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RESEARCH ARTICLE

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Stability and policy threats: US public opinion after a decade of the Affordable Care Act

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Abstract

The Affordable Care Act (ACA) continues to shape US politics at the elite level. We know less about whether this conflict still carries over to the broader public. Moreover, we know little about the degree to which the conflict reaches into its various policies and whether the policy threats to the ACA can affect public opinion. We fielded a large, and demographically diverse survey of US adults using Lucid ($N = 6066$) from July 8–21, 2020. The survey contained an experiment that introduced the topic to respondents as the 2010 health reform law, the ACA, or Obamacare and at times highlighted the potential undoing of the ACA by the US Supreme Court. Analyses were conducted using Ordinary Least Squares regression. Our findings indicate that perceptions of the ACA differ substantial based on partisanship and racial prejudice. Framing still matters in the minds of Americans and their perception of health reforms in general and its individual components by extending these differences. However, we find only very limited evidence for changes to public attitudes related to the policy threat of the Supreme Court ruling the ACA constitutional in California v. Texas. The ACA remains a political battleground in the minds of Americans. The politics of the ACA continue to be shaped by perceptions of race and partisanship.

KEYWORDS

Affordable Care Act, health reform, public opinion

Key points

- The Affordable Care Act (ACA) remains a political battleground in the minds of Americans. The politics of

the ACA continue to be shaped by perceptions of race and partisanship.

- Utilizing different labels for the ACA continues to elicit differential responses based on the partisanship and racial biases of respondents.
- However, we found only very limited evidence for changes to public attitudes related to the policy threat of the Supreme Court ruling the ACA constitutional in California v. Texas.

INTRODUCTION

The Affordable Care Act (ACA) has been one of the most significant pieces of legislation Congress has passed in the last half-century (Altman & Shactman, 2011; Jacobs & Skocpol, 2010, 2011; McDonough, 2011; Starr, 2011; The Staff of the Washington Post, 2010). While incremental (Haeder & Weimer, 2015a), it substantially transformed essential parts of the US healthcare system, predominantly by reforming insurance regulations and expanding coverage to millions of Americans via the expansion of Medicaid as well as a combination of insurance market reforms and subsidies via the ACA Marketplaces (Haeder et al., 2015a). While the passage of the ACA proved highly partisan, analysts generally expected that, over time, the law would institutionalize, as had major other efforts at social reform before it (Jacobs & Skocpol, 2010).

Yet arguably, the real partisan fighting began only after President Obama's signature had dried as, and perhaps even more consequentially, the ACA ushered in a seemingly never-ending political battle between the two parties (Bussing et al., 2020; Oberlander, 2020; Patashnik, 2023; Wang, 2022). During the drawn-out implementation phase (Patashnik, 2023), political wrangling continued unabated (Haeder & Weimer, 2013, 2015b; Noh & Krane, 2016; Oberlander, 2016; Rigby & Haselswerdt, 2013; Rocco & Haeder, 2018; Shor, 2018). The degree of partisan animosity has led some to describe its implementation as the “Obamacare War” (Béland et al., 2016). Ironically, it seemed that the election of President Trump, one of the law's most vocal critics (Haeder & Chattopadhyay, 2022), and unified Republican control in Washington, DC, and the subsequent policy threat (Hopkins, 2023; Mettler et al., 2023), elevated the standing of the ACA in Americans' mind. This threat may have thus have ultimately contributed to the increasing sense that, despite ongoing barriers to implementation, the law had proven resistant to major reversal and remained largely intact (Levy et al., 2020). However, recent comments by former President Trump indicate that the ACA remains far from being fully settled in political discourse (Colvin & Miller, 2023; Jackson, 2023). A second Trump presidency may thus further test the stability and institutionalization of the ACA.

Given the complexity of the US healthcare system, the growth of social media, and growing distrust in science and experts, it is not surprising that efforts to disparage the ACA as well as calls to repeal the ACA during election season continue to fall on fertile ground. Moreover, debates about the ACA often contain implicit, at times even explicit, racial appeals. The close association of the ACA with the nation's first black president and the fact that many of the key provisions of the ACA disproportionately benefit non-White populations only add further fuel to the issue. In this politically charged environment, it seems like that how issues related to the ACA are framed, even more than a decade after its passage, can have important implications on public attitudes. Moreover, recent work on policy threats related to the ACA (Hopkins, 2023; Mettler et al., 2023) has shown that, while the ability of elites to influence the public is limited when it comes to the ACA, major shifts in public attitudes are possible when the ACA faces policy threats.

To investigate these issues, we developed and fielded a large nationally representative survey of 6066 Americans that included an experiment that primed respondents in two critical ways. First, to assess the effects of wording on public opinion about the ACA, we presented respondents with alternating versions of “the 2010 health reform law,” the “Affordable Care Act,” and “ObamaCare.” Second, we presented half of our respondents with frames focused on potentially losing the ACA through the lawsuit *California v. Texas* in front of the Supreme Court at the time of the survey (instead of simply asking them about the ACA). The lawsuit challenged the constitutionality of the ACA after the repeal of the individual mandate penalty.[1] At the time, the lawsuit was considered to be a real policy threat to the ACA. As the left-leaning Center for American Progress put it, “For the foreseeable future, the ACA is in danger” (Gee & Gaba, 2019). This allowed us to assess whether the effect of wording is different under this condition. Importantly, it allowed us to explore potential loss aversion and endowment effects associated with the ACA in a realistic and policy-relevant fashion.

Overall, our approach here builds on previous work on public opinion about the ACA and its important partisan and racial components. However, we extend the literature by using an experiment to explore how different labels of the ACA can move public opinion after more than a decade since its passage. Moreover, we assess whether attitudes about the ACA are movable when highlighting a credible policy threat in the form of the perilous legal state of the ACA leading up to *California v. Texas* (Gee & Gaba, 2019). Specifically, we do so building on the work of Hopkins (2023) and Mettler et al. (2023) by assessing whether the policy threat of the abolishment of the ACA by the Supreme Court can provide an upswing in support for the ACA attributable to an endowment effect and loss aversion. Lastly, we extend the analysis beyond an assessment of the ACA overall to four important policies contained within it that have been generally found to be popular among Americans.

In the following sections, we first provide an overview of how partisanship and race have shaped the passage and implementation of the ACA and public opinion more broadly. Next, we outline how partisan and racial cues may shape public opinion in the case of the ACA before describing our data, hypotheses, and methods. We then present and discuss our results before highlighting the potential limitations and implications of our findings.

THE ACA AND PARTISANSHIP

Efforts to reform the American healthcare system have long been contentious, reaching back to the first efforts to provide universal coverage in the early 1900s (Blumenthal & Morone, 2010; Brodie et al., 2019). Virtually all presidents have failed to achieve significant reforms they advocate for, except President Johnson's creation of Medicaid and Medicare. The failure of President Clinton to pass his health reform proposal (Hacker, 1997) not only deterred Democrats for well over a decade from seeking significant changes to the US healthcare system, but it also drove the Obama Administration's decision-making in their endeavor after the 2008 presidential elections (Hacker, 2011). Seeking to avoid shaking the proverbial boat too much, the President and his team sought to bring as many interests on board as possible (Altman & Shactman, 2011; Hacker, 2011; Jacobs & Skocpol, 2010, 2011; McDonough, 2011; Starr, 2011; The Staff of the Washington Post, 2010). Perhaps most crucially, they also decided to pursue a relatively conservative reform approach that heavily relies on preserving the existing system while relying on private entities and states to implement large parts of the reforms.

Despite these precautions, the efforts to pass health reform quickly became contentious (Altman & Shactman, 2011; Jacobs & Skocpol, 2010, 2011; McDonough, 2011; Starr, 2011; The Staff of the Washington Post, 2010) and highly emotional, exemplified by misinformed debates over, for example, "death panels" (Hopkins, 2017) or "pulling the plug on grandma" (Montopoli, 2009). Unquestionably, with one party pushing for the reforms and the other staunchly opposed to any compromise, partisanship was at the core of these debates (Jacobs & Mettler, 2020). Yet, the ACA overcame a slew of obstacles and eventually, through creative leadership in the US Congress, was signed into law by President Obama (Haeder, 2012). However, political conflict only escalated once the president's ink had dried. Implementation saw many new battles ranging from the creation of the ACA marketplaces (Haeder & Weimer, 2013, 2015b; Noh & Krane, 2016; Oberlander, 2016; Rigby & Haselswerdt, 2013; Shor, 2018), the expansion of Medicaid (Barrilleaux & Rainey, 2014; Callaghan & Jacobs, 2017; Oberlander, 2016; Olson, 2015; Shor, 2018), or seemingly technical insurance market reforms (Haeder, 2014) or comparative effectiveness research (Sorenson et al., 2014). The courts became another venue of the partisan conflict with several appearances before the Supreme Court (Haeder et al., 2021; Koppelman, 2013). Of course, control over the White House and the executive apparatus of the federal government have been crucial in shaping, or at times undoing, the implementation of the ACA via executive orders (Thompson, 2013; Thompson et al., 2018) or rulemaking (Bagley, 2014; Haeder & Yackee, 2020; Haeder et al., 2015b; Kersh, 2011). To be sure, there was some level of "backstage cooperation" (Grogan, 2011, p. 408) from state-level Republicans but, by and large, partisanship has been a defining factor for the political life of the ACA (Bussing et al., 2020; Oberlander, 2020). And thus, even today, opposition or outright repeal are very much part of the Republican strategy, while the opposite holds for Democrats (Haeder & Chattopadhyay, 2022; Sances & Clinton, 2021; Wang, 2022).

To be sure, the conflict has extended well-beyond the aisles of federal and state legislatures and executive mansions. From the beginning, thousands of Americans made their attitudes known through town hall meetings and other forms of public expression (Jacobs & Skocpol, 2010). Americans, where possible, also used direct democracy to register their support or opposition to the ACA (Matsa & Miller, 2019). Moreover, public opinion surveys have consistently shown strong partisan effects, with Democrats strongly favoring the ACA and Republicans in opposition (Gollust et al., 2020; Grande et al., 2011; Hopkins, 2023; Kaiser Family Foundation, 2021). Importantly, partisan effects went well beyond public attitudes and affect ACA-related behaviors, including, for example, lower levels of Republican sign-ups via the ACA marketplaces (Lerman et al., 2017; Sances & Clinton, 2019).

THE ACA AND RACE

However, a growing body of work indicates that the conflict over the ACA goes beyond partisanship and has a clear and growing racial component (Parker, 2016). And while ethnic and racial divisions had been on the rise before the ACA (Abramowitz & McCoy, 2019), there is strong evidence that the election of President Obama (Knowles et al., 2010; Luttig & Motta, 2017; Pasek et al., 2014) and the passage and implementation of his signature achievement may have further contributed to these developments (Pasek et al., 2014; Stein & Allcorn, 2018; Tesler, 2012). Indeed, racial attitudes have been a strong predictor of support and opposition to health reform (Banks, 2013; Fording & Patton, 2019; Grogan & Park, 2017; Henderson & Hillygus, 2011; Knoll & Shewmaker, 2013; Knowles et al., 2010; Lanford & Quadagno, 2016; Maxwell & Shields, 2014; McCabe, 2019; Pasek et al., 2009; Segura & Valenzuela, 2010; Snowden & Graaf, 2019; Tesler, 2012; Valentino et al., 2018).

This is, of course, not surprising as President Obama has been inseparably linked with the ACA as the face of the policy (Tesler, 2012). Moreover, evidence suggests that health reform has been racialized in general through concerted efforts to attach it to "welfare" (Fording & Patton, 2019, p. 283; Gilens, 1996, 2009; Snowden & Graaf, 2019). In addition, detractors of the ACA have consistently sought to stir up racial animus by highlighting that it is disproportionately helps "undeserving" racial minorities (Haney-López, 2015). The election of President Trump may have further heightened the racial dimension of conflict over the ACA because of his significant appeals towards racial resentment (Abramowitz & McCoy, 2019; Haeder & Chattopadhyay, 2022; Ott & Dickinson, 2020; Ouyang & Waterman, 2020; Tien, 2017). Indeed, there is evidence that President Trump's supporters are highly susceptible to racial cues (Luttig et al., 2017).

FRAMING EFFECTS, POLICY THREAT, AND THE ACA

The inseparable connection between the ACA and President Obama opens the doors for potential framing effects that activate both partisan and racial cues to shape public attitudes as a function of how health reform is labeled (Chong & Druckman, 2007; Druckman, 2004; Entman, 1993; Grande et al., 2011; Hopkins, 2017; Jacobs & Mettler, 2018; Mummolo & Fowler et al., 2017). That is, highlighting the connection between the president and health reform focuses individuals' attention on the partisan and racial component of the issue and reduces the dimensionality of the issue. Unlike learning or persuasion, this cognitive shift acts on an emotional level (Haeder, 2020; Kennedy-Hendricks et al., 2016). Importantly, effects may be highly conditional based on individuals' predispositions on racial issues as well as partisanship (Bergan & Risner, 2012; Brodie et al., 2019; Fowler et al., 2017; Gollust et al., 2017; Jerit, 2008). In the case of the ACA, the potential effects of framing may be further bolstered by the general confusion many Americans share about the complexities of the US healthcare system and the complex nature of the ACA in particular (Blumberg et al., 2013; Brodie et al., 2019; Loewenstein et al., 2013; Long & Goin, 2014).

One way to activate partisan and racial cues related to the ACA is the specific wording used to describe the reforms, most commonly as some version of "the 2010 health reform law," the "Affordable Care Act," or "ObamaCare" (Brodie et al., 2010; Holl et al., 2018). Unfortunately, only limited research has explored this issue so far. One study focused on the determinants of support for the ACA by analyzing question-wording by pollsters and did not find any effect (Holl et al., 2018). Another study found that connecting health reform to President Obama activates racial resentment and thus reduces support for reform (Maxwell & Shields, 2014). It is worth mentioning that President Obama and his surrogates appear to have sought avoiding the term "ObamaCare" in public appearance, arguably indicating that they, based on scientific evidence or not, expect adverse reactions (Epstein, 2013).

Yet there are important nuances to consider when it comes to the ACA. Given the vastness and complexity of the ACA, individuals may have opinions much more in line with their party leadership regarding the legislation as a whole (Brodie et al., 2019; Hamel et al., 2020; Kirzinger et al., 2017). Partisan elite cues may work much better when focused on the whole than the multitude of its subparts (Haeder et al., 2021). And indeed, one study found that framing affects public support for specific components of health reform, one of which was included in the final legislation (the individual mandate) and one of which was not (the public option) (Grande et al., 2011). Moreover, various polls have consistently shown high support, even among Republicans, for multiple subparts of the ACA (Brodie et al., 2019; Hamel et al., 2020; Kirzinger et al., 2017).

At the same time, Republicans have continuously challenged the constitutionality of the ACA. Indeed, more than a decade after its passage, the ACA faced being judicially eliminated in

California v. Texas. There are good reasons to believe that the policy threat to the ACA by the US Supreme Court may have, at least in part, contributed to the upswing in support for the law among the public (Alesina & Passarelli, 2019; Eckles & Schaffner, 2010; Henry J. Kaiser Family Foundation, 2021). This thought is analogous to the evidence that the policy threat to the ACA after the election of President Trump shifted support for the ACA upward (Hopkins, 2023; Mettler et al., 2023). In the literature, sees loss aversion and endowment effects as a likely pathway (Hopkins, 2023; Mettler et al., 2023). Importantly, policy threats, as Mettler et al. (2023) argue, "may grab individuals' attention and trigger a powerful focusing moment that evokes their policy support" (298). That is, because the ACA, and its many policy benefits, have been in place for over a decade, the status quo has inevitably been altered and, with it, the reference point for Americans in their perceptions of the US healthcare system (Camerer, 2005; Jervis, 1992). As a result, the potential of losing the ACA due to a Supreme Court ruling, the focus of our analyses here, may further soften Americans' views of the law and, overall, lead to more positive evaluations of the ACA through loss aversion and an endowment effect (Bruner et al., 2020; Marzilli Ericson et al., 2014; Hopkins, 2023; Kahneman et al., 1991; Knetsch, 1989; Mettler et al., 2023; Thaler, 1980; Tversky & Kahneman, 1991). Besides the aforementioned shifted in public opinion related to the policy threat of President Trump's election there is also some limited evidence to support this expectation via survey experiments. For example, one analysis found that mentioning a repeal of the ACA correlated with increased support for health reform (Holl et al., 2018). Importantly, previous work on welfare state retrenchment (Pierson, 1994) and Social Security cuts (Campbell, 2003) have identified these effects outside of the ACA.

DATA AND HYPOTHESES

Data

To test our expectations, we fielded a large, and demographically diverse survey of US adults using Lucid ($N = 6066$) from July 8–21, 2020. We were careful to field the survey before the *California v. Texas* Supreme Court ruling. While Lucid is considered a convenience sample, it nevertheless provides a national sample that approximates representativeness by targeting several known demographic benchmarks, including race, age, sex, income, and Census region. Despite concerns with online opt-in panels, Lucid has been found to be an appropriate tool for survey research (Coppock & McClellan, 2019; Stagnaro et al., 2024) and, to date, has been used extensively in political science and health policy research (Cassese et al., 2020; Haeder & Moynihan, 2023). While the survey data closely matched national demographics, we weighted them on gender, race, income, and education based on the US Census Current Population Survey to further improve fit. The experiment received approval from the IRBs at the appropriate universities.

To gauge the effectiveness of various primes related to the labels given to the ACA, we introduced respondents to our questions about their attitudes toward the ACA as follows:

> Next, I'm going to show you several benefits related to health insurance coverage currently established by law. These benefits were established by **[the 2010 health reform law/the Affordable Care Act/ObamaCare]**. Please tell us whether you feel very unfavorable, somewhat unfavorable, somewhat favorable, or very favorable about these benefits.

Alternatively, roughly half of our respondents received a version of the following that emphasized that the ACA, and thus the benefits it established, may be undone by the U.S. Supreme Court:

> Next, I'm going to show you several benefits related to health insurance coverage currently established by law. These benefits were established by **[the 2010 health reform law/the Affordable Care Act/ObamaCare]**. Later this year, a lawsuit in front of the U.S. Supreme Court may declare **[the 2010 health reform law/the Affordable Care Act/ObamaCare]** unconstitutional and eliminate these benefits. Please tell us whether you feel very unfavorable, somewhat unfavorable, somewhat favorable, or very favorable about these benefits.

We then provided respondents with four specific benefits established by the ACA, including

1. the ability for children to stay on their parents until age 26,[2]
2. the provision of premium subsidies for consumers in the ACA marketplaces,[3]
3. the pre-existing conditions coverage requirement for carriers,[4] and
4. the expansion of Medicaid.[5]

We specifically chose these components of the ACA because they have consistently received high support across the partisan spectrum (Brodie et al., 2019; Hamel et al., 2020; Kirzinger et al., 2017).

Lastly, we also asked respondents the following questions about the ACA in its entirety:

> Given what you know about [**the 2010 health reform law/the Affordable Care Act/ObamaCare]**, do you have a favorable or unfavorable opinion of it?

Again, we gave respondents a 4-point scale from "very unfavorable" to "very favorable."

Hypotheses

As mentioned above, the battle over the ACA has been highly partisan. Notably, the partisan conflict has been extensive among party elites. Still, it has been reflected in the general population as public opinion surveys have consistently shown that Democrats generally favor the ACA while Republicans generally oppose it (Gollust et al., 2020; Grande et al., 2011; Kaiser Family Foundation, 2021). We thus hypothesize that:

> **H1:** Democrats will be more supportive of the ACA than Republicans across all six of the treatments.

To analyze partisanship, we relied on Lucid's 10-point partisanship scale. The scale contains four distinct levels for both Democrats and Republicans each and two neutral options ("Other-Independent" and "Other-Neither"). We combined the four respective levels for both Democrats and Republicans, respectively, as well as a third category for respondents not supporting either party.[6]

However, there are reasons to believe that the label respondents were primed with may affect how their partisanship is activated. That is, the specific wording used to describe the reforms, most commonly as some version of "the 2010 health reform law," the "Affordable Care Act," or "ObamaCare" in our treatments, may have different degrees of efficiency to send a partisan message to respondents. We thus further hypothesize that:

> **H2a:** Differences between partisans will be larger for the "Affordable Care Act" treatments than for the "the 2010 health reform law" treatments.

H2b: Differences between partisans will be larger for the “ObamaCare” treatments than for the “the 2010 health reform law” treatments.

H2c: Differences between partisans will be larger for the “ObamaCare” treatments than for the “Affordable Care Act” treatments.

We note that while public polls have consistently shown high support, even among Republicans, for various subparts of the ACA (Brodie et al., 2019; Hamel et al., 2020; Kirzinger et al., 2017), we nonetheless expect partisan differences to emerge for both the overall evaluation of the ACA as well as of its subparts. We expect this to be the case because our survey emphasized that these benefits were part of the ACA.

However, because the political conflict over the ACA goes beyond partisan differences and contains a strong racial component due to its association with President Obama (Pasek et al., 2014; Stein & Allcorn, 2018; Tesler, 2012). Indeed, studies have consistently shown the strong effect of racial attitudes on health reform (Banks, 2013; Fording & Patton, 2019; Grogan & Park, 2017; Henderson & Hillygus, 2011; Knoll & Shewmaker, 2013; Knowles et al., 2010; Lanford & Quadagno, 2016; Maxwell & Shields, 2014; McCabe, 2019; Pasek et al., 2009; Segura & Valenzuela, 2010; Snowden & Graaf, 2019; Tesler, 2012; Valentino et al., 2018). However, while the “spillover of racialization” (Tesler, 2012) may affect health reform in general, there are reasons to believe that the label affixed to health reform may make it easier or harder for individuals to make a racialized connection. To measure the divergent effects of racial attitudes on evaluations of the ACA, we utilized the standard four-question measure of racial resentment (Kinder & Sanders, 1996). We then split the sample into tertiles based on their aggregate scores and compared individuals who were low in racial resentment to those who were high. Recent research also indicates that individuals who score low on the scale could also be interpreted as *favoring* minorities while those who score high as *disfavoring* minorities (Agadjanian et al., 2023). We limited this part of our analysis to the subset of non-Hispanic Whites respondents. Analogously to our partisanship-based hypotheses, we thus hypothesize that:

H3: Individuals low in racial resentment will be more supportive of the ACA than those high in racial resentment across all six of the treatments.

We also expect divergent effects of the three different labels for the ACA:

H4a: Differences between individuals who are high or low in racial resentment will be larger for the “Affordable Care Act” treatments than for the “the 2010 health reform law” treatments.

H4b: Differences between individuals who are high or low in racial resentment will be larger for the “ObamaCare” treatments than for the “the 2010 health reform law” treatments.

H4c: Differences between individuals who are high or low in racial resentment will be larger for the “ObamaCare” treatments than for the “Affordable Care Act” treatments.

Again, we expect these hypotheses to hold across the evaluation of the ACA as a whole and its components.

Lastly, as we have described above, the survival of the ACA has long been highly contested in various political venues. Given the extensive research on the endowment effect (Bruner et al., 2020; Marzilli Ericson et al., 2014; Kahneman et al., 1991; Knetsch, 1989;

Thaler, 1980; Tversky & Kahneman, 1991) as well as policy threats (Mettler et al., 2023), there are reasons to believe that the threat of losing the ACA via a Supreme Court verdict may positively affect perceptions of the ACA itself. Indeed, the threat to the ACA has been mentioned as one explanation for the increasing popularity of the ACA under the Trump Administration (Alesina & Passarelli, 2019). Thus, we specifically expect that:

> **H5:** Individuals primed for the Supreme Court's potential to eliminate the ACA will be more supportive of the ACA than those not primed for it across the three different labels used to describe the ACA.

RESULTS

OLS is an appropriate approach because of the survey design and implementation and because we are interested in whether experimental treatments affect mean perceptions of the ACA. We estimate a number of standard OLS models with survey weights to test our hypotheses. To assess the differential effects of treatments by partisanship, we interacted indicator variables for each treatment with our 3-category partisanship variable (Democrats, Other, Republicans). To assess hypotheses related to racial attitudes, we analogously divided individuals into tertiles as described above; we then interacted with the tertile measure with indicator variables for each treatment. We derived predictive means and compared differences using mlincom in Stata (Long & Freese, 2014) for hypotheses 1 and 3. We estimated second differences to test the remaining hypotheses. We considered a $p \leq 0.05$ statistically significant throughout our analyses.

Partisanship

The results for partisanship are presented in Table 1 and Figure 1. We found strong and consistent partisan effects across all six treatments concerning the overall favorability of the ACA. Overall, the mean level of support for the ACA ranged from 2.692 to 2.879 with standard deviations of 0.859 to 1.060. For Republicans, mean favorability ranged from a low of 2.232 (95% confidence interval [CI]: 2.101–2.363) for the "ObamaCare" treatment to a high of 2.623 (2.522–2.725) for the "the 2010 health reform law" treatment. In both cases, the results were for treatments mentioning potential repeal. For Democrats, results ranged from a low of 3.031 (2.926–3.137) for the health reform treatment to a high of 3.282 (3.185–3.379) for the ObamaCare treatment combined with the SCOTUS ruling. All differences between Democrats and Republicans were highly statistically significant ($p < 0.001$). In all six cases, Republicans differed substantially from Democrats, with partisan differences ranging from 0.490 to 1.050 on a 4-point scale. Importantly, differences between Republicans and Democrats were also consistently statistically significant across the policies contained within the ACA (Figure 2, see Appendix Exhibits 5–8). That is, differences between Democrats and Republicans persisted for ACA marketplace subsidies (with $p < 0.001$) and the expansion of Medicaid ($p < 0.001$). Partisan differences ranged from 0.302 to 0.525 for the former and 0.445 to 0.667 for the latter. Partisan differences were also present for the ACA provision that allows children to stay on their parent's insurance until age 26. Here, differences between partisans ranged from 0.193 to 0.589 ($p < 0.0034$). Additionally, we found consistent differences between partisans for pre-existing conditions, except for the "the 2010 health reform law" treatment, with statistically significant differences ranging from 0.180 to 0.398 ($p < 0.035$). Lastly, for Republicans, point estimates for all component analyses were consistently more supportive than those for the ACA. (Figure 3).

TABLE 1 Comparison of republicans to democrats on overall favorability of the Affordable Care Act.

Treatment				Republicans	95% CI		Democrats	95% CI		Delta	*p* Value
1	Health reform			2.542	2.418	2.665	3.031	2.926	3.137	0.490	0.000
2	Affordable Care Act			2.363	2.229	2.496	3.170	3.057	3.283	0.807	0.000
3	Obamacare			2.263	2.138	2.388	3.239	3.143	3.334	0.975	0.000
4	Health reform & Supreme Court			2.623	2.522	2.725	3.148	3.049	3.248	0.525	0.000
5	Affordable Care Act & Supreme Court			2.312	2.181	2.442	3.203	3.093	3.313	0.891	0.000
6	Obamacare & Supreme Court			2.232	2.101	2.363	3.282	3.185	3.379	1.050	0.000
2nd difference	Health reform	vs.	Affordable Care Act	.	.	.	.	.	.	−0.318	0.009
	Health reform	vs.	Obamacare	.	.	.	.	.	.	−0.486	0.000
	Affordable Care Act	vs.	Obamacare	.	.	.	.	.	.	−0.168	0.161
	Health reform & Supreme Court	vs.	Affordable Care Act& Supreme Court	.	.	.	.	.	.	−0.366	0.001
	Health reform & Supreme Court	vs.	Obamacare & Supreme Court	.	.	.	.	.	.	−0.525	0.000
	Affordable Care Act& Supreme Court	vs.	Obamacare & Supreme Court	.	.	.	.	.	.	−0.159	0.186

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Abbreviation: CI, confidence interval.

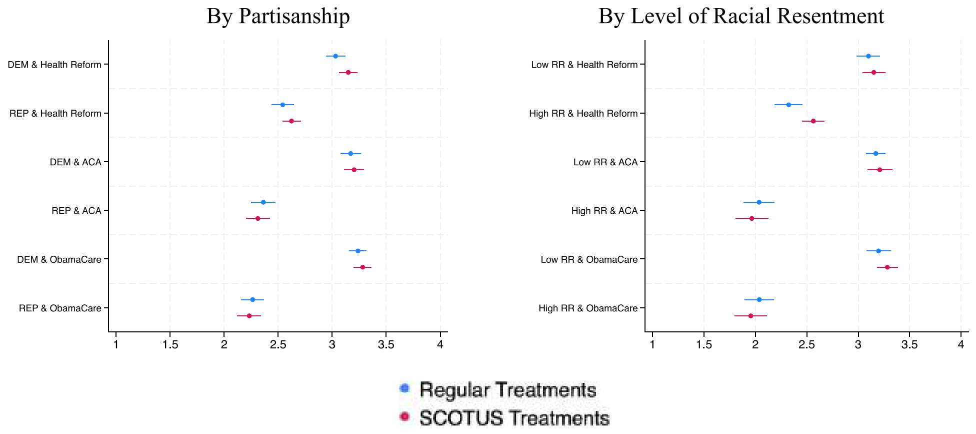

FIGURE 1 Predicted means for various treatments for democrats and republicans for overall ACA favorability. Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

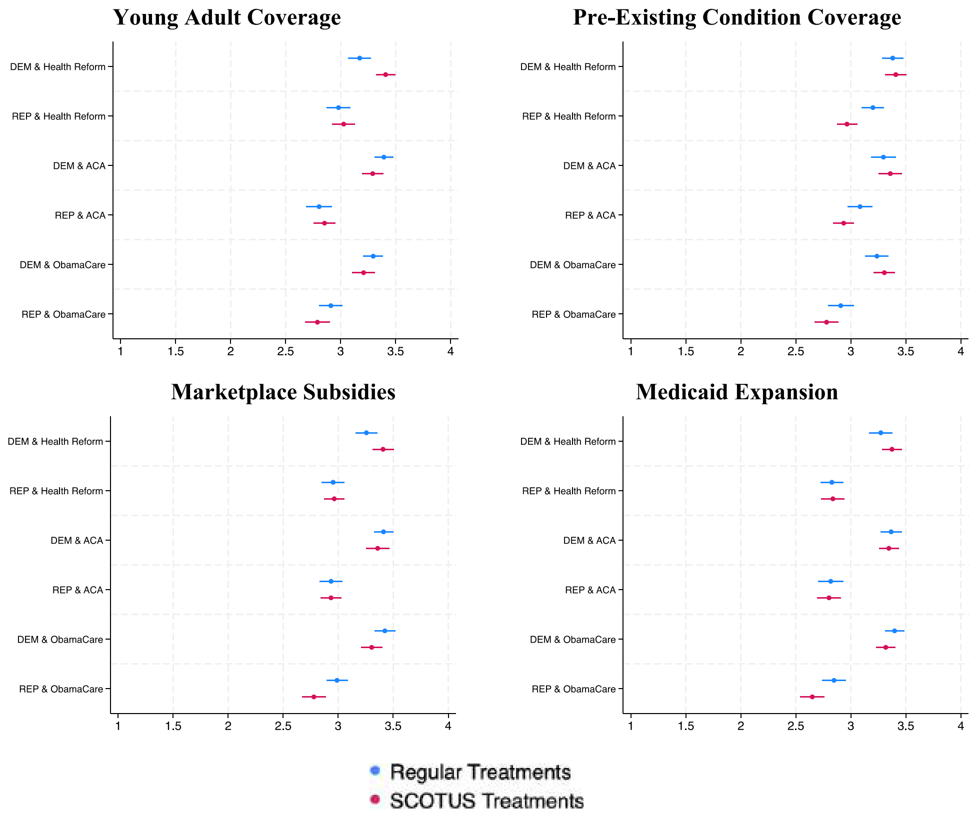

FIGURE 2 Predicted means for various treatments for democrats and republicans for various ACA components. Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

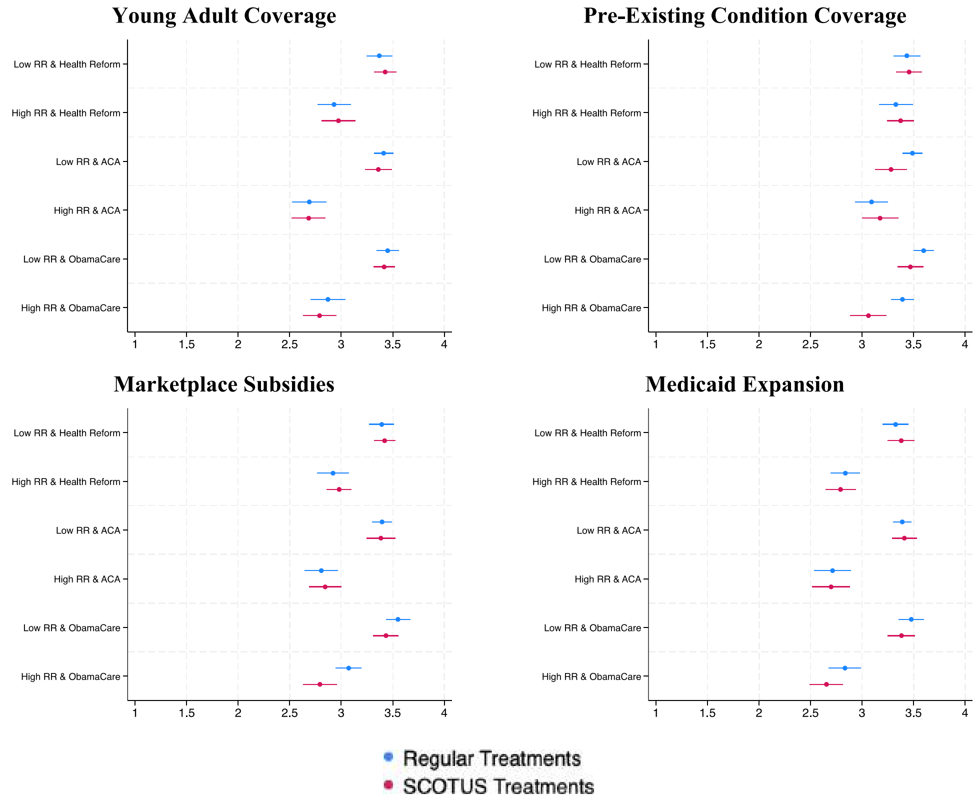

FIGURE 3 Predicted means for various treatments for individuals high and low in racial resentment for various ACA components. Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

The findings for our second set of hypotheses were more mixed. We found evidence that different labels for the ACA increased the difference between partisans in a substantive and statistically significant way. However, these effects were confined to assessments of the ACA as a whole. Specifically, we found that the differences increased by 0.318 ($p = 0.009$) between the "the 2010 health reform law" and the "Affordable Care Act" treatment and by 0.486 ($p < 0.001$) between the "the 2010 health reform law" and the "ObamaCare" treatment, again on a 4-point scale. Similarly, we found increases in partisan gaps for the respective versions of these treatments focused on potential repeal. At the same time, we found no significant differences between the "Affordable Care Act" treatment and the "ObamaCare" treatments ($p = 0.161$ for the general treatment and $p = 0.186$ for the SCOTUS treatment). Moreover, there were no increases in partisan differences for any of the analyses of the four components of the ACA, with the exception of differences for comparisons between "the 2010 health reform law and "Affordable Care Act" for allowing children to stay on their parents' insurance longer as well as pre-existing conditions coverage.

Racial resentment

Turning to the effect of the treatments based on the degree of racial resentment respondents harbor showed similar patterns as partisanship (see Table 2 and Figure 1). We found consistent statistically significant differences between individuals with lower racial

TABLE 2 Comparison of Individuals High and Low in Racial Resentment on Overall Favorability of the Affordable Care Act.

Treatment				High racial resentment	95% CI		Low racial resentme-nt	95% CI		Delta	*p* Value
1	Health reform			2.324	2.162	2.486	3.099	2.965	3.234	0.775	0.000
2	Affordable Care Act			2.036	1.859	2.214	3.171	3.060	3.281	1.134	0.000
3	Obamacare			2.039	1.868	2.209	3.198	3.056	3.339	1.159	0.000
4	Health reform & Supreme Court			2.563	2.435	2.692	3.151	3.020	3.282	0.587	0.000
5	Affordable Care Act & Supreme Court			1.965	1.775	2.154	3.209	3.067	3.352	1.245	0.000
6	Obamacare & Supreme Court			1.955	1.767	2.143	3.283	3.165	3.402	1.328	0.000
2nd difference	Health Reform	vs.	Affordable Care Act	.	.	.	.	.	.	−0.359	0.018
	Health Reform	vs.	Obamacare	.	.	.	.	.	.	−0.384	0.014
	Affordable Care Act	vs.	Obamacare	.	.	.	.	.	.	−0.025	0.873
	Health Reform & Supreme Court	vs.	Affordable Care Act & Supreme Court	.	.	.	.	.	.	−0.657	0.000
	Health reform & Supreme Court	vs.	Obamacare & Supreme Court	.	.	.	.	.	.	−0.740	0.000
	Affordable Care Act & Supreme Court	vs.	Obamacare & Supreme Court	.	.	.	.	.	.	−0.083	0.616

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Abbreviation: CI, confidence interval.

resentment ("favoring") and those with higher racial resentment ("disfavoring"). The former showed substantially higher support for the ACA in general and for three of its components. The differences in assessments of the ACA, in general, were substantial and range from 0.587 to 1.328 ($p < 0.001$) on a 4-point scale. Differences in the components of the ACA (Appendix Exhibits 9–12) were somewhat smaller but statistically significant for Medicaid expansion (0.488–0.728, $p < 0.001$), marketplace subsidies (0.441–0.641, $p < 0.001$), and covering young adults (0.439–0.676, $p < 0.001$). Again, support for the pre-existing condition coverage requirements served as the exception to the pattern, with only three comparisons reaching statistical significance. Point estimates for all component analyses were consistently more supportive than for the ACA as a whole for individuals high in racial resentment. Once again, the findings for our additional hypotheses (H4a-4c) were only confirmed for assessments of the ACA as a whole, and even then, only partially so. That is, the gap between individuals who were high in racial resentment and those who were low increased when comparing treatments for "the 2010 health reform law" and the "Affordable Care Act" (0.359 $p = 0.018$ and 0.657 $p < 0.001$) and when comparing treatments for "the 2010 health reform law " and the "ObamaCare" treatment (0.384 $p = 0.014$ and 0.740 $p < 0.001$). This finding adds support for the thesis of Agadjanian et al. (2023) that those low on the racial resentment measure should be considered as favoring minorities. We found no statistically significant differences in comparisons between the "Affordable Care Act" and the "ObamaCare" treatments. None of the second differences were statistically significant for the four specific coverage extensions.

Policy threat, loss aversion, and endowment effect

Lastly, our assessment of loss aversion and potential endowment effects compared each of the three respective treatments (the 2010 health reform law/the Affordable Care Act/ObamaCare) to its version highlighting the possible elimination of benefits by the Supreme Court. The results of the comparisons are presented in Table 3. Across all comparisons, we found only slim evidence for endowment effects increasing approval for the ACA or its components across the different treatments and analyses of interest. Indeed, the effects, even when present, appear to be relatively small and did not exceed 0.194 ($p = 0.030$) in the case of Democrats and pre-existing condition coverage. We also note that none of the comparisons indicated a growing gap between Democrats or Republicans or individuals high or low in racial resentment for any treatments.

DISCUSSION

Despite persistent attempts by Republicans to repeal or challenge the constitutionality of the ACA, its popularity has continued to grow among the public since its passage in 2010. Importantly, the major increase in popularity appears to be results of the substantial policy threat to the ACA under President Trump (Hopkins, 2023). As such, the overall picture of the ACA has been one of stability with one major intercession. Yet even today, most Republicans continue to strongly oppose the ACA, despite supporting many of the policy benefits that came because of the passage of the ACA. In addition, with the ACA continuously being linked to former President Obama, the same holds for those with high racial resentment. Our findings here show that partisanship and attitudes towards race, even more than a decade into the ACA, continue to be strong predictors of support and opposition for the ACA. Importantly, we show that this is the case for the ACA overall, as well as some of its specific policies.

TABLE 3 Analysis of potential endowment effects.

		Overall		Republicans		Democrats		High racial resentment		Low racial resentment	
		Delta	*p* Value	Delta	*p*	Delta	*p*	Delta	*p*	Delta	*p*
ACA Overall	Health reform	0.111	0.035	0.082	0.317	0.117	0.113	0.051	0.591	0.239	0.023
	ACA	−0.070	0.254	−0.051	0.591	0.033	0.685	0.039	0.674	−0.072	0.588
	Obamacare	−0.025	0.671	−0.031	0.734	0.044	0.528	0.086	0.364	−0.083	0.521
Young Adult Coverage	Health reform	0.117	0.043	0.047	0.603	0.235	0.004	0.057	0.572	0.043	0.761
	ACA	−0.084	0.151	0.049	0.596	−0.102	0.192	−0.051	0.597	−0.006	0.966
	Obamacare	−0.136	0.020	−0.122	0.193	−0.087	0.293	−0.034	0.709	−0.082	0.565
Premium Subsidies	Health reform	0.070	0.219	0.010	0.902	0.151	0.072	0.028	0.773	0.060	0.614
	ACA	−0.034	0.549	−0.001	0.992	−0.054	0.519	−0.011	0.912	0.037	0.785
	Obamacare	−0.165	0.004	−0.210	0.017	−0.120	0.143	−0.116	0.260	−0.279	0.025
Pre-existing Conditions	Health reform	0.062	0.288	0.038	0.664	0.194	0.030	0.023	0.837	0.046	0.715
	ACA	−0.043	0.481	0.064	0.517	−0.121	0.160	−0.208	0.059	0.083	0.567
	Obamacare	−0.251	0.000	−0.271	0.004	−0.189	0.026	−0.129	0.181	−0.330	0.009
Medicaid	Health reform	0.074	0.199	0.009	0.918	0.101	0.231	0.055	0.620	−0.047	0.704
	ACA	−0.057	0.340	−0.016	0.868	−0.021	0.798	0.021	0.822	−0.014	0.927
	Obamacare	−0.155	0.008	−0.197	0.036	−0.080	0.284	−0.095	0.384	−0.180	0.189

Note: Table presents comparisons for stand-alone treatment versus treatment with indication of potential Supreme Court decision. Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

We also examined the potential influence framing has on support for the ACA. While previous research has been mixed concerning the influence of framing, our findings show that how you frame the ACA significantly influences how individuals view the policy. For example, when framing the ACA as "ObamaCare" or the "Affordable Care Act," the support gap between Republicans and Democrats increased substantially as support decreased for Republicans and increased for Democrats. It also increased between those low and high in racial resentment, again by decreasing for those high in racial resentment and increasing for those low in racial resentment. These findings are in line with the new interpretation of the racial resentment measure by Agadjanian et al. (2023) who propose that those with low racial resentment scores can be considered as "*favoring* minorities" whereas those with high scores can be considered to be "*disfavoring* minorities" (75). Interestingly, framing the ACA as "ObamaCare" or the "Affordable Care Act" generally did not increase partisan or racial differences for the various subcomponents of the bill. However, differences between partisans and those with different levels of racial resentment are present even for these components of the ACA. However, a decade after its passage, we found no differences depending on whether respondents were introduced to the topic as "ObamaCare" or the "Affordable Care Act."

Finally, with public opinion of the law growing over the decade or so, we also sought to examine whether or not the policy threat of the Supreme Court ruling the ACA unconstitutional influences public support for the ACA. In our analysis, we only find slim evidence of endowment effects or loss aversion. That is, the threat of the Supreme Court ruling the ACA unconstitutional did not have similar effects on public opinion as the election of President Trump (Hopkins, 2023; Mettler et al., 2023). This also compares to previous research which found some evidence of an endowment effect when priming individuals about the potential of the Supreme Court overturning the ACA. With former President Trump nominating Justice Gorsuch and Justice Kavanaugh, solidifying a conservative majority on the Court, there was a belief by some that the ACA would finally be overturned (Gee & Gaba, 2019). This belief did not materialize in the *California v. Texas* case (which concluded after data were collected), albeit due to a ruling on standing and not substance. It may either be that several lawsuits to abolish the ACA had failed and thus reduced the policy threat in the eyes of Americans. The same holds for various attempts of Congress to undo the ACA (Rocco & Haeder, 2018). In addition, the salience of the policy threat may not have approached previous iterations (Mettler et al., 2023), and our salience treatments may thus have not been considered to present a real threat to the ACA in the eyes of most Americans. In combination with the positive effects of the Trump election policy threat, it seems also plausible that a ceiling effect might have occurred. Our limited findings on endowment effects point to a need for additional research on endowment effects related to the ACA and other policies. Future research should examine whether the addition of Justice Barrett could influence the presence of future endowment effects among the public. This also holds if President Trump is elected to a second term.

LIMITATIONS

There are some potential limitations to this study. First, considerable research suggests how a question is worded and the amount of information provided to participants can shape survey responses. Our study design, of course, took advantage of this fact. However, it is possible that providing respondents with more information about the ACA and the makeup of the Supreme Court could further alter public attitudes. As such, future research should test the robustness of our findings using alternative treatments. Secondly, our treatments did not focus on partisan primes in particular. Given the substantive partisan differences that persist, it seems plausible that more partisan frames may be able to alter public attitudes further. Moreover, the cross-sectional nature of the data can only provide a snapshot at a single moment in time. Thus, it is impossible to account for how attitudes toward the ACA change over time and the subsequent influence of endowment effects on health policy in the future. Finally, it is important to recognize that while the data-collection platform Lucid is of high quality and widely used in social science research (Stagnaro et al., 2024), it is nonetheless an Internet-based survey platform, limiting the representativeness the opt-in sampling frame can provide. However, as noted earlier, it has been well-accepted in social science and health research.

CONCLUSION

Our findings have important implications for politics and policy. We show that opinions toward the ACA remain somewhat moveable (Sances & Clinton, 2021). For example, mean support for the ACA and its components increased when the ACA's framing was changed from "ObamaCare" or "Affordable Care Act" to health reform. Even after two new presidents and more than a decade since its signing, Republicans and those high in racial resentment still react to the same elite cues (Brodie et al., 2019). At the same time, Republicans continue to differentiate between their support for many of the ACA's benefits and overall support for the ACA, as exemplified by their higher favorability towards the subcomponents. As a result, policymakers and politicians will continue to face resistance undoing the benefits established by the ACA while complaining about the ACA in the abstract may score political points for them.

Overall, our research provides an important update about public attitudes and the continued politics of the ACA. A decade in, the "Obamacare Wars" are far from over, both in the aisles on Capitol Hill and in Americans' minds. Our findings suggest that, partisan differences remain although the ACA has become more popular. Moreover, various components of the bill remain popular while partisan differences over individual policies still tend to persist. As former President Trump recently indicated, he will push towards repealing and replacing the ACA in a second term (Colvin & Miller, 2023; Jackson, 2023). With ongoing litigation and a potential Republican takeover of Congress and the presidency, the politics and policies surrounding the ACA may become unsettled again in the United States.

ETHICS STATEMENT

This project was approved by the appropriate institutional review boards and all participants provided informed consent before data collection.

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ENDNOTES

[1] It is worth noting that the question of constitutionality was never fully addressed by the court because the court determined that the plaintiff lacked standing thus leaving the substance of the case undecided.

[2] Specifically, we wrote: "Allowing young adults to stay on their parents' insurance plan until age 26".

[3] Specifically, we wrote: "Providing financial help to low and moderate-income Americans who don't get insurance through their jobs".

[4] Specifically, we wrote: "Prohibiting insurance companies from excluding coverage for pre-existing conditions."

[5] Specifically, we wrote: "Providing states the option of expanding their existing Medicaid program to cover more low-income uninsured adults."

[6] For analysis purposes, we only focus on Republicans and Democrats below and thus combine both independent categories. We do not analyze independents because the overall number is small, particularly if they are separated out into true "independents" and "neither party." Moreover, we do not have any theoretical expectations for this group.

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APPENDIX

See Figure A1 and Exhibits 2–4.

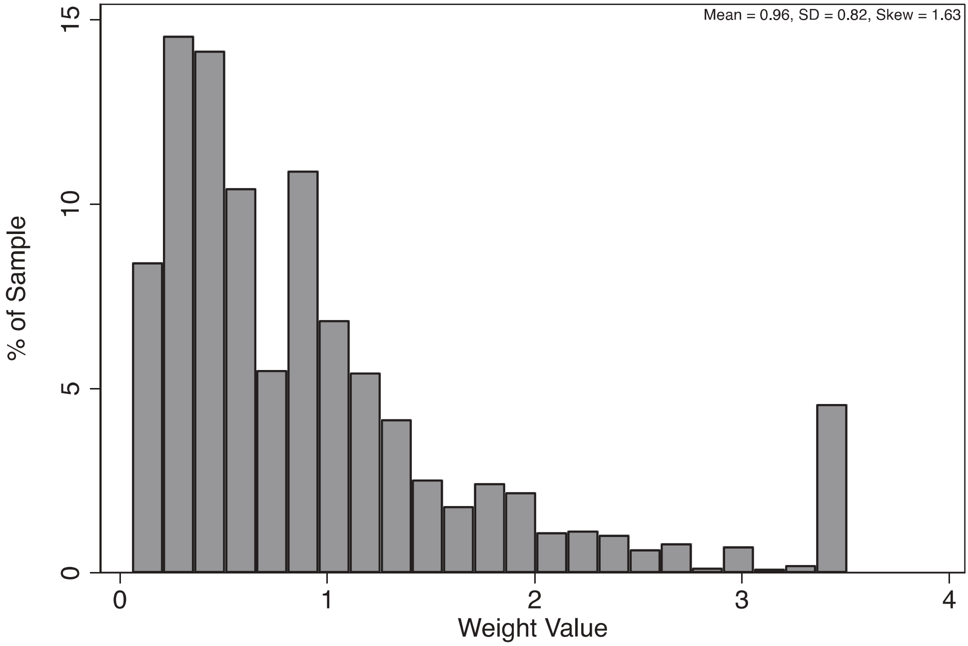

FIGURE A1 Distribution of weights.

Exhibit 2: Comparison of raw and weighted qualtrics data to national benchmarks.

Variable	Survey data (raw)	Survey data (weighted)	Benchmark	Benchmark source
Female	51%	51%	51%	CPS
College degree	42%	34%	31%	CPS
Black	12%	13%	13%	CPS
White	67%	62%	62%	CPS
Hispanic	13%	17%	18%	CPS
Mean age	47	48	47	ANES (Wgt.)
Median income	$35–49,999	$35–49,999	$55–59,999	ANES (Wgt.)

Note: Comparison of the data to known population benchmarks. CPS = Current Population Survey. ANES = American National Election Study. Preference is given to CPS considering its sample size and representativeness, but make use of weighted ANES data whenever it was not possible to use CPS (i.e., CPS does not ask questions about Party ID). Weights in column two adjust for gender, education, race, age, and income. N (Survey Data) = 6066.

Exhibit 3: Treatments

Treatment 1: Health Reform (*N* = 1066)

Next, I'm going to read to you several benefits related to health insurance coverage currently established by law. These benefits were established by **the 2010 health reform law**. Please tell us whether you feel very unfavorable, somewhat unfavorable, somewhat favorable, or very favorable about these benefits.

Treatment 2: Affordable Care Act (*N* = 997)

Next, I'm going to read to you several benefits related to health insurance coverage currently established by law. These benefits were established by **the Affordable Care Act**. Please tell us whether you feel very unfavorable, somewhat unfavorable, somewhat favorable, or very favorable about these benefits.

Treatment 3: ObamaCare (*N* = 1031)

Next, I'm going to read to you several benefits related to health insurance coverage currently established by law. These benefits were established by **ObamaCare**. Please tell us whether you feel very favorable, somewhat favorable, somewhat unfavorable, or very unfavorable about these benefits.

Treatment 4: Health Reform & Supreme Court (*N* = 998)

Next, I'm going to read to you several benefits related to health insurance coverage currently established by law. These benefits were established by **the 2010 health reform law**. Later this year, a lawsuit in front of the US Supreme Court may declare **the 2010 health reform law** unconstitutional and eliminate these benefits. Please tell us whether you feel very unfavorable, somewhat unfavorable, somewhat favorable, or very favorable about these benefits.

Treatment 5: Affordable Care Act & Supreme Court (*N* = 1017)

Next, I'm going to read to you several benefits related to health insurance coverage currently established by law. These benefits were established by the **Affordable Care Act**. Later this year, a lawsuit in front of the US Supreme Court may declare the **Affordable Care Act** unconstitutional and eliminate these benefits. Please tell us whether you feel very unfavorable, somewhat unfavorable, somewhat favorable, or very favorable about these benefits.

Treatment 6: ObamaCare & Supreme Court (*N* = 1017)

Next, I'm going to read to you several benefits related to health insurance coverage currently established by law. These benefits were established by **ObamaCare**. Later this year, a lawsuit in front of the US Supreme Court may declare **ObamaCare** unconstitutional and eliminate these benefits. Please tell us whether you feel very unfavorable, somewhat unfavorable, somewhat favorable, or very favorable about these benefits.

Exhibit 4: Survey Questions

Respondents were offered a 4-scale for all of the following questions ranging from "Very Unfavorable" to "Very Favorable"

- Allowing young adults to stay on their parents' insurance plan until age 26.
- Providing states the option of expanding their existing Medicaid program to cover more low-income uninsured adults.
- Prohibiting insurance companies from excluding coverage for pre-existing conditions.
- Providing financial help to low and moderate-income Americans who don't get insurance through their jobs.

Exhibit 5

Comparison of republicans to democrats on overall favorability for allowing children to stay on their parents until age 26.

Treatment		Republicans	95% CI		Democrats	95% CI		Delta	*p* Value
1	Health reform	2.980	2.853	3.107	3.173	3.049	3.297	0.193	0.034
2	ACA	2.804	2.666	2.942	3.393	3.291	3.494	0.589	0.000
3	Obamacare	2.910	2.784	3.037	3.296	3.189	3.403	0.385	0.000
4	Health reform & Supreme Court	3.027	2.905	3.149	3.408	3.305	3.511	0.381	0.000
5	ACA & Supreme Court	2.853	2.735	2.972	3.291	3.176	3.406	0.438	0.000
6	Obamacare & Supreme Court	2.789	2.656	2.921	3.208	3.086	3.331	0.420	0.000

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Exhibit 6

Comparison of republicans to democrats on overall favorability of marketplace subsidies.

Treatment		Republicans	95% CI		Democrats	95% CI		Delta	*p* Value
1	Health reform	2.954	2.830	3.077	3.256	3.137	3.375	0.302	0.001
2	ACA	2.935	2.813	3.057	3.412	3.307	3.517	0.477	0.000
3	Obamacare	2.989	2.873	3.104	3.424	3.311	3.536	0.435	0.000
4	Health reform & Supreme Court	2.964	2.854	3.074	3.408	3.293	3.522	0.443	0.000
5	ACA & Supreme Court	2.934	2.820	3.048	3.358	3.233	3.483	0.424	0.000
6	Obamacare & Supreme Court	2.779	2.651	2.907	3.304	3.190	3.418	0.525	0.000

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Exhibit 7

Comparison of republicans to democrats on overall favorability of pre-existing conditions coverage requirement.

Treatment		Republicans	95% CI		Democrats	95% CI		Delta	*p* Value
1	Health reform	3.162	3.037	3.287	3.186	3.054	3.318	0.024	0.795
2	ACA	3.019	2.878	3.160	3.417	3.313	3.521	0.398	0.000
3	Obamacare	3.178	3.061	3.295	3.425	3.318	3.533	0.247	0.002
4	Health reform & Supreme Court	3.200	3.080	3.320	3.380	3.264	3.496	0.180	0.035
5	ACA & Supreme Court	3.083	2.950	3.216	3.296	3.162	3.430	0.213	0.027
6	Obamacare & Supreme Court	2.907	2.768	3.047	3.236	3.110	3.363	0.329	0.001

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Exhibit 8

Comparison of republicans to democrats on overall favorability of medicaid expansion.

Treatment		Republicans	95% CI		Democrats	95% CI		Delta	*p* Value
1	Health reform	2.827	2.704	2.950	3.271	3.145	3.398	0.445	0.000
2	ACA	2.817	2.680	2.953	3.365	3.250	3.480	0.549	0.000
3	Obamacare	2.846	2.717	2.976	3.397	3.294	3.500	0.550	0.000
4	Health reform & Supreme Court	2.836	2.709	2.963	3.373	3.266	3.480	0.537	0.000
5	ACA & Supreme Court	2.801	2.673	2.929	3.345	3.237	3.452	0.544	0.000
6	Obamacare & Supreme Court	2.649	2.517	2.781	3.316	3.211	3.421	0.667	0.000

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Exhibit 9

Comparison of individuals high and low in racial resentment on overall favorability for allowing children to stay on their parents until age 26.

Treatment		High racial resentment	95% CI		Low racial resentment	95% CI		Delta	*p* Value
1	Health reform	2.930	2.737	3.124	3.370	3.220	3.520	0.439	0.000
2	ACA	2.690	2.494	2.887	3.411	3.300	3.522	0.721	0.000
3	Obamacare	2.871	2.671	3.071	3.451	3.321	3.580	0.579	0.000
4	Health reform & Supreme Court	2.973	2.777	3.169	3.427	3.298	3.555	0.454	0.000

Treatment		High racial resentment	95% CI		Low racial resentment	95% CI		Delta	*p* Value
5	ACA & Supreme Court	2.684	2.490	2.879	3.360	3.206	3.514	0.676	0.000
6	Obamacare & Supreme Court	2.790	2.597	2.982	3.416	3.292	3.541	0.627	0.000

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Exhibit 10

Comparison of individuals high and low in racial resentment on overall favorability of marketplace subsidies.

Treatment		High racial resentment	95% CI		Low racial resentment	95% CI		Delta	*p* Value
1	Health reform	2.920	2.738	3.103	3.393	3.249	3.537	0.473	0.000
2	ACA	2.807	2.614	3.000	3.396	3.283	3.510	0.590	0.000
3	Obamacare	3.072	2.924	3.221	3.551	3.412	3.690	0.478	0.000
4	Health reform & Supreme Court	2.980	2.838	3.122	3.421	3.297	3.545	0.441	0.000
5	ACA & Supreme Court	2.844	2.658	3.030	3.385	3.220	3.550	0.541	0.000
6	Obamacare & Supreme Court	2.793	2.599	2.988	3.434	3.287	3.581	0.641	0.000

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Exhibit 11

Comparison of individuals high and low in racial resentment on overall favorability of pre-existing conditions coverage requirement.

Treatment		High racial resentment	95% CI		Low racial resentment	95% CI		Delta	*p* Value
1	Health reform	3.328	3.133	3.522	3.434	3.280	3.589	0.107	0.400
2	ACA	3.092	2.903	3.282	3.489	3.375	3.603	0.397	0.000
3	Obamacare	3.392	3.260	3.524	3.598	3.480	3.715	0.206	0.023
4	Health reform & Supreme Court	3.374	3.220	3.528	3.457	3.307	3.607	0.083	0.450
5	ACA & Supreme Court	3.175	2.965	3.385	3.281	3.098	3.464	0.106	0.455
6	Obamacare & Supreme Court	3.062	2.854	3.271	3.469	3.321	3.617	0.407	0.002

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

Exhibit 12

Comparison of individuals high and low in racial resentment on overall favorability of medicaid expansion.

Treatment		High racial resentment	95% CI		Low racial resentment	95% CI		Delta	*p* Value
1	Health reform	2.838	2.669	3.007	3.326	3.177	3.475	0.488	0.000
2	ACA	2.714	2.502	2.925	3.390	3.284	3.496	0.676	0.000
3	Obamacare	2.834	2.648	3.020	3.478	3.332	3.623	0.644	0.000
4	Health reform & Supreme Court	2.791	2.617	2.965	3.380	3.224	3.536	0.589	0.000
5	ACA & Supreme Court	2.700	2.481	2.918	3.411	3.267	3.554	0.711	0.000
6	Obamacare & Supreme Court	2.655	2.461	2.848	3.383	3.226	3.539	0.728	0.000

Note: Analyses based on data collected by authors from an online survey of 6066 US residents from July 8–21, 2020.

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RESEARCH ARTICLE

The effect of tax-based price increases on cigarette and fermented liquor consumption: Evidence from tax reform laws in the Philippines

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Abstract

We evaluate the effect of the recent spate of tax reform laws on cigarette and fermented liquor consumption in the Philippines using an error correction model that utilizes regularly available national data. Since 2012, the Philippine government passed three reform measures that substantially increases cigarette and alcohol excise taxes to address the problems of smoking and non-communicable diseases, and raises revenue for the country's national health insurance program. This paper offers a potential alternative, considering the estimation challenges stemming from the scarcity of data from individual- and household-based surveys in developing countries like the Philippines. The volume of removals is used to measure consumption while the consumer price index is used to measure price changes. Quarterly national data from 2000 to 2021 yields an elasticity estimate for cigarette demand that is consistent with earlier studies that used individual- and household-level data. Estimates for fermented liquors, meanwhile, offer a basis for policymaking and future studies. Overall, findings highlight the potential of using the error correction model and cointegration techniques to estimate elasticity for countries with limited data, and bolsters the argument on the effectiveness of taxes in influencing health behavior.

KEYWORDS

excise tax, health behavior, price elasticity

Key points

- An error correction model using regularly available national data can bridge the gap posed by limited availability of individual-based survey data, especially among developing countries.
- Excise tax reform remains a viable policy option to discourage cigarette use and address the growing problem of noncommunicable diseases.
- Fiscal planning in the use of cigarette and alcohol excise taxes to fund the national health insurance system can benefit from price elasticity of demand estimates.

INTRODUCTION

The price elasticity of demand for tobacco and alcoholic beverages, collectively called *sin* products, underpins the viability of sin tax reform. Tobacco and alcohol excise tax policy is seen as an avenue for health promotion and revenue generation. In pursuing these two objectives, the Philippine government enacted a series of tax reform laws between 2012 and 2020. The measures were expected to raise additional revenues for universal health coverage while reducing consumption of so-called "*sin*" products and the prevalence of non-communicable diseases.

The price elasticity of demand—the extent to which individuals respond to price changes—is an important measure for policymaking. Price increases reduce consumption of the more expensive product and have substitution effects over consumption of related products. These effects have implications on both population health and government revenues. These two objectives—demand reduction and revenue generation—run in opposite directions and require careful assessment by government for health and fiscal programming. It is in this light that a sound approach to measure the price elasticity of demand is crucial.

In this paper, we use an error correction model to estimate the short- and long-run price elasticities of demand for cigarettes and fermented liquors in the Philippines. We choose the two products based on their contribution to sin tax revenues and implications on funding the country's universal health coverage program. Between 2013 and 2021, cigarette excise taxes accounted for 67% while fermented liquors made up 23% of total sin tax collections, on average (Figure 1).

Sin tax collections increased dramatically following implementation of the first of a series of major excise tax reform laws—the Sin Tax Reform Act of 2012. In 2013 alone, the first year of implementation, tobacco and alcohol excise tax collections doubled to PHP 103.4 billion or roughly USD 2.1 billion (PHP 50/USD 1) compared with the previous year. Its share increased to 6% of national government (NG) revenues. In 2021, revenues rose to PHP 260.9 billion or USD 5.2 billion—about 9% of total NG collections.

The earmarking of tobacco and alcohol excise tax revenues for the national health insurance program is an important feature of the Philippine reform. Evidence shows that public support is stronger when there is a clear link between tax reform and activities that have an impact on public health (Chaloupka et al., 2019). Several countries have used tax revenues to promote population health, as in the case of Ghana's and Vietnam's earmark for public health insurance (Cashin et al., 2017). In the Philippines, 92% of national government subsidies for insurance premiums of the poor, senior citizens (aged 60+), and unemployed persons with disability in 2022 were sourced from sin taxes (Department of Health, 2022). The Philippines' national health insurance program is managed by a government enterprise,

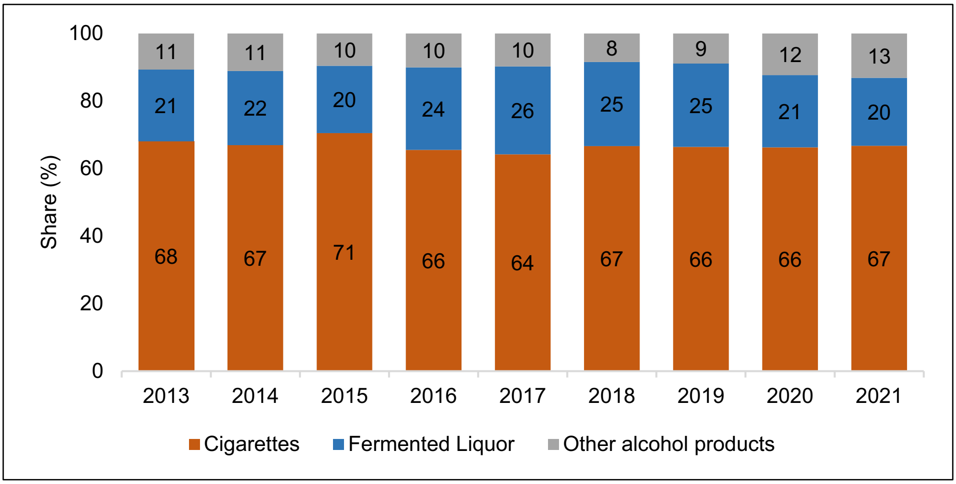

FIGURE 1 Cigarette and alcohol product excise tax shares to total revenues. *Source*: Authors' computation based on Bureau of Internal Revenue (Philippines) data.

the Philippine Health Insurance Corporation, which pools resources from government, workers', and employers' contributions.

The potential of sin taxes to promote population health and generate sources of funds for other public initiatives underscores the policy's importance. Concomitantly, estimating the price elasticity of demand is crucial for countries contemplating to increase tobacco and alcohol excise taxes. However, while individual- or household-level data exist for low- and middle-income countries, studies that use these data to estimate the price elasticity of demand typically face limitations related to data frequency and regularity (Paraje et al., 2021; Salti et al., 2015). Hence, researchers faced with these limitations seek innovative ways to estimate the effect of taxes and consequently, prices, on consumption and other behavioral outcomes, as in the case of tobacco taxes and smoking cessation (Ross et al., 2014).

Our paper contributes to the literature on price elasticity of demand estimation following tobacco and alcohol excise tax increases by proposing an alternative model that uses more frequently available data. The approach can be useful for countries facing data availability constraints. We use an error-correction model that accounts for more frequently (quarterly) collected national data–information that is typically available in low- and middle-income countries like the Philippines. Studies that estimated price elasticity in the Philippines typically sourced their data from less frequently conducted household- and individual-level surveys (Austria & Pagaduan, 2019; Cheng & Estrada, 2020; Quimbo et al., 2012). Another contribution of this paper is the estimation of the price elasticity of demand for fermented liquors. We are aware of only a few studies that examined the price elasticity of demand for alcohol products in the Philippines (Lacaza, 2022; Moral & Mojica, 2019).

METHODS

Data

We use quarterly data for the Philippines over the period 2000–2021. The dependent variable is the volume of removals (VOR) for each of the two products, sourced from the Bureau of Internal Revenue. Excise taxes for tobacco and alcohol products are levied from the manufacturer, producer, or importer at the point of removal from the production facility or, in the case of imports, from the customs house. Removal indicates the transfer of the products to warehouses or points of sale. Hence, the term VOR is used to refer to the quantity of excisable products. Annual figures for cigarette and fermented liquor VOR are presented in Figure 2.

The independent variables are the specific consumer price indices for alcohol and tobacco, each using the year 2012 as baseline, and real Gross Domestic Product (GDP) per capita as proxy for income. Both are sourced from the Philippine Statistics Authority. None of the datasets used in this paper involved human subjects, and no ethical clearance was required in the conduct of this study.

A binary variable for the presence of the tax reform policy is used, with a value of 1 for observations during the reform period (2013 onwards) and 0 otherwise. The VOR for cigarettes and fermented liquors, prices, and income variables were all in logarithmic form (*ln*).

Econometric approach

Spurious or inaccurate relationships may arise when modelling nonstationary variables. Regression results may show a significant relationship even when two variables are uncorrelated. Differencing the variables is one approach to achieve stationarity. However, stationarity only provides insights into the short-run and not the long-run relationships between the variables. To address this limitation, we use cointegration tests and an error correction model (ECM) to determine both short- and long-run relationships. A series of tests, discussed subsequently, precede the use of these methods to determine their appropriateness.

Augmented Dickey–Fuller (ADF) test

To avoid estimation bias arising from using nonstationary data, we use a unit root test. Engle and Granger (1987) and Nelson and Plosser (1982) argue that most of the macroeconomic series are nonstationary at level but stationary after first differencing. Hence, the ADF test is used to determine the stationarity of the series.

Given a series y, we test for the presence of unit roots using the ADF approach shown in Equation (1).

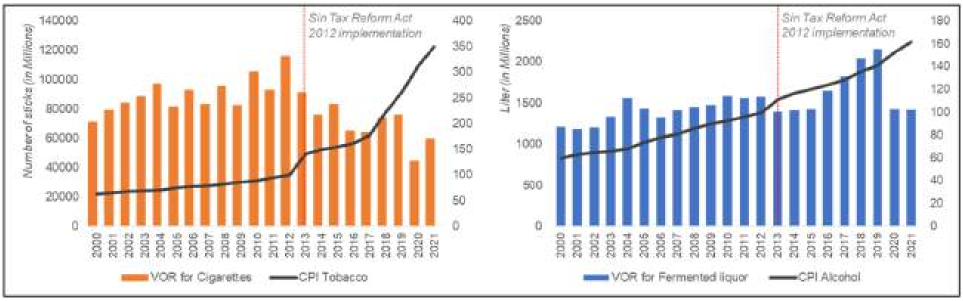

FIGURE 2 Annual volume of removals for cigarettes and fermented liquors (2000–2021). *Source*: Bureau of Internal Revenue; Philippine Statistics Authority.

$$\Delta y = u + \delta y_{t-1} + \sum_{i=1}^{k} \beta_i \, \Delta y_{t-i} + e_t, \tag{1}$$

where Δy is the first difference of y (i.e., $y_t - y_{t-1}$); u, δ, and β are the coefficients to be estimated; e is the error term; and $\delta = \alpha - 1$, where α is the coefficient of y_{t-1}. The null hypothesis is that the variable is nonstationary.

Engle–Granger test for cointegration

Variables with the same order of integration are tested for the existence of cointegration or a long-run relationship. If the variables are cointegrated, then the residual of the cointegrating regression is stationary. The Engle and Granger (1987) cointegration test involves a two-step process. The first generates the residuals of a regression model that includes the variable of interest. The second step checks for the presence of a stationary linear combination of the residuals by regressing the first-differenced residuals on lagged residuals. The null hypothesis is that no cointegration exists. In the event that the null hypothesis is rejected, suggesting the existence of cointegration, the error correction model involves regressing the first-differenced variables on each other, along with lagged values of the variables.

Johansen test for cointegration

The Johansen cointegration test is another statistical approach to determine whether or not a set of nonstationary variables are cointegrated (Johansen & Juselius, 1990). This test differs from the Engle–Granger test because it can identify multiple cointegrating relationships. The test produces two test statistics: the trace statistics and the maximum eigenvalue statistics. The null hypothesis pertains to the absence of cointegration among variables. Only when the null hypothesis is rejected can we proceed with the estimation using a vector error correction model.

Cigarette and alcohol consumption are determined by price and income. We model this demand function, together with a dummy variable that represents the implementation of the Sin Tax Reform Act of 2012 and subsequent laws. This dummy variable has a value of 0 for the pre-implementation and 1 for the implementation periods. The model is presented as Equation (2):

$$\Delta LOG(VOR)_t = \alpha_0 + \alpha_1 \Delta LOG(CPI)_t + \alpha_2 \Delta LOG(GDPPC)_t + \alpha_3 REFORM_t + \varepsilon_t, \tag{2}$$

where *VOR* is the volume of removals for cigarette and fermented liquor, represented by sticks of cigarettes and liters of fermented liquors; *CPI* is the tobacco- and alcohol product-specific consumer price index (2012 = 100); *GDPPC* is the real GDP per capita; *REFORM* is a dummy variable for presence of the tax reform; and ε_t is the error term. The coefficients (α_0, α_1, α_2, α_3) are vectors of long-run parameters to be estimated. In the fermented liquor equation, we included a dummy variable for the second quarter of 2020 (*2020q2)* to account for the significant drop in the fermented liquor VORs following the alcohol sales ban in the Philippines in the early part of the COVID-19 pandemic.

After establishing the existence of cointegration, we estimate the short-run dynamics through the unrestricted error correction model with VOR as dependent variable, shown as Equation (3):

$$\Delta LOG(VOR)_t = \beta_0 + \beta_1 \Delta LOG(CPI)_t + \beta_2 \Delta LOG(GDPPC)_t + \beta_3 REFORM_t + \gamma ECT_{t-1} + \varepsilon_t, \tag{3}$$

$$ECT_{t-1} = LOG(VOR)_{t-1} - \beta_0 - \beta_1 \Delta LOG(CPI)_{t-1} - \beta_2 \Delta LOG(GDPPC)_{t-1} - \beta_3 REFORM_t, \tag{4}$$

where delta (Δ) is the difference operator that represents short term dynamics; β_0 is the intercept; β_1, β_2, and β_3 are the short-term or contemporaneous effects of price, income, and the policy variable on quantity demanded, respectively; γ is the coefficient of the error correction term (ECT_{t-1}); and ε_t is the error term. The ECT is expected to be significant and negatively associated with the dependent variable.

In running the tests, we account for the fact that the Engle–Granger and Johansen cointegration methods cannot be used when variables have different orders of integration.

ARDL bounds test for cointegration

Addressing the weaknesses in the Engle–Granger and Johansen methodologies, Shin and Pesaran (1999) and Pesaran et al. (2001) introduced the Autoregressive Distributed Lag (ARDL) Bounds test. The approach does not require all variables to be integrated in the same order. It can be applied regardless of whether the underlying variables are I(0), I(1), or a combination of both.

The ARDL cointegration approach has three advantages over the other cointegration methods. First, it allows estimation for a mix of I(0) and I(1) variables. Second, the double log-linear model specification used in the analysis yields elasticities necessary for demand. Third, the long-run estimates generated by the ARDL method are unbiased regardless of possible endogeneity among some independent variables (Odhiambo, 2009).

We use an unrestricted error correction model (ECM) within the ARDL framework, with the VOR as dependent variable. The model is shown as Equation (5):

$$\begin{aligned}\Delta LOG(VOR)_t = \beta_0 &+ \sum_{i=1}^{p} \beta_1 \Delta LOG(VOR)_{t-i} + \sum_{j=0}^{q} \beta_2 \Delta LOG(CPI)_{t-j} \\ &+ \sum_{k=0}^{r} \beta_3 \Delta LOG(GDPPC)_{t-k} + \alpha_1 LOG(VOR)_{t-1} + \alpha_2 LOG(CPI)_{t-1} \\ &+ \alpha_3 LOG(GDPPC)_{t-1} + \alpha_4 REFORM_t + \varepsilon_t\end{aligned} \tag{5}$$

where delta (Δ) is the difference operator that represents short term dynamics. The parameters $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ represent the long-run relationships, whereas β_1, β_2, β_3 represent the short-run dynamics.

To investigate the existence of a long-run relationship among variables, we use the ARDL bounds test (Pesaran et al., 2001). The null hypothesis is the absence of cointegration or $H_0 : \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$, while the alternative hypothesis is the presence of cointegration or $H_1 : \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0$.

Two critical values of the *F*-statistic, representing an upper- and a lower-bound, are used to determine whether or not to reject the null hypothesis. The critical value bounds correspond to I(0), I(1), and mutually integrated regressors. If the computed *F*-statistic is greater than the upper bound critical value, then the null hypothesis is rejected, indicating that the variables are cointegrated. Conversely, if the computed *F*-statistic is below the lower bound, the null hypothesis cannot be rejected. If the computed *F*-statistic falls between the lower and upper bounds, the result is inconclusive.

The unrestricted ECM based on the assumption by Pesaran et al. (2001) is used for the short-run dynamics of the model. The error correction version of the ARDL model for Equation (6) is written as:

$$\begin{aligned} \Delta LOG\,(VOR_t) = \delta_0 + \sum_{i=1}^{p} \delta_1 \Delta (VOR)_{t-i} + \sum_{j=0}^{q} \delta_2 \Delta LOG\,(CPI)_{t-j} \\ + \sum_{k=0}^{r} \delta_3 \Delta LOG\,(GDPPC)_{t-k} + \delta_4 REFORM_t + \lambda ECT_{t-1} + \varepsilon_t, \end{aligned} \tag{6}$$

where the error correction coefficient λ is expected to be less than zero, implying cointegration.

Finally, to ensure reliability and robustness, we use the Autoregressive Conditional Heteroscedasticity (ARCH) test to check for heteroscedasticity and the Breusch–Godfrey LM test to check for serial correlation.

RESULTS

The ADF unit root test results (Supporting Information: Table S1) confirm that all variables are not stationary at levels, except for the VOR of fermented liquors and CPI of alcohol (in logs). GDP per capita (log), tobacco CPI (log), and cigarette VOR (log) were transformed into stationary series through first differencing. Since the variables have the same order of integration for the cigarette model, we test whether these variables have long-run relationships using the Engle–Granger and the Johansen cointegration techniques. In the fermented liquor model where the variables are of different orders of integration, the Autoregressive Distributed Lag (ARDL) bounds test was used.

Based on the results of the cointegration test for both the cigarette and fermented liquor models,[1] we reject the null hypothesis of no cointegration in both models at the 1% level of significance (Supporting Information: Table S2). The results suggest that there are long-run relationships among variables.

After establishing stationarity and cointegration, we proceeded with estimating the long-run and short-run elasticities of the demand for the two products with respect to prices (CPI) and income (GDP per capita). Tables 1 and 2 present the long-run and short-run results, respectively.

Long-run price elasticity estimate for cigarettes is negative and below 1, consistent with the inelastic nature of the demand for this product. On the other hand, the value for fermented liquors is negative and greater than 1, suggesting an elastic demand. Both cigarettes and fermented liquors have statistically significant results. A 1% increase in the price of cigarettes reduces consumption by 0.52% while a similar increase in the price of fermented liquors leads to a 1.10% decline in consumption.

The figure for cigarettes approximates the −0.56 lower-bound elasticity estimate for the Philippines by Cheng and Estrada (2020) and the −0.53 estimate for 13 low- and middle-income countries by Kostova et al. (2014). Moreover, the price elasticity of fermented liquor consumption is similar to the findings of Moral and Mojica (2019) and Lacaza (2022).

The short-run coefficients for the price elasticity of cigarette and fermented liquor demand are lower than the long-run coefficients, although these are not statistically significant. Short-run elasticities are typically smaller than long-run elasticities given that consumer behavior is slow to adjust to price changes in the short-run.

Income is seen as an important factor in the consumption of cigarettes and fermented liquors, both in the short- and long-run. Its coefficient is statistically significant for both

TABLE 1 Long-run coefficients.

Variable	(1) VOR (CIGARETTES),[a,b]	(2) VOR (FERM. LIQ.),[a,c]
CPI (LOG)	−0.522***	−1.102***
	(0.147)	(0.204)
GDP PER CAPITA (LOG)	1.699***	2.709***
	(0.297)	(0.317)
REFORM	−0.378***	−0.164***
	(0.134)	(0. 052)
2020Q2		−0.259
		(0.222)
Constant	7.835***	
	(2.708)	
N	88	86
R-squared	0.426	0.889

[a] Variables are in logs. Standard errors are in parentheses.

[b] Estimated using Engle–Granger cointegration test.

[c] Estimated using ARDL Bounds Test.

***1%.

**5%.

*10% level of significance.

products, except for fermented liquor in the short-run. For cigarettes, a 1% increase in income yields a 1.70% increase in long-run consumption while for fermented liquors, a similar increase in income results in a 2.71% increase in consumption.

The excise tax reform period (*REFORM)* is generally associated with lower consumption of the two products, except for fermented liquors in the short-run. This is consistent with the hypothesis that the tax reform leads to lower demand.

The negative coefficients for the lagged residuals or the error correction term support the existence of a long-run relationship for both products. The values show the rate by which consumption returns to the long-run equilibrium within one period. This means that 96% of the deviation in cigarette consumption is corrected within one period while for fermented liquors, the rate of correction is much slower at 61%.

Results for diagnostics show that the residuals of the models are free from specification issues, specifically, serial correlation and heteroscedasticity. Results of the Breusch-Godfrey Serial Correlation LM test suggest that we cannot reject the null hypothesis that there is no serial correlation (Supporting Information: Table S4). Moreover, based on the ARCH heteroskedasticity test results, we cannot reject the null hypothesis that the residuals are homoscedastic.

DISCUSSION AND CONCLUSION

We find that the series of tax reform laws negatively influenced consumption of cigarettes and fermented liquors in the Philippines. Using an alternative model that utilized aggregated data, we estimated the price elasticity of demand for cigarettes that approximate results from studies that use individual-level data (Cheng & Estrada, 2020). The results reinforce the

TABLE 2 Short-run coefficients.

Variables	(1) VOR (CIGARETTES),[a,b]	(2) VOR (FERM. LIQ.),[a,c]
CPI (LOG)	−0.393	−0.220
	(1.226)	(1.646)
GDP PER CAPITA (LOG)	2.285***	−0.298
	(0.252)	(0.279)
REFORM	−1.274***	−0.086
	(0.364)	(0.095)
2020Q2		−0.543***
		(0.110)
ECT (LAG 1)	−0.960***	−0.613***
	(0.100)	(0.100)
Constant	0.004	−2.442
	(0.034)	(1.373)
N	87	86
R^2	0.731	0.89

[a] Variables are in logs. Standard errors are in parentheses.

[b] Estimated using Engle–Granger cointegration test

[c] Estimated using ARDL Bounds Test.

***1%.

**5%.

*10% level of significance.

claim that the Sin Tax Reform Act of 2012 (Republic Act No. 10351), the Tax Reform for Acceleration and Inclusion or TRAIN Act (RA 10963), RA 11346, and RA 11467–tax measures which were passed from 2012 onwards–were effective toward attaining the policies' health goal. The results also provide inputs to researchers in assessing the effect of these interventions in funding the country's national health insurance program.

Our results provide the basis for the paper's two main contributions. First, our alternative model estimating the price elasticity of cigarette and fermented liquor demand can help project changes in consumption, which can help estimate revenues. This approach is particularly useful for countries with infrequently- and irregularly-collected individual- or household-level data. In the Philippines, the Global Adult Tobacco Survey (GATS) and Family Income and Expenditure Survey (FIES)–two main data sources for studies that estimated elasticity–are collected every 6 years and 2 years, respectively. Before 2023, the FIES was conducted every 3 years. Moreover, release of the data from these surveys can take anywhere from several months to 1 or 2 years. The use of more frequently and regularly available volume of removals as a proxy for demand, and CPI as proxy for price is a potential alternative to more resource-intensive individual- and household-based surveys. Second, we offer further support on the effectiveness of the tax reform in achieving its health objective, specifically, reduction in the demand for sin products. This is especially relevant given that smoking and drinking continue to take a significant toll on the Philippine population, as in many other countries, through higher healthcare costs, and through income and productivity losses.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

ETHICS STATEMENT

The study used secondary data.

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ENDNOTE

[1] Johansen cointegration test was performed to check for the existence of a long-run relationship between the variables in the cigarette model. The results of maximum eigenvalue and trace statistics suggest that there is a unique co-integrating vector among the variables tested at the 1% and 5% level of significance, respectively (Supporting Information: Table S3). Since Johansen test identified only a single cointegration equation, the Engle–Granger test was used to estimate the error correction model.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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RESEARCH ARTICLE

Personalized medicine in China: An overview of policies, programs, and actions in China

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Abstract

Background: Over the past decade, the ascent of personalized medicine (PM) has catalyzed pivotal transformations in healthcare systems on a global scale. Recognizing its crucial importance, the European Commission has prioritized PM within its research directives, allocating funding for international collaborative projects, such as the "Integrating China in the International Consortium for Personalized Medicine" (IC2PerMed) project, which aims to facilitate China's integration into the International Consortium for Personalized Medicine (ICPerMed). This research presents the delineation and examination of existing policies governing PM in China, describing the regulatory framework that encompasses PM within the country.

Methods: PubMed, Baidu.com, Google Scholar, Google, and Microsoft Academic as well as official repositories of national and international institutions, were searched to find publications and information pertaining to policies, programs, and action plans concerning PM in China in English and Chinese language. This search encompassed both national and local perspectives and covered documents published until December 2023.

Results: Sixteen policies, 18 programs, and 11 actions in China on both national and local base addressing PM approaches and themes were identified. The policies mainly focused on genetics and human genetic resources management, and big data and data security requirements. China's strategic plans and programs emphasized PM's integration into national health strategies, mostly through 13th 5-year plans and special plans. Finally, the action plans focused on specific applications of PM. The Health and Family Planning Commission and National Health Commission standardized molecular testing, physician approval, and clinical use of antitumor drugs.

Discussion: In recent years, China has implemented a variety of policy measures to address healthcare challenges, focusing on personalized treatment for an aging population. Despite increased government spending, challenges persist, including rising out-of-pocket payments and regional disparities. China is heavily investing in PM, utilizing extensive health datasets and diagnostic technologies. China has prioritized technological innovation and large-scale data collection. While disparities exist between China and Europe, both aim to integrate PM insights into clinical practice for better healthcare outcomes.

KEYWORDS

China, personalized medicine, plan, policy, precision medicine

Key points

- China's healthcare policies have evolved to prioritize personalized medicine (PM). This evolution is evident through the identification of 16 policies, 18 programs, and 11 actions focused on genetics, data security, and clinical applications.
- Strategic integration of PM into national health strategies, particularly through the 13th 5-year plans and special initiatives, highlights China's commitment to leveraging PM for addressing healthcare challenges, particularly personalized treatment for China's aging population.
- Despite challenges such as rising out-of-pocket payments and regional disparities, China's heavy investment in PM, technological innovation, and large-scale data collection showcases its dedication to harnessing PM insights to improve clinical practice and healthcare outcomes, aligning with global efforts in PM advancement.

INTRODUCTION

In the context of contemporary healthcare, Personalized Medicine (PM) has emerged as an innovative approach positioned to strategically address the complexities of healthcare systems through tailored prevention, diagnosis, and treatment strategies based on individual characteristics (European Union, 2024). PM employs techniques such as molecular profiling, medical imaging, biomarker detection, and lifestyle data collection to identify optimal therapeutic approaches for individual patients. Furthermore, it provides insights into disease prevention by pinpointing individual risk factors (European Union, 2024).

China has attracted global attention due to its significant interest in the transformative potential of PM for healthcare improvement. By leveraging expertize in biotechnology, hardware computing, and infrastructure, the country has made monumental strides in large-scale bioinformatics projects (O'Meara, 2021).

While EU policies prioritize the harmonization of effective medical practices, the utilization of big data and digital innovations, the sharing of data, cross-border interoperability, and the maintenance of sustainable healthcare systems. At the national level, policies seek to deliver customized treatments and targeted preventive measures for patients, educate healthcare practitioners, engage patients in research and development activities, bolster infrastructure and the standardization of big data, and encourage investment in PM (Beccia et al., 2022). In the People's Republic of China, the academic and political circles generally prefer the term “Precision Medicine” over “PM.” This preference has ultimately led to the definition of Precision Medicine by the Chinese Academy of Sciences (CAS): “Precision medicine is a medical model for high-efficiency, low-cost prevention and treatment of diseases tailored to individual patients based on their genetic content” (Chinese Academy of Sciences, 2024). Due to the substantial overlap in definition and contextual usage, the terms “precision medicine” and “Personalized Medicine” are interchangeable; both are abbreviated to PM in this paper.

Through the “13th 5-Year Special Plan on Technological Innovation for Health and Healthcare” (PRC State Council, 2020), the Chinese government meticulously assessed the nation's achievements in cutting-edge scientific and technological domains globally. This comprehensive plan, spanning diverse sectors such as stem cell research, genome sequencing, vaccine design, structural biology, and cancer immunotherapy, received substantial government support that not only propelled advances in health research but also catalyzed growth in the related industrial sector in China.

Since 2017, the Chinese government proactively established a multilevel foundational precision medical knowledge system and a national platform dedicated to sharing biomedical big data. Prioritizing key technologies like next-generation gene sequencing, “-omics” research, and big data fusion analysis, China aims to position itself as a leader in the field of PM. This strategic approach ensures a dual focus on the collective and individualized dimensions of healthcare, reflecting the nation's commitment to innovation and progress (IC2PerMed, 2024).

As part of the International Consortium for Personalized Medicine (ICPerMed), which is committed to harmonizing the perspectives of various stakeholders, the IC2PerMed initiative, known as “Integrating China into the International Consortium for Personalized Medicine,” was established to foster international collaboration, as well as provide support for research and the implementation of PM in both Europe and China (Morsella et al., 2021).

This article seeks to provide a comprehensive overview of the extensive spectrum of policies in the field of PM in China. Specifically, it will explore the varied landscape of PM, analyzing the dynamic interactions between global collaborations, national policies, and technological advancements that define the current scenario.

METHODS

For the purpose of this manuscript we refer to the definitions of “policy,” “policy cycle,” “policy agency,” and “policy stakeholder” as follows.

1. *Policy*: “Measure that embodies an institution's political vision and direction using a set of rules and guidelines that specify how an objective is being met long-term” (European Union, 2017).
2. *Policy cycle*: “Complex series of decisions and includes the following stages: identification and definition of a problem; agenda-setting and advocacy; setting of goals

and targets; formulation and selection of relevant options; policy implementation, evaluation, and feedback" (Viennet & Pont, 2017).
3. *Policy agency*: "A body that has its own legal personality and a certain degree of administrative and financial autonomy in carrying out its tasks as specified by the government" (Clingendael, 2024).
4. *Policy stakeholder*: "A stakeholder is any identifiable group or individual who can affect or is affected by organization's performance in terms of production, policies, and work processes" (Freeman, 2010).

Concerning the definition of programs and action, a program might be a set of projects intended to address a particular issue or need, while an action can refer to legal proceedings initiated by parties to resolve disputes or seek redress for grievances both spanning several key domains such as laws, human rights; economics; and health systems (Hornung, 2022; WHO, 2010). A plan is defined as a detailed proposal for achieving a specific goal or objective. It outlines the steps that need to be taken, the resources required, and the timeline for completion (Manaher, 2023).

The query adopted included the keywords *policy*, *program*, *action plan, PM*, *precision medicine*, and *China*. The search was conducted in English and Chinese languages to retrieve relevant documents published up to December 2023. To thoroughly retrieve information about policy measures, programs, and action plans related to PM in China a three 3-step methodological approach was adopted. In the first phase, a scientific literature search was performed on the PubMed database to retrieve any record reporting information on national legislation in China. In the second phase, a gray literature mapping was conducted, searching Google Scholar, Baidu.com, Google, and Microsoft Academic search engines, adapting the keyword-based search query. In the third step, national and international official repositories were screened, including ICPerMed repository, Chinese entities' websites, and web resources of additional institutions related to public health, for eligible publicly available documents or reports.

The retrieved documents were carefully read and from those deemed pertinent the following data were extracted: name of the policy, publication year, institution, country, language, topic, and link. Data extraction was conducted creating a database in an Excel spreadsheet.

Subsequently, a descriptive summary was conducted, categorizing the results into two groups based on the issuing body of the documents: those from Chinese institutional bodies and those from national and local levels. A breakdown of the documents in relation to document type is also presented (policy, program, and action plan).

For further detail on the project and the methodology adopted, we refer to the IC2PerMed first Deliverable (D1.1), entitled "Scoping paper: Review on health research and innovation priorities in Europe and China," available at the IC2PerMed website (IC2PerMed, 2024).

RESULTS

The review process identified 16 policies, 18 programs, and 11 actions in China, spanning both national and local levels, that address various approaches and themes related to PM. A summary of the organizational structure of the Chinese legislation is illustrated in Figure 1.

Policies

China has enacted several regulations and guidelines concerning healthcare data, technology, innovation, and genetic resources. These include measures to regulate data

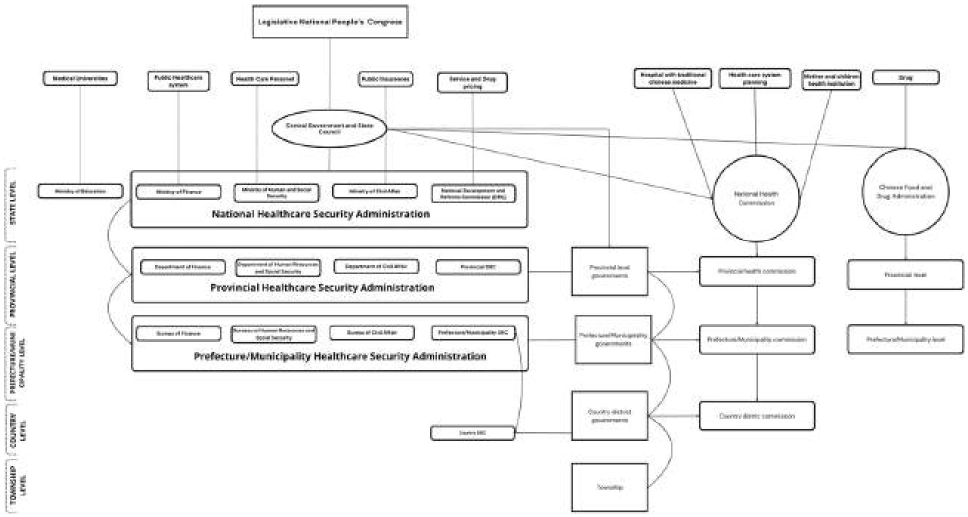

FIGURE 1 The diagram describes the organizational structure of Chinese legislation adapted from Wang et al. (2020).

security, manage human genetic resources ethically, promote internet-based medical services, and regulate advertising practices, all with a strong emphasis on privacy, security, and compliance. These efforts prioritize privacy, security, and compliance. Please refer to Table 1 for a comprehensive compilation of policy measures related to PM in China.

Programs

China's national strategic programs are devised and executed within the framework of 5-year plans. Between 2014 and 2021, these plans incorporated initiatives targeting the seamless integration of PM into national health strategies, fostered technological advancements in the field, prioritized improvements in healthcare infrastructure, and established specialized programs dedicated to disease treatment and rare conditions. For a comprehensive overview of these programs, see Table 2.

Action plans

China's action plans aim to standardize and promote the use of advanced medical technologies, including genetic testing and personalized treatment approaches. Concurrently, they tackle microbial resistance through a comprehensive national action strategy. For an in-depth examination of these action plans, see Table 3.

DISCUSSION

In recent years, Chinese policy measures have encompassed a range of tools, comprising laws, regulations, strategic directives, guiding principles, and normative standards issued across various administrative levels. This shift in policy emphasis correlates with the Chinese government's increasing attention toward personalized treatment, aimed at

TABLE 1 List of personalized medicine (PM)-related policy measures in China.

Year	Title	Institutional body	Topic	Source
2014	Management Measures on Population Health Information [Trial]	National Health Commission	It disciplines health data collection, security, and privacy in medical institutions.	http://www.nhc.gov.cn/guihuaxxs/s10742/201405/9ce0be75feab4da1-b2a8b2f898689d21.shtml
2015	Guiding Opinions on Actively Promoting the "Internet+" Action	State Council	The "Internet+" action aims to enhance standards, boost security, and supervize the market for fair competition and preventing monopolies.	https://www.gov.cn/zhengce/content/2015-07/04/content_10002.htm
2015	Outline of Action to Promote the Development of Big Data	State Council	Harness big data for healthcare and social security, building systems for data connectivity and encouraging innovation to offer more personalized services to the public.	https://lawinfochina.com/display.aspx?id=26624&lib=law
2016	Notice regarding the publication of the 2016 national project application guidelines for key special projects on precision medicine research in the National Key R&D Program	*Ministry of Science and Technology (MOST)*	Provide detailed guidelines for applying for funding from the National Key R&D Program, specifically for PM research. It outlines who can participate, the application requirements, and the submission process for interested parties.	http://www.most.gov.cn/tztg/201603/t20160308_124542.htm
2016	Guiding opinions on Promoting the Healthy Development of the Pharmaceutical Industry	*State Council*	Strengthen the position in the pharmaceutical market globally such as improving innovation, ensuring a stable drug supply, proposing healthcare reforms, and expanding international presence through initiatives like the "One Belt One Road" strategy to acquire resources, technologies, and markets.	http://www.gov.cn/zhengce/content/2016-03/11/content_5052267.htm
2016	Outline of National Innovation-driven Development Strategy	*State Council*	Strategy to promote China as an innovative leader by 2050 through three stages: emphasizing the importance of open policies; environmental development; and resource allocation for innovation-driven growth.	http://www.gov.cn/xinwen/2016-05/19/content_5074812.htm
2016	Guiding Opinions on Promoting and Regulating the Development of Health and Medical Big Data Applications	*State Council*	China aims to lead global innovation by 2050 through technological advancements, especially in healthcare, to improve public health and establish a strong innovation framework.	http://www.gov.cn/zhengce/content/2016-06/24/content_5085091.htm

(Continues)

TABLE 1 (Continued)

Year	Title	Institutional body	Topic	Source
2017	Cyber Security Law of the People's Republic of China	*Cyberspace Administration of China*	Promote technology for safeguarding network data, ensure availability of public data, and outline measures to handle cybersecurity incidents, including the possibility of temporary restrictions on network communications for national security reasons.	http://www.cac.gov.cn/2016-11/07/c_1119867116_3.htm
2018	Opinions on Promoting the Development of "Internet + Medical Health"	*State Council*	Using internet technology to create integrated medical services, including online hospitals for appointments, consultations, and prescriptions. It stresses secure information platforms, telemedicine, and data protection, emphasizing the storage of sensitive patient information within China.	http://www.gov.cn/zhengce/content/2018-04/28/content_5286645.htm
2018	National Health and Medical Big Data Standards, Safety and Service Management Measures	*Health Committee*	The document establishes rules for handling health and medical big data, emphasizing security, privacy, and national interests. It outlines responsibilities, security measures, and data transmission through a national health platform.	http://www.cac.gov.cn/2018-09/15/c_1123432498.htm
2019	Regulation of the People's Republic of China on Human Genetic Resources Management (the Regulation on Human Genetic Resources	*State Council*	Puts a focus on safeguarding the privacy and rights of individuals concerning data, ensuring voluntary participation and the right to withdraw from data collection.	https://english.www.gov.cn/policies/latest_releases/2019/06/10/content_281476708945462.htm
2020	Data Security Measures	*Cyberspace Administration of China*	The text highlights China's network security law, aiming to regulate data activities within the country, ensure data security, and define rules for network operators regarding the collection, storage, and sharing of data, both domestically and internationally.	http://www.moj.gov.cn/
2021	Biosecurity Law of the People's Republic of China	*Standing Committee*	Announce the adoption and implementation date of the Biosecurity Law of the People's Republic of China. Additionally, it highlights the law's focus on emphasizing the significance of biosafety and its integration within the framework of national security.	https://www.fao.org/faolex/results/details/en/c/LEX-FAOC198696/#:~:text=This%20Law%20is%20enacted%20for,boosting%20the%20construction%20of%20a

TABLE 1 (Continued)

Year	Title	Institutional body	Topic	Source
2021	Advertising Law of the People's Republic of China	*Standing Committee*	Regulates advertising to protect consumer rights and develop the industry, prohibiting claims of efficacy, endorsements, and certain health-related statements.	http://www.npc.gov.cn/zgrdw/englishnpc/Law/2007-12/12/content_1383782.htm#:~:text=Article%203%20An%20advertisement%20shall,not%20cheat%20or%20mislead%20consumers.
2021	Data Security Law of the PRC	*Standing Committee*	DTC genetic testing providers are required not to engage in theft or other unlawful methods to obtain consumers' personal data, including biometric information. Additionally, they must refrain from illegally selling or sharing consumers' personal information with third parties.	https://jgswglj.xuancheng.gov.cn/XxgkRules/show/8810.html
2023	Implementation Rules for the Regulations on the Management of Human Genetic Resources	*MOST*	Guidelines to ethically manage and safeguard human genetic resources, dictating their lawful handling, ensuring compliance, and restricting access to foreign entities. These regulations emphasize privacy, ethics, and the establishment of oversight bodies and databases for resource management.	https://www.most.gov.cn/xxgk/xinxifenlei/fdzdgknr/fgzc/bmgz/202306/t20230601_186416.html

TABLE 2 List of personalized medicine (PM)-related programs in China.

Year	Title	Institutional body	Topic	Source
2015	Proposal of the Central Committee of the Communist Party of China on Formulating the 13th Five-Year Plan for National Economic and Social Development	*Central Committee of the Communist Party of China*	The proposal outlines the foundation of the 13th Five-Year Plan, emphasizing "Healthy China" as a core focus. Its primary aim is to drive the development of the healthcare industry over the upcoming five years.	http://www.gov.cn/xinwen/2015-11/03/content_5004093.htm
2016	Outline of the 13th Five-Year Plan for National Economic and Social Development of the People's Republic of China	*MOST*	Encourages innovation in PM and other emerging fields, fostering strategic industries for growth.	http://www.most.gov.cn/mostinfo/xinxifenlei/gjkjgh/201608/t20160810_127174.htm
2016	13th Five-Year National Strategic Emerging Industry Development Plan	*State Council*	Encourages understanding the advancements in life sciences, particularly the widespread use of new biological technologies. It suggests leveraging the rapid progress in genetic technology to propel medical care toward PM.	https://cset.georgetown.edu/wp-content/uploads/Circular-of-the-State-Council-on-Issuing-the-National-13th-Five-Year-Plan-for-the-Development-of-Strategic-Emerging-Industries.pdf
2016	13th Five-Year Biological Industry Development Plan	*National Development and Reform Commission*	The text discusses how PM significantly influences drug research and development by hastening the creation of new drugs and enhancing their quality. It emphasizes the promotion of emerging technologies like genetic testing to advance these developments.	https://www.ndrc.gov.cn/xxgk/zcfb/tz/201701/t20170112_962867.html
2016	13th Five-Year Plan on Informatization	*State Council*	Create user-friendly smart healthcare services, advance a comprehensive health information system, standardize healthcare big data application, enhance global public health risk monitoring, and build an international travel health network for the safety of travelers.	http://www.gov.cn/zhengce/content/2016-12/27/content_5153411.htm
2016	13th Five-Year Plan on Technological Innovation	*State Council*	Advancing a new era of information technology, emphasizing ubiquitous integration, green broadband, security, and intelligence. It aims to develop new Internet technology, secure cyberspace, and integrate	http://www.gov.cn/zhengce/content/2016-08/08/content_5098072.htm

TABLE 2 (Continued)

Year	Title	Institutional body	Topic	Source
			information technology extensively into diverse industries, including medical treatment.	
2016	"Healthy China 2030" Planning Outline	*State Council*	Enhance technological advancements in chronic disease prevention, PM, and smart medical treatments. By 2030, the goal is to achieve standardized management and utilization of population health data to cater to personalized services and fully implement PM.	http://www.gov.cn/xinwen/2016-10/25/content_5124174.htm
2016	Notice regarding the publication of the 2016 national project application guidelines for key special projects on precision medicine research in the National Key R&D Program	*MOST*	A prioritized special project was launched, encompassing four key tasks related to precision medicine: life group research; constructing large cohorts; utilizing big data for precision medicine; and developing precise strategies for disease prevention and treatment.	https://www.nsfc.gov.cn/english/site_1/pdf/NationalNaturalScienceFundGuidetoPrograms2016.pdf
2017	13th Five-Year Special Plan for Biotechnology Innovation	*MOST*	Advancement in cutting-edge technologies, notably a new generation of genetic manipulation technology.	http://www.most.gov.cn/mostinfo/xinxifenlei/fgzc/gfxwj/gfxwj2017/201705/t20170517_132857.htm
2017	13th Five-Year Special Plan for Health and Health Technology Innovation	*National Health and Family Planning Commission*	Setting up a comprehensive system for precision medicine, including a knowledge base and a national platform for sharing biomedical big data. It emphasizes core technologies like next-generation gene sequencing, "-omics" research, and advanced big data analysis to support precision medicine.	http://www.nhc.gov.cn/qjjys/s3577/201706/1f3657c3dfc94d138ebbb2a4f791896c.shtml
2017	13th Five-Year Plan on Health and Healthcare	*State Council*	The text discusses internal issues in China's health system: insufficient resources, weak grassroots services, necessary reforms in system contradictions, and the need to change family planning approaches.	http://www.nhc.gov.cn/qjjys/s3577/201706/1f3657c3dfc94d138ebbb2a4f791896c.shtml
2017	Notice regarding the publication of the 2017 national project application guidelines for key special projects on precision	*MOST*	The text focuses on the requirement for platform projects to conduct extensive research PM, covering big data acquisition through to clinical treatment. This	https://www.nsfc.gov.cn/english/site_1/pdf/NationalNaturalScienceFundGuidetoPrograms2017.pdf

(Continues)

TABLE 2 (Continued)

Year	Title	Institutional body	Topic	Source
	medicine research in the National Key R&D Program		research aims to establish the foundation necessary for China's long-term PM plan.	
2018	Application guidelines for key special projects in the national key R & D program	*MOST*	Highlight the five key projects within three prioritized programs that are open for application. These projects include research and development of new generation clinical life group technology, construction of a resource integration platform for PM big data, and precise research on disease prevention and treatment plans.	https://en.most.gov.cn/programmes1/200610/t20061009_36224.htm
2018	Pilot Working Plan for Multidisciplinary Diagnosis and Treatment of Cancer	*National Health and Family Planning Commission*	Select certain hospitals for a cancer diagnosis and treatment pilot to improve care, patient experience, and public satisfaction.	http://www.nhc.gov.cn/yzygj/s3594q/201808/0cfe48391dd14876951cf6262e28c062.shtml
2019	Establishment of a national cooperation network for diagnosis and treatment of rare diseases (Ying et al., 2021)	*National Health and Family Planning Commission*	Management and treatment of rare diseases in China.	http://www.xinhuanet.com/english/2019-02/18/c_137831101.htm
2020	Proposal on Formulating the 14th Five-Year Plan for National Economic and Social Development and the Visionary Goals for 2035	*CPC Central Committee*	Highlight the national health strategy's emphasis on prioritizing people's health, promoting preventive measures, reforming the medical system, and leveraging technology to advance telemedicine.	https://english.www.gov.cn/policies/latestreleases/202011/03/content_WS5fa159efc6d0f7257693edc1.html
2021	The 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Long-Range Goals for 2035	*CPC Central Committee*	The plan highlights improvements in public health, medical services, and healthcare technology, indirectly supporting principles aligned with PM in China.	https://english.www.gov.cn/policies/latestreleases/202011/03/content_WS5fa159efc6d0f7257693edc1.html
2021	"14th Five-Year Plan" National Health Informatization Plan	*National Health Commission*	Enhance the National Health Information Platform's infrastructure, support services, decision-making capabilities, data analysis, and early warning systems while promoting medical research connectivity and strengthening medical education management.	http://www.nhc.gov.cn/guihuaxxs/s3585u/202211/49eb570ca79a42f688f9efac42e3c0f1.shtml https://digichina.stanford.edu/wp-content/uploads/2022/01/DigiChina-14th-Five-Year-Plan-for-National-Informatization.pdf

TABLE 3 List of personalized medicine (PM)-related action plans in China.

Year	Title	Institutional body	Topic	Source
2014	Notice of CFDA on the definition of three product categories including genetic analyzers	*China Food and Drug Administration (CFDA)*	Gene analysis is classified as a Class III medical device, while a sequencing reaction kit, used for general purposes (sequencing method), falls under Class I medical device regulation.	http://www.sfda.gov.cn/WS01/CL1297/145580.html https://www.cirs-group.com/Uploads/file/20160302/20160302144937_52695.pdf
2014	Notice on Strengthening the Management of Clinical Use of Gene Sequencing Related Products and Technology (Du & Wang, 2020)	*Health and Family Planning Commission*	The text revolves around regulating medical tools, software, and gene sequencing technology. It insists on official approval before these are used in medical settings and emphasizes strict oversight by relevant authorities.	http://www.nmpa.gov.cn/WS04/CL2197/324799.html
2015	Decision on the cancellation of non-administrative approval items	*State Council*	Cancellation of the approval for the clinical application of the third type of medical technology, which includes procedures like hematopoietic stem cell transplantation, gene chip diagnosis, and immune cell therapy.	https://english.www.gov.cn/policies/latest_releases/2015/05/14/content_281475107327581.htm
2015	Notice of the National Development and Reform Commission on the implementation of major engineering packages for emerging industries	*Development and Reform Commission*	The text focuses on: 1. Leveraging New Health Technologies: Utilizing genetic testing and modern Chinese medicine to prevent diseases and improve health protection capabilities.2. Standardizing Chinese Medicine: Establishing high-quality standards for a large portion of patented medicines and commonly used Chinese medicine products to enhance overall product quality for better health outcomes.	https://www.ndrc.gov.cn/xwdt/tzgg/202307/t20230724_1358622.html
2015	Tumor personalized treatment testing technology guide [Trial]	*Health and Family Planning Commission*	Distributing a guide for understanding tumor-related test results, offering accurate reports and consulting services. It also stresses the importance of standardized procedures and quality assurance in medical laboratories to ensure precise results.	https://www.improve-medical.com/Uploads/attached/file/20171207/20171207141157_13839.pdf
2015	Technical Guideline for Gene Detection Technology of Drug Metabolizing Enzymes and Drug Action Targets (Qiu et al., 2020)	*Medical administrator and Hospital Authority*	Provide personalized genetic testing services for health, combining online and offline elements using advanced technologies like the Internet of Things. The goal is to offer tailored care, intelligent diagnosis, treatment, and biotherapy services for complex diseases, along with remote health management.	http://www.nhc.gov.cn/yzygj/s3593/201507/fca7d0216fed429cac797cdafa2ba466.shtml

(Continues)

TABLE 3 (Continued)

Year	Title	Institutional body	Topic	Source
2016	Notice of standardizing and orderly carrying out prenatal screening and diagnosis of free DNA of pregnant women's peripheral blood fetus	*Health and Family Planning Commission*	Prenatal screening and diagnosis of free DNA from pregnant women's peripheral blood and the fetus. This involves the advancement of technology in gene sequencing diagnostic products and the management of clinical applications, aiming to ensure their safety, efficacy, and orderly development.	http://www.nhc.gov.cn/fys/s3581/201611/0e6fe5bac1664ebda8bc28ad0ed68389.shtml
2017	Infectious Disease-Related Personalized Medical Molecular Detection Technology Guide	*Health and Family Planning Commission*	Standardize clinical laboratory activities in medical institutions for individualized medical molecular testing.	http://www.nhc.gov.cn/yzygj/s3593/201712/44aa5e433ade4cbeaad8a3a8b95a8199.shtml
2017	Notice on further reform and improvement of the examination and approval work of medical institutions and physicians	*National Health Commission, Administration of Traditional Chinese Medicine*	Enhance and refine medical institutions and physician approval procedures, reiterating the possibility of delegating medical testing, pathological diagnosis, and related services to independent medical laboratories or diagnostic centers.	https://www.pkulaw.com/chl/ed34424137753741bdfb.html?isFromV5=1
2018	Guiding Principles for Clinical Application of New Antitumor Drugs (Shunlong et al., 2022)	*National Health Committee*	Guide clinical use based on science, calling for future updates to consider evidence-based guidelines and address tumors lacking treatments.	https://www.nhc.gov.cn/cms-search/xxgk/getManuscriptXxgk.htm?id=be9a91e2176e405e92977baaaad42438
2022	National Action Plan to Curb Microbial Resistance	*National Health Commission* *Ministry of Education*	Aims for substantial progress in addressing microbial resistance through 8 key tasks, including prevention, education, regulation, research, and global collaboration.	https://www.fao.org/faolex/results/details/en/c/LEX-FAOC222100/

addressing the healthcare challenges resulting from an aging population and declining health (CORDIS | European Commission, 2024; Feng et al., 2020). Despite a significant increase in health expenditure by the central government, persistent financial and systemic challenges include rising out-of-pocket payments, the necessity for comprehensive financial protection through insurance or prepaid coverage for the entire population, management of soaring healthcare expenses, operational streamlining to reduce inefficiencies and wastage, improvement of care quality, and mitigation of regional disparities within China (Feng et al., 2020).

China's legislative process involves proposal, deliberation, voting, and official announcement, overseen by the central government for national legislation. Local governments influence regional legislative processes through standing committees in People's Congresses. This decentralized system allows regional entities to create policies within national laws. However, significant variations exist in local-level legislative procedures across regions (Hua & Chang, 2011). This framework has enhanced the role of stewardship in shaping and guiding the healthcare system, particularly in terms of financing, provisioning, and resource allocation (Murray & Frenk, 2000). The health administration in China operates within a hierarchical framework consisting of four tiers. At the top level is the National Health Commission (NHC), previously recognized as the National Health and Family Planning Commission and the Ministry of Health, which holds oversight over the entirety of the healthcare system. Provincial health commissions are responsible for coordinating and supervising healthcare providers. Moreover, administrative laws are enacted by the Standing Committee of the National People's Congress, while administrative regulations are disseminated by the State Council (World Health Organization, 2015). Subordinate to these are prefecture/municipal-level health commissions, responsible for formulating local regulations and managing resource allocation. At the lowest administrative tier are county/district health commissions, which possess some autonomy in implementing provincial health policies. Notably, there is no independent health administration at the township level, with healthcare providers directly supervised by county health commissions (Murray & Frenk, 2000; World Health Organization, 2015). The 5-year plans encompass budgets and competition policies among healthcare providers (Burns & Huang, 2017; Mossialos et al., 2017).

A more recent development is the establishment of the National Healthcare Security Administration (NHSA), which has assumed the previous roles of the Ministry of Civil Affairs, the Ministry of Health, and the Ministry of Human Resources and Social Security. The NHSA is specifically tasked with overseeing all public medical insurance programs and healthcare personnel, establishing pricing frameworks for essential medicines, and maintaining safety nets for rural residents to ensure access to healthcare (Mossialos et al., 2017; Tikkanen et al., 2020).

Chinese healthcare is based on an insurance reimbursement system that varies among the different regions, leading to disparities and conflicts, as medical insurance funds are inadequate. The Chinese healthcare system is facing unprecedented challenges, including insufficient health insurance funds, inconsistent insurance reimbursement policies, a deficient integrity system, and a lack of oversight in managing health insurance funds (Chen & Liu, 2023).

Concerning PM China is making substantial investments to advance the accuracy of diagnoses and treatment protocols across various health conditions. Researchers are actively amassing extensive health datasets encompassing genetic profiles and biological specimens to discern underlying patterns and disease subtypes. For instance, an ongoing study in Shanghai is aggregating data from more than 1000 children diagnosed with autism spectrum disorder (ASD) to gain deeper insights into the condition and facilitate the development of tailored treatments. Additionally, investigations utilizing big data techniques are underway to explore rare diseases such as hereditary hearing loss, aiming to pinpoint distinct genetic variations associated with these ailments. The emergence of diagnostic technologies, including genetic testing and proteomics, is significantly enhancing the efficacy of precision medicine in China. Nevertheless, persistent challenges encompass sustained funding and comprehensive data sharing practices, yet researchers remain sanguine about the prospects of precision medicine in the nation (Ye, 2022).

In contrast to the focus of European PM initiatives on the integration of genomic data into clinical practice, personalized cancer therapy, and rare disease research, governed by regulatory frameworks such as the General Data Protection Regulation (GDPR) and the European Medical Device Regulation emphasizing patient data protection and device safety, China's trajectory in PM is propelled by significant investments in health technology, infrastructure, and genomic research (Beccia et al., 2022; Hoxhaj et al., 2023).

The nation's PM endeavors prioritize large-scale data collection, exemplified by initiatives such as the China Precision Medicine Initiative (Chen, 2022) and the Biobank of CAS (Gan et al., 2017). The Chinese government underscores technological innovation, evident in swift progress in gene sequencing, artificial intelligence (AI), and biotechnology. Regulatory frameworks, like the Management of Human Genetic Resources Regulation, underscore ethical considerations regarding genetic data usage and resource management.

Regional disparities are evident, with Europe's PM initiatives facing the challenge of harmonizing diverse healthcare systems and addressing data privacy concerns among member states (Beccia et al., 2022). On the other hand, China faces hurdles related to data accessibility, quality, and ethical concerns amid swift technological progress. In contrast, Europe underscores collaborative research and data sharing, while China emphasizes technological innovation and comprehensive data gathering. Nonetheless, both regions align on the common goal of integrating genomic data into clinical practice to augment healthcare outcomes. Despite their divergent strategies, they exhibit a collective dedication to advancing precision medicine and its integration into clinical environments, aiming to enhance healthcare outcomes for both individuals and populations. This highlights the global importance of PM research and underscores the imperative for interregional cooperation to adeptly tackle intricate healthcare challenges. PM and associated components, including Big Data, along with the emerging discourse on AI, possess the capability to oversee the entirety of the process, impacting the health insurance fund. Governments on both the Chinese and EU fronts are urged to enact pertinent legislation and regulations to enhance health systems and ensure the secure and efficient functioning of health funds.

This work has some limitations. We recognize that there could be publication bias in our study, as certain policies or regulatory actions might have been in draft form, not yet implemented, or published in national languages that were not identified at the time of our analysis. In addition, given the complexity of China's regulatory framework, we acknowledge the possibility that we may have missed potential sources of information or relevant documents. Nonetheless, we conducted extensive desk research on various sources and repositories, offering a comprehensive overview of the regulatory landscape in China.

CONCLUSION

Although it is apparent that both China and the EU share a mutual interest in PM research, several barriers inhibit collaboration and hinder progress in this area. Challenges such as disparities in regulatory frameworks, concerns regarding data privacy, and variations in healthcare systems can obstruct the smooth integration of genomic data into clinical practice. Policymakers should prioritize and actively promote and support collaborative synergies between regions to surmount these barriers. By nurturing partnerships and facilitating the exchange of knowledge, policymakers can establish an environment conducive to the successful implementation of PM initiatives, thereby enhancing healthcare outcomes on a global scale.

AUTHOR CONTRIBUTIONS

Marzia Di Marcantonio and Stefania Boccia conceived the study. Marzia Di Marcantonio, Flavia Beccia, and Alessandra Maio wrote the manuscript. Lili Wang, Walter Ricciardi, and Stefania Boccia reviewed the manuscript. All the authors reviewed the final version of the manuscript and agreed to be accountable for the content of the work.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

ETHICS STATEMENT

Ethical statements are not applicable as this work solely focuses on policies; no human or animal subjects were involved.

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RESEARCH ARTICLE

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Consumer experiences navigating health care provider directories and support of federal policy action

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Abstract

Most Americans rely on managed care networks and provider directories to access care. Little is known about how patients experience navigating directories, how it affects their lives, and whether Americans support federal action on the issue. We fielded a large, and demographically diverse survey of US adults ($N = 10{,}739$) from January to April 2022. The survey queried respondents about their experience using provider directories, problems they encountered, and support for federal policy action. Analyses were conducted using Weighted Ordinary Least Squares regression. We found that 43% of Americans used provider directories last year. Among these, provider directory inaccuracy affected 56%, with inaccurate network status (34%), providers having left the practice (18%), and wrong contact information (15%) serving as primary problems. A majority of those using provider directories faced challenges in accessing care subsequently. This included 28% delaying care, 10% seeking out Urgent Care and 6% Emergency Care, respectively, 5% going out of network, and 10% forging care. A substantial number suffered health (54%) and financial (51%) problems as a result and about half took some action as a result. Overall, Americans strongly supported various federal actions to improve directory accuracy. Provider directory inaccuracy affects a larger number of Americans, many of whom are severely affected by the challenges. Broad public support should encourage federal action on the issue.

KEYWORDS
managed care, provider networks, regulation

INTRODUCTION

Today, most insured Americans enroll in managed care insurance plans that use a defined network of providers. In-network physicians and other medical providers are those who have contracted with an insurer to provide services to the insurer's enrollees. Consumers learn about their in-network providers through provider directories issued by insurance plans. Provider directories play a crucial role in how consumers experience health insurance and medical care. For one, consumers rely on the directories to make plan selections during open enrollment (Drake 2019). Even more importantly, consumers use the directories to seek out providers when they need medical care (Busch & Kyanko, 2020; Syed et al., 2013). Thus, provider directories determine whether and how consumers access needed health care in a timely fashion.

An emerging literature using government auditing data as well as secret shopper surveys has shown that provider directories are inaccurate, and often remarkably so (Burman & Haeder, 2022a, 2022b, 2022c; Burman et al., 2023; Elton et al., 2024). The accuracy in provider directories is a seemingly technical detail, yet a flawed directory can substantially increase consumers' administrative burdens locating health providers and it may affect how and whether they access needed care in-network. Seeking care out-of-network mostly mean much higher cost-sharing requirements or sometimes entirely out-of-pocket expenses (Xu, Dowd, et al., 2019; Xu, Song, et al., 2019). Ultimately, flawed provider directories may thus affect both the health and financial well-being of consumers. However, while a growing literature has highlighted the extent of inaccuracies, scant scholarship is available on to what extent consumers are actually experiencing them when accessing care and what effect these inaccuracies may have on consumers and their lives (see Busch & Kyanko, 2020).

To fill this gap in the literature, we conducted a survey of 10,739 adults in the United States via Lucid from January to April 2022, which queried respondents about their experiences navigating provider networks as well as their attitudes on potential policies to enhance provider network accuracies. Below, we first briefly outline the policy developments that have made provider networks, and thus provider directories, a crucial component of the US healthcare system. We then provide an overview of the existing literature on the accuracy of provider directories as well as potential implications on consumers before providing an overview of state and federal regulatory efforts to ensure correct and updated provider directories. Next, relying on large-scale original survey research conducted in early 2022, we explore consumers' experience with provider directories, the problems they encounter, as well as the effects on their finances and health. We then assess the key drivers of support for federal action on ensuring more accurate provider directories. We conclude by highlighting the implications of our findings.

BACKGROUND

Managed care and provider networks

When insurance coverage first emerged in the United States, it was overwhelmingly of the indemnity type in which consumers had relatively free choice of providers while insurers agreed to cover a set portion of total charges incurred in return for a monthly fee (Gabel et al., 2000). However, over time a dramatic shift occurred from indemnity coverage to managed care arrangements where providers accept capitated fees (Hacker, 1997). These arrangements are centered on the concept of leveraging restrictions to contain costs. Specifically, employers and consumers trade free choice of providers for a more restricted set, their provider network. In return, they receive lower premiums and are further incentivized to stay in their network as very little coverage was provided for care outside of the network. By the late 1990s, indemnity coverage dropped from a high of 95% of private insurance to just 14% with further reductions after (Gabel et al., 2000; Morrisey, 2014). Indeed, today, managed care arrangements are dominant types of insurance in employer sponsored plans and individual plans. The managed care structures are in virtually all government-sponsored insurance programs, such as all plans in the Affordable Care Act (ACA) Marketplaces (Giovanelli et al., 2015; Haeder et al., 2015a, 2015b; Polsky & Weiner, 2015), most state Medicaid programs and serving half Medicare beneficiaries (Haeder, 2019a, 2019b; Jacobson et al., 2019), with any future coverage expansion likely further following this path.

Impacts of inaccuracies in provider network directories on consumers

Due to the ubiquity of managed care arrangements in the US healthcare system, provider networks have become an essential feature in connecting insured consumers to medical care. That is, the usability of provider networks is an essential part of the process of accessing medical care for most Americans today. In this process, provider directories play a crucial role in many ways. First, during the purchasing decision, consumers rely on provider directories to select their preferred health plan. Indeed, the inclusion of specific providers is one of the most important decision drivers of consumers when selecting their plan (Gunja et al., 2016; Pandhi & Saultz, 2006). As a result, inaccuracies in provider directories at the time of purchase may lead consumer to select suboptimal products that do not fit their needs and potentially expose them to higher financial costs in the form of higher out-of-pocket costs or longer travel distances at the point of care.

At the same time, the importance of accurate provider directories does not diminish after the purchasing decision when consumers. They have to also rely on their provider directory to select appropriate in-network providers that fit their preferences and needs. There are reasons to believe that inaccuracies may substantially impact consumers' health care experiences when seeking care. For some consumers, the burden imposed by the inaccuracies may lead to delayed or forgone care (Haeder et al., 2019b, 2020; Kim et al., 2009). Yet, others may see themselves seeking care outside of their networks. Some may see themselves confronted with surprise bills because they relied on the inaccurate information listed in the directory when seeking care (Busch & Kyanko, 2020; Haeder et al., 2019c; Syed et al., 2013), although recently federal policy efforts have been made to limit these exposures (Haeder, Xu, et al., 2023). At the very least, inaccuracies will burden consumers with the time-costs of seeking providers who are factually in their network (Ray et al., 2015). Importantly, there are reasons to believe that the burdens imposed by the inaccuracies are highly inequitable (Blumenberg & Agrawal, 2014; Brown et al., 2016). Of course, the need for accuracy provider directories has only grown in importance due to the narrowing of provider networks, which, by definition, already reduces the number of providers listed in directories (Giovanelli et al., 2015; Haeder et al., 2015a, 2015b; Polsky & Weiner, 2015), exacerbating the impact of any inaccuracies for consumers. Ultimately, provider networks, as experienced through provider directories, play a pivotal role in consumers' efforts to seek medical care in the today's medical system (Haeder et al., 2019b). However, we know very little about this issue from the consumers' perspective.

Empirical findings on provider directory accuracy

Empirically, the implementation of the Affordable Care Act has brought the accuracy of provider directories into the focus of academic researchers. Recent studies have screened provider directories and characterized inaccurate networks as “ghost networks” (Busch & Kyanko, 2020) or “phantom networks” (Holstein & Paul, 2012; Zhu, Charlesworth, Polsky, McConnell, 2022; Zhu, Charlesworth, Polsky, Levy, et al., 2022). A number of studies collected first-hand data and found substantial inaccuracies across a variety of settings including primary care (Burman & Haeder, 2022a; Haeder et al., 2016; Melnikow et al., 2020; Tipirneni et al., 2016), dermatology (Resneck et al., 2014; Tsang & Resneck, 2006), mental health (Cama et al., 2017; Holstein & Paul, 2012; Malowney et al., 2015), oncology (Hamlyn et al., 2016), and contraception (Lim & Krajewski, 2020). A slew of recent studies improved on this limitation by relying on extensive data sets. For example, several studies used data from the California Department of Managed Health Care that contained almost two million observations to study primary and specialty care providers (Burman & Haeder, 2022c), mental health providers (Burman et al., 2023), and mammogram providers (Burman & Haeder, 2022b). The studies found inaccuracy rates as high as above 40% for several markets and specialties. A similar study of Maryland's Medicaid program even found inaccuracies for more than 50% of listed providers (Burman & Haeder, 2022a). Lastly, assessing primary care and mental health provider networks in Oregon's Medicaid managed care program, Zhu, Charlesworth, Polsky, McConnell (2022) found that six out of 10 providers listed did not see any Medicaid patients at all, suggesting highly inaccurate directories.

State and federal policy actions on provider directory accuracy

The issue of directory accuracy has received some attention from regulators (Haeder et al., 2019b). However, the limitations of current regulation approaches have been identified by academics and governments alike (Giovannelli et al., 2015, 2016; Haeder et al., 2019b; Haeder, Xu, et al., 2023; Hall & Ginsburg, 2017; US Government Accountability Office, 2015). Even during the managed care backlash that led legislators to tighten the oversight of managed care plans (White, 1999), directory accuracy failed to be included as a component in the 1996 model law on network regulation by the National Association of Insurance Commissioners. Nonetheless, in the wake of the ACA, a number of states have sought to improve the accuracy of provider directories for consumers in the wake of the often-dismal assessments published in recent years with a number of them setting accuracy standards (Busch & Kyanko, 2020; Giovannelli et al., 2016; Wishner & Marks, 2017). However, these vary substantially along important dimensions such as stringency, extent, and enforcement (Busch & Kyanko, 2020; Giovannelli et al., 2016; Haeder, Xu, et al., 2023; Wishner & Marks, 2017). Some states have also moved to address the issue of surprise medical bills, which occur when consumers inadvertently use out-of-network providers, through restrictions on both insurers and providers (Callaghan et al., 2021; Garmon & Chartock, 2016). However, the regulatory reach of states is inherently limited by the restrictions imposed by the Employee Retirement Income Security Act of 1974, which preempts their ability to regulate self-funded employer plans.

At the same time, the federal government has established a number of accuracy standards for Medicare Advantage, Medicaid, and Marketplace plans (Burman & Haeder, 2021). Importantly, Congress extended accuracy requirements as part of the 2021 Consolidated Appropriations Act (Burman & Haeder, 2021). The most recent statute requires that carriers update directories at least every 90 days and provides some limited protections for consumers. These include swift responses to consumer inquiries as well as swift rectification of potential errors in the information presented to consumers. Moreover, the federal government has become more active in increasing regulatory stringency in the Marketplaces (US Department of Health & Human Services, 2022b) as well as for Medicare Advantage plans (US Department of Health & Human Services, 2022a). Yet, little is known about how consumers, the stakeholders who are mostly impacted by provider directories, perceive how government should explicitly specify rules to hold insurance plans accountable.

However, a number of concerns have been raised about the limited nature of the law and the lack of active and passive compliance monitoring at all levels of government and enforcement mechanisms (Burman & Haeder, 2021; Haeder et al., 2019b). Indeed, reviews of networks are rare and lack sophistication (Giovannelli et al., 2016). Moreover, consumer complaints, a high burden for many consumers, are rarely tracked and systematically compiled and analyzed (Medicaid and CHIP Payment and Access Commission, 2015; Wishner & Marks, 2017). More generally, there appears to be a substantial lack of resource investments by regulators at levels in terms of oversight and monitoring (Giovannelli et al., 2016). Lastly, it was worth noting that inaccuracies, undetected by regulators and taken on good faith, may overrepresent the adequacy of provider networks on, in a worst-case scenario, render the entirety of provider network adequacy regulations wholly invalid (Haeder et al., 2019a, 2019b; Haeder, Weimer, et al., 2023). Given this lack of governmental monitoring, gaining a better understanding of the extent of the challenges consumers face when navigating provider networks is of high utility.

DATA AND METHODS

Data

To better assess the extent of the challenges consumers face in navigating provider directories and whether they support governmental action targeting on accuracy of directories, we fielded a large national survey using Lucid. Lucid is a survey platform that relies on quota sampling to provide nationally representative samples that closely mirror national benchmarks on a variety of demographic factors such as age, race, gender, education, and income. Lucid's data have been shown to be of high quality and has found widespread use in the survey research (Callaghan et al., 2019; Coppock & McClellan, 2019; Haeder, 2021; Motta & Callaghan, 2020; Trujillo et al., 2020; Wood & Porter, 2019). Overall, 53,517 US adults (18 years or older) initiated the survey from January to April of 2022, 16,461 respondents completed it (31%). Attrition was the result of three attention checks, a crucial component to ensure data quality (Ternovsk et al., 2022). Of the 16,461 respondents who completed the survey, 10,759 respondents received questions used for the analyses related to provider networks in this manuscript, while the remainder where asked questions about a different, unrelated tropic (see Supporting Information S1: Appendix Exhibit 1-3). Although the unweighted data closely match population benchmarks characteristics generally used for the assessment of surveys, we utilized post-stratification weights to population benchmarks for gender, education, race, age, and income to further approximate the US population.

Before exposing respondents to our questions, we briefly introduced the topic of provider directories to them to ensure that respondents fully understand the issue at hand before providing their answers:

> Next, we have some questions about health care provider directories. Simply put, provider directories are lists of physicians and other medical providers who have contracted with an insurer to provide services to the insurer's enrollees (patients). If patients see providers who are not "in network," their insurer will often pay little or not at all for their care.

Assessing consumer experiences with provider directory inaccuracies

Our first broad interest for this study is to better understand the extent of the problem of provider directory inaccuracies as experienced by consumers, how they deal with the problem, how it affects their lives, and lastly, whether they took active steps to complain about the problem. To do so, we asked respondents whether they had used a "a provider directory (a list of in-network providers) given to you by your insurance company to search for doctors or other medical providers." In our sample, 43.5% of respondents ($N = 4663$, 42.8% weighted) indicated that they had done so. This question also served as a screening question and was then followed up by a series of questions to assess their subsequent experience (see Supporting Information S1: Appendix Exhibit 4 for all question wording).

Within this broad area, our first subject of interest was whether respondents experienced any issues using their provider directory when searching for providers and seeking care. We specifically asked them about what happened "When looking for a provider, were there any cases when you tried to contact the provider," and provided them with a list of options, including "the provider could not be reached because of wrong contact information, "the provider was not practicing the specialty listed," "the provider was not in your network (not accepting your insurance)," "the provider had retired or left the practice," and "the provider never worked at the practice." These options have also been used by government regulators to assess provider networks (Burman & Haeder, 2022a, 2022c; Burman et al., 2023). We report the results for these variables descriptively below. We also create an indicator variable whether respondents experienced at least one of these problems. We use this variable as an explanatory variable in our analyses of support for federal policy changes.

Next, for respondents indicated encountering problems in provider directories, we were interested in whether respondents were able to overcome these challenges and access care. We provided them with a list of six possible outcomes including "quickly find[ing] an alternative doctor in your network," "delay[ing] care for some time until you were able to find a doctor in your network," "seek[ing] care at an urgent care clinic," "seek[ing] care at an emergency department or hospital," "seek[ing] care with a doctor outside of your network," or "giv[ing] up and forgo[ing] care all together." We report the results for these variables descriptively below. We also assessed the predictors for these below using regression analysis. They also serve as explanatory variables for our assessment of support for federal policy changes.

We then asked respondents about the effects of the inaccuracies on both their health and finances. We specifically asked them whether the problem accessing care as a result of an inaccuracy cause them major health problems, minor health problems, or no health problems. We then followed up and asked the analogous questions about financial problems. Below, we again provide a descriptive analysis of the results as well as assessing the predictors for these problems using regression analysis. They also serve as explanatory variables for our assessment of support for federal policy changes.

Lastly, we were interested in whether respondents took any action as a result of their negative experiences. We provided respondents the options of “report[ing] the problem to the carrier,” “fil[ing] a complaint with the insurer,” or “fil[ing] a complaint with the insurance regulating agency.” Once more, we provide a descriptive overview of the findings below, determine predictors of these variables, and then finally use them to determine correlates for support for federal policy changes.

Assessing public support for federal policy action: Dependent variables

Our second goal for the study was to gauge American public support for federal action to reduce inaccuracies and improve consumer access to care. We were specifically interested to understand whether negative experiences with provider directory inaccuracies affect respondents' support for federal policy action on the issue. To assess this question, we presented six distinct policy options to all respondents, whether they used a provider directory in the past year or not. Our first set of questions reflect the recent changes as part of the 2021 Consolidated Appropriations Act. Specifically, we asked respondents whether the federal government should (1) “require insurers to update their directories at least every 90 days,” (2) “require insurers to respond to consumers whether a provider is in network within 1 business day,” or (3) “hold harmless patients who unknowingly went to a provider not in their network but listed in the directory.” We also provided respondents with three additional proposals that go beyond the actions taken by the federal government in early 2022. These include whether the federal government should (4) “impose meaningful fines on insurers for inaccurate directories,” (5) “allow patients to sue insurers over inaccurate directories,” and (6) “conduct regular audits to ensure directories are accurate.” For all six options, respondents were provided with a four-point scale including definitely not, probably not, probably yes, definitely yes. We derived six dependent variables from respondents' responses to six distinct policy options.

Assessing public support for federal policy action: Independent variables

Our primary explanatory variables reflect the experiences of consumers navigating potentially inaccurate provider directories. We thus estimate two separate models with an indicator for whether the respondent used a provider directory and, alternatively, whether they experienced a problem using a provider directory in the last year. Personal experiences with healthcare have been shown to be important indicators of policy support (Callaghan et al., 2021; Hopkins, 2023). We thus expect that both will be associated with larger support for federal policy change. In addition to these subject specific measures, we expect that traditional predictors of policy actions will play an important role, including partisan effects and confidence in Congress. Traditionally, Republicans have been opposed to federal action on health policy while the opposite holds for Democrats (Callaghan et al., 2021). We included indicators for both in our models. Moreover, we include a four-point measure for how much confidence respondent have for Congress to “act in the best interests of the public,” a standard measure of trust in governmental institutions. We expect that those with higher levels of confidence will be more supportive of federal action (Hopkins, 2023). We also include a standard 6-point indicator of political knowledge. We expect that individuals who scored higher on this measure will be more supportive of federal action (Haeder, 2023).

We also include a number of control variables in our models. Because most healthcare decisions are made by women (Matoff-Stepp et al., 2014), we include a measure for gender (a dichotomous measure with female coded as one). We also account for respondents' subjective assessment of their health (a 5-point measure ranging from *poor* to *excellent*). We also include indicators for whether respondents are diagnosed with any major disease (diabetes, hypertension, immunodeficiency, obesity, heart disease, chronic obstructive pulmonary disease, asthma, or cancer, binary) or whether they suffer with at least one common disability (based on the standard six questions about disability, binary). We also include insurance status of respondents by including indicators for Medicare, Medicaid, employer-sponsored coverage, and individual market coverage. Similarly, we also accounted for educational attainment; here we specifically included indicators for individuals who completed some college, completed college, or obtained a professional, master's degree or more. We also accounted for respondents' household income (a 10-point measure), their race and ethnicity (indicators for White non-Hispanics, Blacks, and Hispanics) and age. Because of the lack of previous work of this topic, our analyses here are exploratory.

Because the experience of individuals with provider directories may shape respondents' support for federal policy action on the issue in nuanced ways, we also estimate separate models only for those respondents who experienced at least one problem using a provider directory. In these models, we include a number of additional explanatory variables. These variables account for how consumers experienced problems using provider directories over the last year, how they accessed care despite these problems, how the problems affected their finances and health, and lastly, whether they took their complains to their insurer or a governmental agency. We expect that negative outcomes when seeking care may make it more likely that they will support federal action (Hopkins, 2023). We thus included indicators for the how and whether respondents were able to access medical care after encountering the problems. As noted above, we focus on those experiences that were must obviously detrimental including going out of their network, forgoing care, or going to the emergency department.[1] We also include indicators for whether the experienced either minor or major health or financial problems (four indicators). We particularly expect support for federal actions for those who experienced major injuries to their health or finances. Finally, we include an indicator whether respondents took any action in response to their problems. We expect that these individuals will also be more supportive of federal action.

Analytical approach

We conducted three general sets of analyses. First, we compare mean levels of support for respondents who experienced a problem with those who did not using standard *t* tests. Our second set of analyses below focusing on the correlates of experiencing substantial problems accessing care, experiencing negative effects to their health and finances, and taking personal action to seek remedy as a response. While these measures are binary, we rely on linear probability models to facilitate presentation given the large number of models (Caudill, 1988). All models were estimated including survey weights. Our third sets of analyses focus on correlates of support for federal policy change with regard to six distinct policies. The dependent variables here have four categories. Once again, to facilitate presentation and comparison, we relied on standard OLS modeling with survey weights (Angrist & Pischke, 2009). As noted above, we estimate several models for all respondents as well separate models only for those respondents who experienced at least one problem using a provider directory. We considered a *p*-value lower than 0.05 as statistically significant throughout our analyses.

RESULTS

Analysis of provider directory experiences

Overall, 42.8% (95% confidence interval: 41.6%–44.1%) of respondents used a provider directory in the past year. Among respondents who used provider directories, 56.4% (54.4%–58.2%) encountered at least one problem (Figure 1a). Among the individual problems, the biggest issue facing consumers was that providers were not actually in their network (33.7%, 31.9%–35.4%), that the provider had left the practice (18.2%, 16.8%–20.0%), and wrong contact information (15.3%, 14.0%–16.7%). About one in 10 respondents indicated that the provider had the wrong specialty listed (10.3%, 9.2%–11.6%) or that the provider never worked at the specific practice (4.5%, 3.8%–5.5%). In further analysis of the predictors of any of the five problems, indicated that those with chronic conditions (except network status, 0.04–0.07, $p < 0.007$) and disabilities (except never practicing, 0.04–0.07, $p < 0.011$). We also saw higher incidence of wrong information related to contact information, specialty, and network status among Medicaid beneficiaries (0.06–0.11, $p < 0.034$), as well as for Democrats with regard to specialty and whether providers ever worked or left practice (0.02–0.04, $p < 0.078$). All other covariates were either consistently insignificant or inconsistently significant (see Supporting Information S1: Appendix Exhibit 5 for details).

Do problems with provider directories affects access to care (Figure 1b)? When asked about whether respondents were able to overcome these challenges and access care, there was a substantial amount in diversity among the respondents. One the one hand, 40.9%

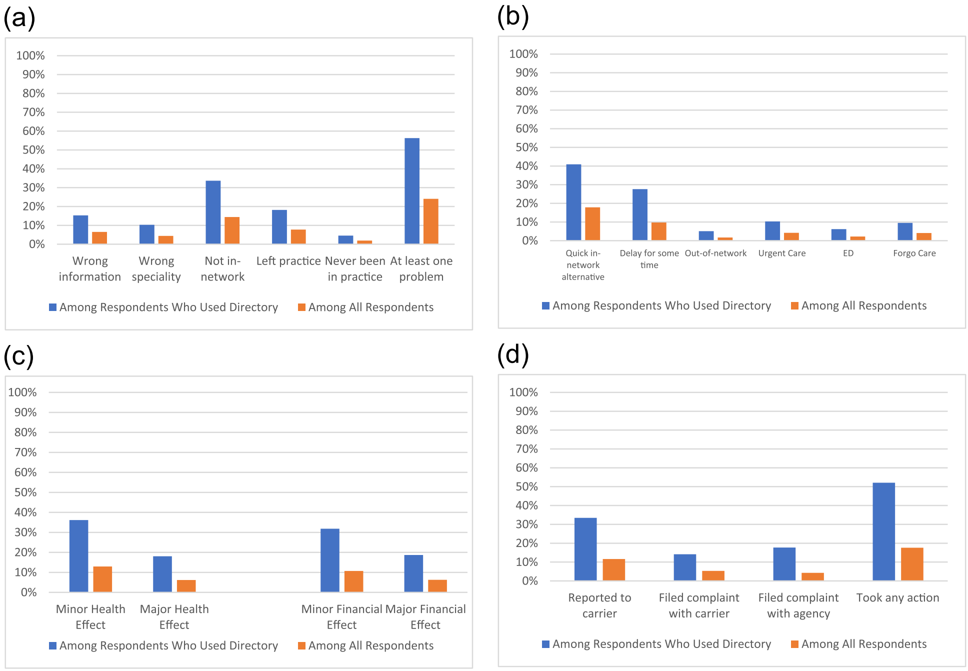

FIGURE 1 Respondents' experience with provider directories. (a) Problems experienced with provider directories. (b) Subsequent access to care. (c) Health and financial consequences. (d) Subsequent actions taken.

(38.5%–43.4%) were able to find a quick, in-network alternative. However, a majority of respondents faced varying challenges as a result of the inaccuracies. Among these, 27.6% (25.5%–29.9%) delayed seeking care for some time which may carry with it additional time spent sick or impose psychological burdens and lead to a deterioration of medical conditions. Moreover, an additional 10.3% (8.8%–12.0%) went to an urgent care facility which does not promote continuity of care and might have more expensive cost-sharing. Additionally, for almost one in five respondents were particularly problematic and with potentially substantial health and financial implications. This includes 5.1% (4.1%–6.3%) of respondent sought out-of-network care, 6.2% (5.1–7.5) went to the ER, and 9.5% (8.2%–11.0%) abandoned seeking care altogether. Similarly, to our analyses of the incidence of specific provider directory problems, our regression analyses did not provide additional patterns with regard to which respondents were particularly likely to experience certain health access outcomes (see Supporting Information S1: Appendix Exhibit 6). Intermittently significant results indicate that those with disabilities were more likely to delay care for some time (0.05, $p < 0.045$) or to forgo care (0.04, $p < 0.013$). However, we did not find effects for insurance coverage type. Income and education show no general patterns and are mostly not significant as does race although Whites (0.03, $p < 0.009$) and Blacks (0.08, $p < 0.009$) are somewhat more likely to seek care at the emergency department (ED).

Did provider directory problems result in either financial or health problems (Figure 1c)? We found that 18.0% (16.2%–0.1%) of respondents with problems indicated that the inaccuracies, and thus the challenges in accessing care, had a major effect on their health while 36.2% (33.8–38.6) noted a minor effect on their health. Moreover, 31.8% (29.5–34.2) of respondents experienced a minor financial effects, with 18.7% (16.9%–20.7%) noting major financial effects. Our regression analysis of the correlates of financial or health impacts provides additional insights (Supporting Information S1: Appendix Exhibit 7). Individuals with higher levels of health (0.03, $p < 0.001$), or higher levels of disease burden (0.08, $p < 0.001$) or disabilities (0.13, $p < 0.001$), appeared particularly likely to suffer major health problems as a results of provider directory issues. Higher levels of education were also associated with higher incidence of major health effects. Employer-sponsored insurance (ESI) coverage (−0.18, $p < 0.001$) and individual market coverage (−0.17, $p < 0.001$) reduced the incidence of major health problems. Women were less likely to experience major health effects (−0.05, $p < 0.003$). The analogous pattern is present for major financial problems, with major financial effects being associated with better levels of health (0.03, $p < 0.003$), higher disease burden (0.08, $p < 0.001$), disability (0.12, $p < 0.001$), Democratic party ID (0.04, $p < 0.036$) and better education. We also found positive effects for non-White Hispanics (0.08, $p < 0.008$). We found negative associations for those with Medicaid coverage (−0.14, $p < 0.006$), those on ESI (−0.21, $p < 0.001$), and those in the individual market (−0.17, $p < 0.001$).

Lastly, did those who experienced problem seek any sort of remedy by filing complaints (Figure 1d)? As a result of their experiences, 52.1% (49.6%–54.6%) of respondents with problems took some action with the most common one being the reporting of the inaccuracy to the carrier. For 17.8% (15.9%–19.8%) percent of respondents this meant filing a complaint with the carrier while 14.2% (12.5–16.1) said they filed a complaint with the relevant state agency. Once more, not many clear and consistent indicators emerge from our regression analyses (see Supporting Information S1: Appendix Exhibit 8). However, those with chronic conditions (0.05–0.08, $p < 0.049$) were consistently more likely to take any of the actions while women were consistently less likely (−0.04 to −0.08, $p < 0.033$). Moreover, those with ESI were less likely to file a complaint with an agency (−0.10, $p < 0.005$) or the carrier (−0.12 $p < 0.006$). The same held for those with better health (0.06, $p < 0.001$ and 0.03, $p < 0.003$).

Analysis of federal policy change

Overall, we found that a majority of respondents were supportive (either *Definitely yes* or *Probably yes*) of all six policy options (Figure 2), with means ranging from 2.54 for allowing individuals to sue insurers to 3.12 for the conduct of regular audits (on a four-point scale). Indeed, for three options, the 90-day updating time frame, quickly responding to consumer questions, and regular audits either gained the support for just below 80% in two cases or slightly above 80% in one case (regular audits). In two additional cases (holding consumers harmless and fining insurers for inaccuracies), almost two-thirds of respondents were supportive of federal action. Lastly, respondents were evenly split on allowing patients to sue insurers over inaccurate directories. The results for individuals who experienced at least one problem are consistently albeit slightly more favorable towards federal action ($p < 0.001$). Overall, these findings indicate strong support for federal action on this issue for five of the six policies presented.

Next, we turned to assessing the various predictors associated with support or opposition towards the six federal policy choices. The results of our OLS estimates for all respondents are presented in Table 1. Before assessing individual predictors, we once more note that overall support for five of the six options is already remarkably high raising the possibility of a ceiling effect and limiting the potential for findings strong predictors. We did not find consistent evidence that using or encountering a problem using a provider directory was correlated with increased support for any of the six policies. That is, using a provider directory seemed to not be predictable a driver of policy support. In some cases, the effect was positive (90-day updates and conducting audits) while it was negative in others (inform consumers whether providers are in network and fining insurers) while we found no effect for the policy of holding consumers harmless. Where present, the effect sizes were relatively small. Experiencing problems was associated with larger support for 90-day updates (0.08, $p = 0.002$), holding patients harmless (0.07, $p = 0.029$) and conducting audits (0.09,

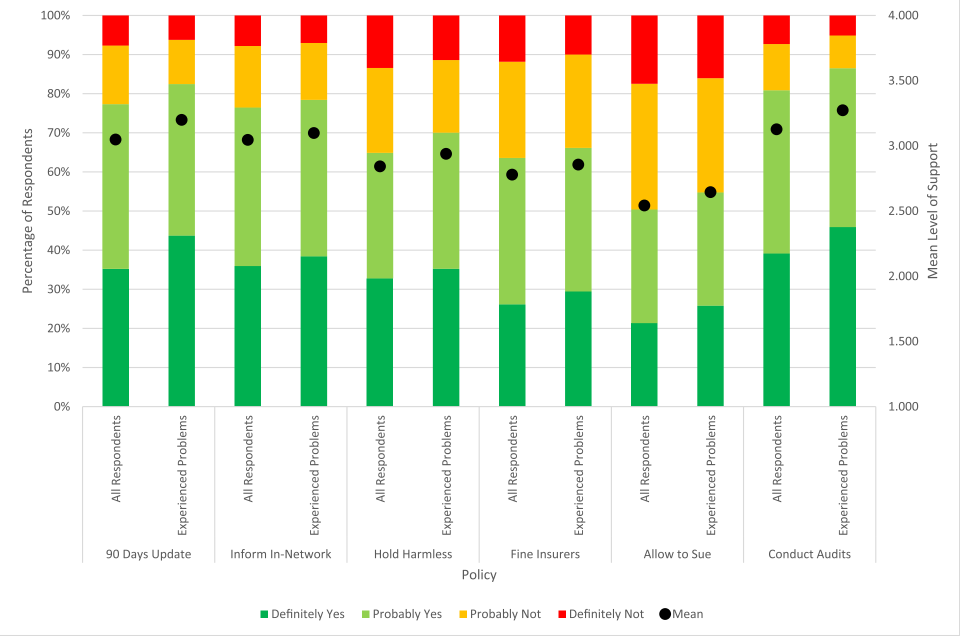

FIGURE 2 Respondents' support for federal action on various policies.

TABLE 1 OLS estimates for respondents' support for various federal policies changes, all respondents.

Variables	90 Days update		Inform in-network		Hold harmless		Fine insurers		Allow to sue		Conduct audits	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Used directory	0.05*		−0.06**		0.04		−0.07**		−0.13***		0.05*	
	(0.024)		(0.009)		(0.151)		(0.003)		(0.000)		(0.024)	
Experienced problem		0.08**		−0.01		0.07*		−0.02		−0.06		0.09***
		(0.002)		(0.798)		(0.029)		(0.425)		(0.054)		(0.000)
Republican	−0.17***	−0.17***	−0.14***	−0.14***	−0.14***	−0.14***	−0.20***	−0.20***	−0.19***	−0.19***	−0.18***	−0.18***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democrat	0.22***	0.22***	0.23***	0.22***	0.20***	0.20***	0.27***	0.27***	0.24***	0.24***	0.23***	0.23***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Political knowledge	−0.03**	−0.02**	−0.01	−0.01	0.05***	0.05***	0.02	0.02	0.03**	0.03**	−0.00	−0.00
	(0.004)	(0.005)	(0.487)	(0.560)	(0.000)	(0.000)	(0.095)	(0.079)	(0.006)	(0.004)	(0.597)	(0.641)
Trust in congress	0.11***	0.11***	0.07***	0.06***	0.09***	0.09***	0.07***	0.07***	0.07***	0.06***	0.10***	0.10***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Health	−0.03*	−0.03*	−0.03*	−0.03*	−0.02	−0.02	0.00	0.00	0.01	0.01	−0.03*	−0.03*
	(0.016)	(0.014)	(0.016)	(0.016)	(0.291)	(0.269)	(0.987)	(0.966)	(0.349)	(0.336)	(0.029)	(0.025)
Chronic conditions	0.01	0.00	−0.00	−0.00	0.01	0.01	0.02	0.02	0.01	0.00	−0.01	−0.01
	(0.761)	(0.851)	(0.992)	(0.878)	(0.751)	(0.828)	(0.399)	(0.471)	(0.810)	(0.949)	(0.668)	(0.569)
Disability	0.03	0.03	0.05*	0.05	0.04	0.03	0.06*	0.06*	0.11***	0.11***	0.06*	0.06*
	(0.292)	(0.348)	(0.048)	(0.062)	(0.243)	(0.288)	(0.031)	(0.039)	(0.000)	(0.000)	(0.014)	(0.021)
Medicare	−0.05	−0.05	0.06	0.05	0.13**	0.13**	0.07	0.06	0.18***	0.16***	0.04	0.03
	(0.199)	(0.175)	(0.158)	(0.246)	(0.004)	(0.004)	(0.099)	(0.153)	(0.000)	(0.000)	(0.354)	(0.398)

TABLE 1 (Continued)

Variables	90 Days update		Inform in-network		Hold harmless		Fine insurers		Allow to sue		Conduct audits	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Medicaid	0.10*	0.09*	0.11*	0.10*	0.05	0.05	0.05	0.04	0.05	0.04	0.08*	0.08
	(0.020)	(0.025)	(0.010)	(0.022)	(0.294)	(0.323)	(0.278)	(0.402)	(0.252)	(0.453)	(0.050)	(0.062)
Employer-sponsored insurance	−0.01	−0.01	0.06	0.05	0.12*	0.12*	0.03	0.02	0.02	0.00	0.06	0.06
	(0.739)	(0.739)	(0.163)	(0.254)	(0.011)	(0.010)	(0.550)	(0.718)	(0.598)	(0.911)	(0.144)	(0.146)
Individual market	0.08	0.08	0.11*	0.09	0.16**	0.16**	0.15**	0.14*	0.13*	0.10	0.10	0.09
	(0.113)	(0.125)	(0.044)	(0.089)	(0.007)	(0.008)	(0.005)	(0.012)	(0.020)	(0.064)	(0.053)	(0.062)
Income	−0.00	−0.00	0.00	−0.00	0.02*	0.02*	0.02**	0.02**	0.01*	0.01	0.00	0.00
	(0.543)	(0.561)	(0.842)	(0.982)	(0.029)	(0.025)	(0.002)	(0.004)	(0.030)	(0.075)	(0.713)	(0.693)
Female	0.05*	0.05*	0.04	0.04	−0.06*	−0.06*	−0.12***	−0.13***	−0.27***	−0.27***	0.02	0.02
	(0.037)	(0.035)	(0.100)	(0.104)	(0.024)	(0.024)	(0.000)	(0.000)	(0.000)	(0.000)	(0.304)	(0.302)
Some college	−0.00	−0.00	0.00	−0.00	0.09**	0.09**	0.03	0.03	0.06	0.05	0.04	0.04
	(0.928)	(0.921)	(0.927)	(0.925)	(0.007)	(0.008)	(0.299)	(0.381)	(0.080)	(0.143)	(0.143)	(0.148)
College	−0.07	−0.07	−0.06	−0.06	0.17***	0.17***	0.02	0.01	0.08*	0.06	−0.03	−0.04
	(0.062)	(0.053)	(0.143)	(0.088)	(0.000)	(0.000)	(0.681)	(0.861)	(0.039)	(0.093)	(0.311)	(0.266)
College graduate	−0.01	−0.01	0.01	−0.00	0.24***	0.24***	0.11*	0.10*	0.20***	0.19***	−0.03	−0.03
	(0.808)	(0.795)	(0.884)	(0.970)	(0.000)	(0.000)	(0.018)	(0.029)	(0.000)	(0.000)	(0.451)	(0.425)
White	0.11**	0.11**	0.05	0.05	0.08	0.08	0.05	0.05	0.07	0.07	0.05	0.05
	(0.004)	(0.004)	(0.245)	(0.269)	(0.070)	(0.067)	(0.270)	(0.278)	(0.092)	(0.093)	(0.193)	(0.193)
Black	0.08	0.08	−0.01	−0.01	−0.11	−0.11	−0.11*	−0.11*	−0.07	−0.07	0.06	0.06
	(0.110)	(0.103)	(0.823)	(0.831)	(0.061)	(0.062)	(0.037)	(0.039)	(0.197)	(0.218)	(0.222)	(0.207)

(Continues)

TABLE 1 (Continued)

Variables	90 Days update		Inform in-network		Hold harmless		Fine insurers		Allow to sue		Conduct audits	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Hispanic	0.05	0.04	0.00	0.00	0.04	0.04	−0.01	−0.01	−0.00	0.00	0.04	0.04
	(0.318)	(0.350)	(0.945)	(0.974)	(0.469)	(0.481)	(0.836)	(0.820)	(0.993)	(0.995)	(0.356)	(0.382)
Age	−0.01***	−0.01***	−0.00***	−0.00**	0.00**	0.00**	−0.01***	−0.01***	−0.02***	−0.02***	−0.00***	−0.00***
	(0.000)	(0.000)	(0.001)	(0.002)	(0.008)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	3.19***	3.19***	3.03***	3.02***	2.03***	2.03***	2.67***	2.67***	2.93***	2.92***	3.06***	3.06***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	10,595	10,614	10,592	10,611	10,593	10,612	10,579	10,598	10,593	10,612	10,609	10,628
R^2	0.10	0.10	0.04	0.04	0.07	0.07	0.07	0.07	0.14	0.14	0.08	0.08

Note: p values in parentheses.

$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

$p < 0.001$). Our findings regarding our political variables were very much in line with our expectations. For one, Republicans consistently opposed federal action across all models (0.14 to 0.20, $p < 0.001$). Conversely, Democrats were consistently more supportive of federal action (0.20–0.27, $p < 0.001$). At the same time, trust in Congress was correlated with increases in support across all six policies (0.06–0.11, $p < 0.000$). Findings for political knowledge were statistically significant in six of the 12 models, but once more inconsistent. Women were more supportive of 90-day updates (0.05, $p = 0.037$) but less supportive of holding patients harmless (−0.06, $p = 0.024$) fining insurers (−0.12, $p < 0.001$), and allowing patients to sue (−0.27, $p < 0.001$). All other variables were also inconsistently significant.

Our analysis of those respondents who experienced a problem provide nuance for our understanding of the predictors of federal policy support Table 2. Experiencing major financial problems as a result of provider directory inaccuracies is strongly significant for all policies (Figure 3), except holding patients harmless (0.20–0.37, $p < 0.003$). The same pattern held for respondents having taken action in response to a negative experience with provider directories was also consistently associated with increased support (0.11–0.24, $p < 0.020$). At the same time, even minor financial problems were positive predictors for imposing fines, allowing consumers to sue, and federal audits (0.11–0.23, $p < 0.048$). Interestingly, experiencing major health problems was only significant for holding patients harmless (0.17, $p = 0.039$) and allowing patients to sue (0.17, $p = 0.040$), whereas minor health problems increased support for fines (0.12, $p = 0.036$) and suing (0.21, $p = 0.000$). We found no effects for negative effects on care access with the exception of being forced into an emergency department and being held harmless, which was negatively signed (0.25, $p = 0.022$). Findings were also consistent with expectations for Democrats (0.15–019, $p < 0.011$) and Republicans (0.14–0.22, $p < 0.035$) once again with the holding harmless exception. Findings for trust in Congress were also as expected (0.08–0.10, $p < 0.007$).

DISCUSSION

Today, most Americans are subject to managed care arrangements when accessing medical care. In this process, consumers have to rely on the provider directories provided by their carrier to determine where they can access care within their network. However, a number of studies relying on secret shopper approaches or administrative data have found that these directories often are highly inaccurate(Burman & Haeder, 2022b, 2022c; Burman et al., 2023; Haeder et al., 2016). These inaccuracies may potentially pose substantial challenges to consumers seeking to access care. We fielded a nationally survey to assess the extent of the problems for consumers, what specific problems they encountered, how it affected their access to care as well as their health and finances, and whether they took steps to complain about their experience. We were also interested in whether they supported federal policy action on the issue of provider networks.

Overall, we found that almost half of all Americans used a provider directory “in the last year” to search for medical providers. When they did so, they frequently encountered problems. While a majority of Americans were able to overcome this problem quickly or a majority confronted various challenges as a results of the inaccuracies. This included about three in 10 respondents who faced some delays which invariable imposed certain time, compliance, and psychological costs related to navigating their treatment and one in 10 respondents who went to urgent care, a suboptimal outcome from a care and financial perspective. Lastly, two in 10 respondents had to either go out-of-network, to the ED, or forgo care altogether. Unsurprisingly, these problems created problems for some consumers in the form of health or financial problems. Again, while many Americans were able to overcome these challenges, a substantial minority was suffering from the effects

TABLE 2 OLS estimates for respondents' support for various federal policies changes, only respondents who experienced a problem with provider directories.

Variables	(1) 90 Days update	(2) Inform in-network	(3) Hold harmless	(4) Fine insurers	(5) Allow to sue	(6) Conduct audits
Minor Health Effect	0.02	0.06	0.09	0.12*	0.21***	0.04
	(0.707)	(0.238)	(0.148)	(0.036)	(0.000)	(0.421)
Major health effect	0.05	−0.04	0.17*	0.11	0.17*	0.01
	(0.508)	(0.636)	(0.039)	(0.183)	(0.040)	(0.926)
Minor financial effect	0.02	0.10	0.03	0.23***	0.11*	0.11*
	(0.768)	(0.052)	(0.579)	(0.000)	(0.047)	(0.022)
Major financial effect	0.21**	0.27***	0.10	0.37***	0.27***	0.20**
	(0.002)	(0.000)	(0.224)	(0.000)	(0.000)	(0.002)
Sought care outside of network	−0.00	−0.25*	0.06	−0.12	−0.05	0.01
	(0.998)	(0.024)	(0.628)	(0.313)	(0.552)	(0.888)
Forwent care	0.08	0.11	0.01	0.02	−0.09	0.09
	(0.309)	(0.176)	(0.900)	(0.779)	(0.229)	(0.178)
Went to emergency department	−0.08	−0.02	−0.25*	−0.13	−0.10	0.00
	(0.362)	(0.778)	(0.022)	(0.146)	(0.270)	(0.984)
Took any action	0.18***	0.11*	0.05	0.20***	0.24***	0.12**
	(0.000)	(0.019)	(0.360)	(0.000)	(0.000)	(0.007)
Republican	−0.15*	−0.14*	−0.06	−0.20**	−0.18**	−0.22***
	(0.027)	(0.034)	(0.377)	(0.003)	(0.008)	(0.000)
Democrat	0.19***	0.19***	0.16**	0.15*	0.17**	0.16**
	(0.000)	(0.000)	(0.006)	(0.010)	(0.005)	(0.001)
Political knowledge	−0.05**	−0.01	0.06**	0.00	0.01	−0.03
	(0.002)	(0.620)	(0.001)	(0.812)	(0.666)	(0.094)
Trust in congress	0.09***	0.09***	0.10**	0.08**	0.09**	0.10***
	(0.001)	(0.001)	(0.003)	(0.006)	(0.003)	(0.000)
Health	−0.08**	−0.08**	−0.01	−0.01	0.04	−0.03
	(0.003)	(0.004)	(0.780)	(0.678)	(0.160)	(0.185)
Chronic conditions	−0.10*	−0.09	−0.05	0.02	−0.01	−0.09*
	(0.029)	(0.076)	(0.350)	(0.740)	(0.828)	(0.045)
Disability	0.05	−0.00	0.06	−0.06	−0.04	0.00
	(0.273)	(0.968)	(0.323)	(0.248)	(0.432)	(0.930)

TABLE 2 (Continued)

Variables	(1) 90 Days update	(2) Inform in-network	(3) Hold harmless	(4) Fine insurers	(5) Allow to sue	(6) Conduct audits
Medicare	−0.04	−0.02	0.07	−0.08	−0.04	0.13
	(0.713)	(0.854)	(0.526)	(0.479)	(0.678)	(0.163)
Medicaid	0.07	0.08	−0.04	−0.13	−0.08	0.08
	(0.473)	(0.442)	(0.712)	(0.240)	(0.438)	(0.424)
Employer-Sponsored insurance	0.06	0.16	0.15	0.05	−0.01	0.15
	(0.513)	(0.110)	(0.196)	(0.656)	(0.922)	(0.118)
Individual market	0.16	0.04	0.11	−0.05	−0.17	0.16
	(0.128)	(0.737)	(0.391)	(0.646)	(0.143)	(0.113)
Income	−0.01	−0.02	−0.00	0.00	0.01	−0.02
	(0.286)	(0.161)	(0.941)	(0.943)	(0.440)	(0.143)
Female	0.08	0.03	−0.01	−0.17***	−0.26***	0.05
	(0.066)	(0.480)	(0.911)	(0.001)	(0.000)	(0.245)
Some college	−0.12	−0.12	−0.02	−0.09	0.09	−0.02
	(0.055)	(0.078)	(0.817)	(0.201)	(0.180)	(0.703)
College	−0.20**	−0.17*	0.07	−0.16*	−0.01	−0.16*
	(0.005)	(0.024)	(0.386)	(0.045)	(0.905)	(0.017)
College graduate	−0.07	−0.11	0.21*	−0.06	0.12	−0.14
	(0.385)	(0.228)	(0.030)	(0.510)	(0.180)	(0.079)
White	0.12	0.10	0.11	0.03	0.05	−0.01
	(0.083)	(0.211)	(0.197)	(0.752)	(0.540)	(0.857)
Black	0.15	0.01	−0.04	−0.16	−0.10	−0.04
	(0.077)	(0.889)	(0.723)	(0.109)	(0.306)	(0.588)
Hispanic	0.09	0.01	0.09	−0.11	−0.10	−0.04
	(0.260)	(0.919)	(0.400)	(0.292)	(0.303)	(0.617)
Age	−0.00**	−0.00	0.01***	−0.00**	−0.02***	−0.00
	(0.008)	(0.513)	(0.001)	(0.010)	(0.000)	(0.251)
Constant	3.42***	3.14***	1.92***	2.81***	2.73***	3.23***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2706	2702	2706	2702	2708	2711
R^2	0.12	0.08	0.07	0.14	0.24	0.09

Note: *p* values in parentheses.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

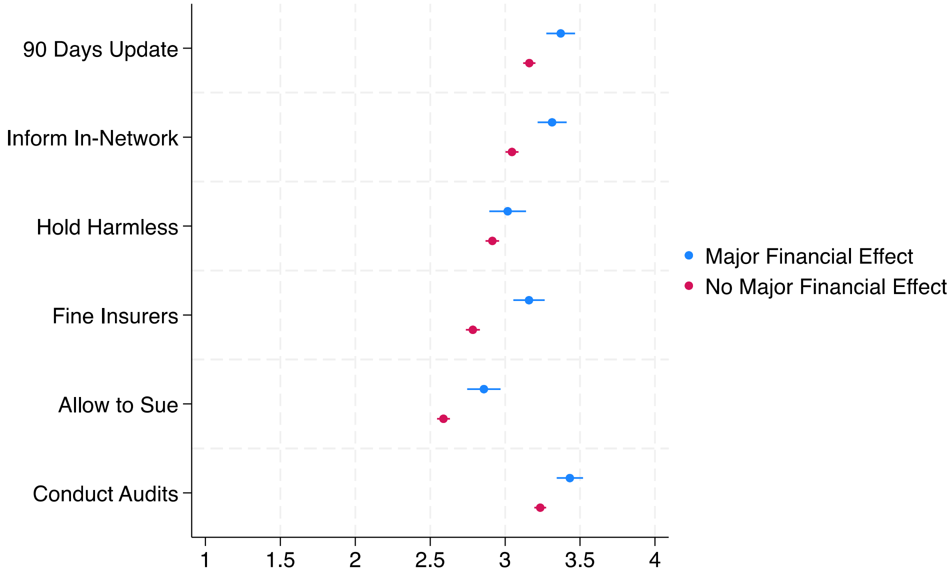

FIGURE 3 Effect of experiencing major financial problems as a result of provider directory inaccuracies across the various policies.

either in the form of deteriorating health, finances, or both. Lastly, only small majority of individuals suffering from these problems took action to remedy the situation such as filing complaints to their insurer.

Moreover, we were interested whether Americans support federal action to improve provider directory accuracy and whether these negative experiences shape Americans' perceptions of potential policy solutions. To do so, we provided them with six specific policy proposals at the federal level; three of these were recently enacted as part of the 2021 Consolidated Appropriations Act. Overall, we found that a large majority of Americans would like to see the federal government take steps to ensure more accurate provider directories, with five policies attracting the support of nearly two in three Americans and three policies even finding support from four in five Americans. These large percentages for federal action on health policy are remarkable given the highly partisan nature of health policy in general.

When we assessed whether and how respondents' experiences with provider directories translate into support for federal policy actions, we found that while experiencing problems with provider directories at times was a predictor of support, that was not consistently the case. Instead, we found that consistent and substantial driver of support was experiencing major financial problems as a result of provider directory inaccuracies, and, to a more limited degree, experiencing even minor financial or different degrees of health problems. We also found that particularly negative experiences like being forced to seek care outside one's network or even forgoing care altogether generally did not correlate with support for federal action. Lastly, standard political variables continued to shape support and opposition to federal action, with Republicans consistently less supportive federal actions while the opposite holds for Democrats. Moreover, trust in Congress appeared to be an important predictor of support.

Our findings here add to a growing literature highlighting the challenges in accessing medical care as consumers are forced to navigate provider networks. The vast majority of these works rely on secret shopper surveys or administrative data to ascertain the degree of inaccuracies associated with provider directories. However, we know very little about whether how these apparent inaccuracies affect consumers and whether these effects are disproportionate for some Americans. At the same time, we know virtually nothing about Americans' support for various policy solutions in general or whether their poor experiences in particular affect support. Our analyses here overcome these shortcomings add important findings to the literature. Future work should seek to further explore the accompanying time, compliance, and psychological costs associated with navigating treatment. Crucially, analyses should focus on the ways in which these costs might be felt more acutely by some populations than others. Importantly, because of the lack of consistent correlates in our analyses, in-depth quantitative interviews of individuals struggling to access care due to provider directory issues may provide crucial insights.

LIMITATIONS

There are a number of limitations to our study. First, the standard limitation of survey research in general and online survey research in particular apply. Second, our approach is highly quantitative and presents a broad assessment of issues with provider directories. However, these experiences maybe highly nuanced and unique for individuals. Future research should further explore the detailed experiences of consumers struggling with provider networks. Third, we conducted our survey during the time of the coronavirus pandemic. It is not clear whether this may have affected perceptions and if so, how. Fourth, despite our brief introduction to the issue of provider networks and provider directories for respondents, the topic, like most healthcare topics, is complex. As a result, some respondents may not have been fully aware of our questions. Lastly, we restricted respondents to six relatively common policy proposals related to provider network inaccuracies. We cannot assess their support for any additional proposals.

CONCLUSIONS

Our findings indicate that a substantial number of Americans experience inaccuracies of provider directories indicating that consumers are confronted with substantial problems when seeking providers from provider directories. These findings supplement and confirm existing findings from administrative data. While consumers often were able to seek alternative sources of care quickly, for a substantial subset of Americans, the effects were more detrimental with major health or financial consequences. Americans at times took action seeking to correct the situation. Our findings here, together with previous findings about the ubiquity of provider directory inaccuracies, indicate that policymakers should become more aggressive in protecting consumers from inaccuracies. Importantly, as we also show, provider directory inaccuracies are not mere technicalities that pose inconveniences. For some consumers, they create substantial burdens that effect both their health and financial well-being. Some policymakers seem to have to become more aware of these consumer challenges. For example, the Biden administration has initiated rulemakings for both the Medicare Advantage program (US Department of Health & Human Services, 2022a) and the ACA marketplaces (US Department of Health & Human Services, 2022b). However, additional actions at the state-level as well as an eye towards enforcement of existing and new regulations will be crucial (Burman & Haeder, 2021). Importantly, Americans seem eager for the federal government to move beyond the policies recently adopted.

ETHICS STATEMENT

Approval for this study was obtained from the appropriate institutional review board. This study followed the policies of the Committee on Public Ethics (COPE).

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ENDNOTE

[1] We also estimated models with all potential outcomes. None of the outcomes approached significance and all other variables were similar.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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RESEARCH ARTICLE

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Sex trafficking in the Caribbean: A comparative analysis of policy responses in the Dominican Republic and Trinidad and Tobago

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Abstract

Human trafficking poses a global humanitarian and public health concern, particularly affecting women and migrants in many countries. This article assessed existing policies and laws addressing human trafficking and the sexual exploitation of women in the Caribbean nations of the Dominican Republic and Trinidad and Tobago. It identified the legislative frameworks and procedures for anti-trafficking efforts in the Dominican Republic and Trinidad and Tobago through a comprehensive review of academic literature and policy documents. The analysis focused on evaluating the successes and challenges in implementing these policies. Findings revealed that while both countries had established anti-trafficking laws, several structural, economic, social, and political barriers prevented effective interventions catering to the needs of vulnerable populations. Based on the analysis, recommendations were made to mitigate country and regional human trafficking, with a focus on the protection of women. Key recommendations include enhancing economic opportunities, strengthening social protections, and improving the criminal justice system's capacity to combat trafficking. A reduction in trafficking and sexual exploitation in the Dominican Republic and Trinidad and Tobago requires comprehensive policy implementation strategies aimed at protecting and supporting at-risk native and migrant populations, providing sound economic opportunities and social protection, and strengthening effective legal responses to combat trafficking.

KEYWORDS

Caribbean, health policy, human trafficking, legislative reform, migrants, population health, refugee health, women

Key points

- Strategically planned and regionally specific policy is necessary to mitigate the human trafficking crisis in the Caribbean.
- The capacity of criminal justice systems and victim care services must be expanded to reduce the adverse health and social effects associated with trafficking.
- Inequities in policies and procedures regarding migrant populations, gender equality, and trafficking exacerbate the vulnerability of women.

INTRODUCTION

Human trafficking is a multifaceted public health issue that is influenced by structural inequalities, sociocultural values, geographical location, and political instability. Therefore, evidence-based policy reform is a top priority in ending this global crisis. Trinidad and Tobago and the Dominican Republic are countries in the English and Spanish-speaking Caribbean, respectively—a region encompassing the archipelago of islands off the coast of Florida to South America (see Figure A1, Appendix A). Geographical locations, various inequities (economic, political, and social), and high levels of migration have made them primary points for multiple forms of trafficking (John, 2019). In the Caribbean, most trafficking victims are women and underage girls, and sexual exploitation is the most common form of trafficking (United Nations Office on Drugs and Crime, 2022; see Figure A2, Appendix A). This study aims to identify and analyze human trafficking crises, factors influencing crises, and current policies in Trinidad and Tobago and the Dominican Republic to provide recommendations to mitigate trafficking and protect vulnerable populations. Assessing existing policies in these countries revealed a lack of alignment with international best practices and evidence-based approaches, highlighting necessary policy reforms to enhance prevention and response efforts. The influence of cultural, geographical, and structural factors on the prevalence of human trafficking in the Dominican Republic and Trinidad and Tobago informs targeted policy interventions aimed at combating this issue effectively.

Human trafficking with the intent of sexual exploitation is a significant public health issue; it further complicates the exploitation of already vulnerable populations (Recknor et al., 2022) and has been found to fuel transnational crime organizations, affect economic stability, disrupt labor markets, and increase the occurrence of harmful and illegal activities (United States Department of State, 2017). Common health issues affecting trafficking victims include sexually transmitted diseases, anxiety, depression, posttraumatic stress disorder, substance abuse, and malnutrition (Gardner, 2023; Pérez-Figueroa et al., 2020). While the global burden of disease caused by trafficking has not been studied extensively, existing research has shown that trafficking contributes significantly to mortality and morbidity (Recknor et al., 2022).

In recent years, the Dominican Republic and Trinidad and Tobago have experienced substantial increases in migrant populations (Migration Data Portal, 2023). Many migrants, especially women, fall victim to trafficking (United Nations Women, 2021a). The political and economic unrest in the neighboring country of Venezuela, as well as other Latin American countries, has caused women to become increasingly vulnerable to recruitment by human traffickers (Venezuela Investigative Unit, 2021). In Venezuela, corruption among government officials, economic mismanagement, inflation, and poor healthcare have led to high rates of violence, poverty, crime, and food insecurity, leading to what has been considered one of the world's most significant displacement crises (Paulino-Ramírez et al., 2023).

In 2021, approximately 172,500 Venezuelans migrated to Trinidad and Tobago, the Dominican Republic, Curaçao, and Aruba, with the Dominican Republic receiving the most migrants (Migration Data Portal, 2023). Complicity among immigration and border control and agreements between trafficking rings, private beach owners, and government officials facilitate the illegal entry of migrants into neighboring islands (Venezuela Investigative Unit, 2021). Within the Dominican Republic and Trinidad and Tobago, women are vulnerable to high rates of gender-based violence (Johns Hopkins University and Centro para la Observacion Migratoria y Desarrollo Social en el Caribe, 2017; United Nations Women, 2023) and have limited access to opportunities for professional employment (United Nations Development Programme, 2021; United States Agency for International Development Dominican Republic, 2013); ultimately, these effects of gender inequality are exacerbated for migrant women. Traffickers disproportionately target female migrants. Since the coronavirus disease 2019 (COVID-19) pandemic, women have been prompted to take more dangerous routes of migration, thereby increasing the occurrence of gender-based violence and sex trafficking (Francis-Blackman & Andrew, 2022; United Nations Women, 2021a). Migrant women are often enticed by offers for work and educational opportunities abroad but find themselves becoming victims of false promises and, as a result, are sexually, physically, and psychologically abused (Venezuela Investigative Unit, 2021; Waldropt-Bonair et al., 2013).

Monitoring efforts: Human trafficking in the Caribbean

The United States (US) trafficking in persons (TIP) report is an extensive monitoring and review system for international anti-human trafficking efforts. TIP reports are published annually and classify countries into four tiers based on anti-trafficking efforts made by national governments. These reports aim to engage foreign governments in human trafficking prevention and ultimately improve public health outcomes of vulnerable populations worldwide by identifying countries' susceptibility to trafficking and encouraging anti-trafficking efforts. According to the Global Report on TIP by the United Nations Office on Drugs and Crime in 2022, 83% of females were trafficked, and 73% of these individuals were trafficked for purposes of sexual exploitation (United Nations Office on Drugs and Crime, 2022). In 2023, the Dominican Republic and Trinidad and Tobago were ranked under the Tier 2 Watchlist, indicating that these countries do not meet the minimum level of standards in identifying, preventing, and eliminating trafficking (United States Department of State, 2023a, 2023b).

Under the United Nations Office on Drugs and Crime, a project entitled “Transforming Alerts into Criminal Justice Responses to Trafficking in Persons within Migration Flows” has been implemented in the Dominican Republic, Trinidad and Tobago, and Aruba to address the trafficking of migrants and strengthen criminal justice systems by using a victim-centered approach (United Nations Office on Drugs and Crime, 2023). While the Dominican Republic and Trinidad and Tobago have increased efforts to monitor and prevent human trafficking, there remain inequities in the criminal justice systems and a lack of conviction and accountability toward traffickers (United States Department of State, 2023a, 2023b). The Venezuelan displacement crisis prevails due to poor economic and educational opportunities (Paulino-Ramírez et al., 2023). Women are found to experience increased vulnerability to trafficking and sexual exploitation, so there is an urgent need for the two Caribbean countries to improve their human trafficking prevention and response efforts (Cone & Teff, 2019). By extension, stakeholders must collectively make a clarion call to all Caribbean governments to join forces and address human trafficking in their respective nation-states.

METHODS

To define and analyze the trafficking crises and current anti-trafficking policies and efforts in the Dominican Republic and Trinidad and Tobago, academic articles, government documents, and research reports by international organizations were reviewed. Academic literature analyzing trafficking, specifically in the Dominican Republic and Trinidad and Tobago, was scarce, warranting analyses based predominantly on US TIP reports. All collected documents were used to assess the effectiveness and limitations of current mechanisms for anti-trafficking policies and efforts, promotion of trafficking awareness, and quality of victim care. The analysis further sought to identify barriers and successes associated with the implementation of anti-trafficking policies and laws within the public health framework to provide recommendations on how to prevent trafficking and the protection of vulnerable populations.

Role of the US TIP report

The US TIP report monitors, evaluates, and classifies the severity of human trafficking within countries and the adequacy of government intervention. TIP reports include information on the prosecution of traffickers, protection of victims, trafficking prevention, general prioritized recommendations, and a country trafficking profile. The US TIP is the world's most comprehensive resource for governmental anti-trafficking efforts (United States Department of State, n.d.). Countries are classified into one of four tiers (Tier 1, Tier 2, Tier 2 Watchlist, and Tier 3) depending on whether they fully comply with all aspects of the US Trafficking Victims Protection Act (John, 2019), with Tier 1 successfully meeting the minimum standards of the Trafficking Victims Protection Act. Twelve TIP reports on the Dominican Republic and Trinidad and Tobago published between 2018 and 2023 (which reviewed efforts made in the previous year) were used to evaluate the effectiveness of policies and laws over the last 5 years. Additional reports published by international organizations concerning human trafficking, sexual exploitation, demographics of trafficking victims, and other data were used to evaluate the scope of the issue and the effectiveness of anti-trafficking policies and laws in these regions.

Identifying the scholarly literature

Seven articles from academic journals and international organizations were retrieved using Google Scholar with the keywords and Boolean operators in Table A1 in the appendix. Titles, abstracts, and discussion sections were used to evaluate article relevance to the present study, and after searches, the selected articles were collated. Articles were included if available in English and focused on sex trafficking, if they had information on the Dominican Republic and Trinidad and Tobago, and if they were published between 2012 and 2023. Articles were excluded if they did not contain relevant information on human trafficking, focused on other forms of trafficking such as forced labor, researched other Caribbean islands, or were not in English.

Findings

Of the seven studies and 12 US TIP reports selected for review, it was found that both countries enforce laws against human trafficking and have dedicated task forces to identify, prevent, and intercept trafficking networks (United States Department of State, 2023a, 2023b). However, government corruption, uncontrolled migration from neighboring countries, and social inequities further magnify each country's human trafficking crisis. The Dominican Republic and Trinidad and Tobago were both identified as destination, source, and transit countries for the sex trafficking of women (Murray, 2020; Waldropt-Bonair et al., 2013). High rates of illegal migration from nearby countries such as Venezuela, Haiti, Colombia, and additional extra-regional countries (Nakhid & Welch, 2017), along with an absence of adequate laws protecting migrant and refugee populations, have been linked to increased sex trafficking in both the Dominican Republic and Trinidad and Tobago.

Vulnerability of migrants

To understand the human trafficking crisis in the Dominican Republic and Trinidad and Tobago, it is necessary first to understand the various push and pull factors influencing migrants and refugees to enter both countries. Venezuelans comprise a large portion of the migrant population in the Dominican Republic and Trinidad and Tobago (John, 2019; Paulino-Ramírez et al., 2023). Paulino-Ramírez et al. (2023) investigated the motives behind migration from Venezuela to the Dominican Republic and Trinidad and Tobago. Venezuela's economic collapse, political instability, social unrest, and lack of necessities such as food, healthcare, and personal safety were factors that pushed Venezuelans out of the country. While the Dominican Republic and Trinidad and Tobago offer better economic prospects, employment opportunities, relative stability, and perceived safety were identified as pull factors (Paulino-Ramírez et al., 2023). Dating back to 2000, Venezuela has experienced socioeconomic and political crises directly resulting in increased poverty levels and overall poor quality of life, prompting an estimated 6 million persons to migrate to other countries, with the majority choosing to locate in nearby Caribbean countries (Paulino-Ramírez et al., 2023). Despite evidence of large numbers of Venezuelans entering Trinidad and Tobago both legally and illegally, government officials have insisted that they cannot support refugee populations due to limited resources and the small geographic size of Trinidad and Tobago (Herbert, 2021). In a survey among Venezuelans in Trinidad and Tobago, most respondents moved away from Venezuela due to an inability to afford to live there (Herbert, 2021), highlighting the economic disenfranchisement of this group leading them to trafficking schemes.

The Dominican Republic receives many migrants from Venezuela and the neighboring country of Haiti. Similar to Venezuela, Haiti has experienced longtime political and socioeconomic instability and significant displacement of persons (Bass, 2019). The Dominican Republic's relatively more robust economy than Venezuela and Haiti makes it an attractive destination for migrants seeking opportunities. Despite challenges in income inequality and social disparities, the Dominican Republic offers opportunities in agriculture, construction, tourism, and informal jobs that draw migrants from neighboring countries (Bass, 2019). Haitian women are lured to the capital of the Dominican Republic, which has been described as offering "promises of higher wages, educational opportunities, and a general advancement in quality of life" (Bass, 2019, p. 18). The transportation of Haitians across the border has become an illicit, underground business involving various parties and sectors of the government, all of which make the trafficking of thousands possible (Bass, 2019). The US Department of State previously recognized the trafficking of Haitians as a unique case due to the high number of Haitian persons trafficked and the geographical, political, and sociocultural influences affecting the crisis (Bass, 2019).

Both the Dominican Republic and Trinidad and Tobago have seen a significant increase in incoming migrants, and this population cannot continue to be ignored. Most migrants enter the two countries illegally, suggesting the border control of both countries is inadequate (Medford, 2022; Nakhid & Welch, 2017). While the Dominican Republic and Trinidad and Tobago cannot control the political and economic instability present in neighboring countries, government officials must better respond to the displacement of persons. Border protection must be strengthened, and migrants must be provided with legal routes of entry and work, as it is evident that migrants are pulled to islands like the Dominican Republic and Trinidad and Tobago for better economic opportunities (Venezuela Investigative Unit, 2021). Ultimately, a lack of protective legislation for migrants leaves them susceptible to various forms of trafficking and specifically leaves women highly susceptible to sex trafficking.

Trinidad and Tobago: Anti-Trafficking policies and measures

In 2011, officials in Trinidad and Tobago criminalized sex trafficking. The TIP Act No. 14 prohibits trafficking and provides extensive protection to victims (United States Department of State, 2018b; Waldropt-Bonair et al., 2013). A counter-trafficking unit (CTU) was also identified as the primary entity in anti-trafficking efforts (United States Department of State, 2023b). Between 2018 and 2020, Trinidad and Tobago was classified under Tier 2, and in 2021, the country was demoted to the Tier 2 Watchlist due to a decrease in investigations and identification of victims, a consistent lack of convictions, and persistent corruption and complicity of government officials in trafficking schemes (United States Department of State, 2021b).

US TIP reports published between 2018 and 2023 detail the investigation and prosecution of numerous suspected traffickers (United States Department of State, 2018b, 2019b, 2020b, 2021b, 2022b, 2023b). However, the 2023 report states that no trafficker has ever been convicted since the enactment of Trinidad and Tobago's 2011 TIP Act. Poor collection and maintenance of evidence in trafficking investigations were identified as a considerable weakness, and the CTU described being overwhelmed by the number of tips, requests, and referrals received (United States Department of State, 2023b). TIP reports also consistently describe the notable involvement of public officials (immigration, customs, police) and government officials in the trafficking and sexual exploitation of women, as well as significant delays in the prosecution of traffickers (United States Department of State, 2020b,2023b). Corruption present within these official bodies deters anti-trafficking efforts and increases the overall occurrence of trafficking (United States Department of State, 2022b). While investigations have been initiated into police officers and immigration officials complicit in trafficking, none have been prosecuted or convicted (United States Department of State, 2022b).

The government of Trinidad and Tobago and nongovernmental organizations (NGOs) present within the country provide care and various forms of assistance to trafficking victims, with many victims being placed in shelters. However, shelter staff and security, primarily volunteers, were described as inadequate. Inadequate staff and security and a lack of training in the identification and handling of victims of sexual exploitation have led to low-quality victim care (United States Department of State, 2020b, 2023b). TIP reports consistently described a lack of protection and confidentiality for victims and witnesses participating in criminal trials, and foreign trafficking victims were frequently detained for violation of immigration laws despite trafficking indicators being evident among victims (United States Department of State, 2023b).

Between 2018 and 2020, US TIP reports detailed Trinidad and Tobago's use of trafficking awareness campaigns through various platforms to educate the public; however, reports published in 2021 and 2023 do not mention such efforts (United States Department of State, 2018b, 2019b, 2020b, 2021b, 2023b). The omission of trafficking awareness campaigns in recent reports suggests a lack of consistency in anti-trafficking efforts, which may result from a refusal to accept or an inability to apply recommendations set forth by the US State Department. Generally, there has been a lack of consensus among countries on defining and applying human trafficking laws, the effectiveness of anti-human trafficking policies, and the quality of the evidence necessary to identify the problem (Kempadoo, 2016).

Dominican Republic: Anti-Trafficking policies and measures

In 2003, the government of the Dominican Republic criminalized some forms of sex trafficking and all forms of labor trafficking (United States Department of State, 2018a). However, the law is described as inequitable due to child sex trafficking, requiring “a demonstration of force, fraud, or coercion to constitute a child sex trafficking crime” (United States Department of State, 2023a). The Specialized Prosecutor's Office against the Smuggling of Migrants and Trafficking in Persons (PETT) and the National Police Anti-Trafficking Unit (ATU) are identified as the primary forces in anti-trafficking efforts in the Dominican Republic (United States Department of State, 2023a). Between the 2018 and 2022 reports, a total of 80 defendants were convicted under the trafficking law (United States Department of State, 2018a, 2019a, 2020a, 2021a, 2022a, 2023a). However, reports identified corruption among law enforcement and unjust treatment of Haitian trafficking victims. Migrants and individuals of Haitian descent were reported to experience discrimination from Dominican authorities, with some cases not being pursued or investigated. Furthermore, there was little collaboration between Haitian and Dominican authorities despite Haitians making up a large portion of trafficking victims in the Dominican Republic (Murray, 2020; United States Department of State, 2023a).

In 2023, the Dominican Republic was demoted to the Tier 2 Watchlist due to insufficient funding and resources allocated to anti-trafficking efforts and a refusal to amend child sex trafficking laws. Additionally, a new national trafficking action plan remained incomplete, leading to frustrated efforts. The TIP 2023 report also identified inequities in the screening of migrant populations, a lack of justice for trafficking victims, and a decreased number of investigations and prosecutions compared to previous years (United States Department of State, 2023a).

The government of the Dominican Republic heavily relies on NGOs to provide trafficking victims with assistance, and similarly to Trinidad and Tobago, shelters housing victims were inadequately staffed and had a limited capacity to support victims (United States Department of State, 2023a). Without adequate care for trafficking victims, the adverse psychological and reproductive health effects and economic vulnerability associated with sexually exploited victims are left unaddressed, likely leading to poorer health outcomes. In 2019, campaigns aimed at raising awareness of trafficking were produced for the public using different methods, including billboards, conferences, radio, and more; however, in 2023, several campaigns were described to be discontinued (United States Department of State, 2019a, 2023a). The government also offers a 24-h national trafficking hotline with additional hotlines available in other languages, eliciting numerous cases. However, it is unclear if these calls are thoroughly investigated (United States Department of State, 2021a, 2023a).

DISCUSSION

A review of scholarly articles and US TIP reports published within the last 5 years found that both governments have systems for investigating and prosecuting traffickers. Authorities have implemented trafficking awareness campaigns and have offered support and protection for victims. However, complicity in trafficking among government officials, immigration officers, and other law enforcement poses a significant barrier to equitable and efficient investigation and conviction of traffickers. In addition, support services do not adequately serve victim populations, likely leading to unaddressed health issues and magnification of this public health issue. Insufficient laws regarding the rights of migrants also seem to facilitate the trafficking crisis, as migrants do not have rights to housing and work and often fear approaching law enforcement for help. There was a noticeable gap in the academic literature on sex trafficking within Caribbean countries despite the prevalence recorded and its direct relation to the present displacement crisis in Venezuela. Furthermore, scholarly literature and US TIP reports lacked detail on the trafficking of local women in the Dominican Republic and Trinidad and Tobago.

Policy effectiveness

As shown in Table A2 in the Appendix, the criminal justice system in the Dominican Republic seems to be more proactive in identifying, investigating, prosecuting, and convicting trafficking. In the Dominican Republic, investigations were reported to be carried out by the ATU and the Attorney General, while in Trinidad and Tobago, the CTU is the sole body that leads investigations. Trinidad and Tobago may benefit from identifying a second body to help initiate investigations. Furthermore, between 2013 and 2019, it was reported that the Trinidad and Tobago police service received 484 reports of human trafficking, investigated 256, and charged 57 people; yet only nine out of 57 traffickers identified were committed to stand trial (Seemungal, 2023). While it is unclear why Trinidad and Tobago have yet to convict traffickers, their criminal justice system would benefit from considerable reform and reorganization, and evidence collection must be improved to help in the conviction of traffickers.

Notably, both countries have increased their cooperation and collaboration with international law enforcement, helping to protect vulnerable migrant populations from trafficking better (United States Department of State, 2023a, 2023b). In 2023, the government of the Dominican Republic granted Venezuelan migrants visas to facilitate social integration (United States Department of State, 2023a). This program granted over 14,000 Venezuelan migrants work and student visas, helping to reduce their vulnerability. Nevertheless, those of Haitian descent remain unable to attain legal status in the Dominican Republic, limiting access to jobs and housing and ultimately increasing the risk for trafficking (United States Department of State, 2023a). Trinidad and Tobago would benefit from implementing a similar program to protect vulnerable populations from trafficking better. However, visa programs must be equitable to protect all migrant populations regardless of background.

One unique initiative introduced by the government of Trinidad and Tobago was campaigns targeting young men to decrease the demand for commercial sex work (United States Department of State, 2023b), a significant step in preventing the sexual exploitation of women and lessening the demand for sex work. The two countries can learn from one another in their unique approaches to strengthening anti-trafficking efforts, as each country's initiatives identify different yet relevant factors that facilitate trafficking and ultimately have the potential to protect populations better within each country.

Barriers to adequate policies

Inadequate migration legislation and policy

High levels of migration from neighboring countries, primarily due to political and economic instability, remain a significant barrier to anti-trafficking efforts as this population has been identified as highly vulnerable (Paulino-Ramírez et al., 2023; United Nations Women, 2021a). Furthermore, restrictive immigration policies have been described as creating systems of oppression, aggravating economic needs, and heightening susceptibility to trafficking (Recknor et al., 2022). The Dominican Republic and Trinidad and Tobago must provide migrants with legal status and better protect their borders to regulate illegal entry. It is reported that some migrants were previously professionals within their home countries; however, without documents to support their legal status, they are unable to enter their formal job sector, prompting some to turn to sex work (Paulino-Ramírez et al., 2023). Additionally, many migrants are unable to access the criminal justice system out of fear of deportation and discrimination by authorities (Cone & Teff, 2019). Without proper systems and processes to provide migrants with legal status, migrants will continue to be victimized.

In Trinidad and Tobago, it is reported that refugee policies are present. However, no official legislation exists, leaving migrants with no legal right to work, no identification documents, and limited access to the educational and criminal justice systems (Cone & Teff, 2019; Nakhid & Welch, 2017). An estimated 20,000 Venezuelans are unregistered in Trinidad and Tobago, leaving many vulnerable to exploitation, which is evident in the increased trafficking of Venezuelan women and girls (Cone & Teff, 2019). Additionally, interagency collaboration, coordination, and information sharing between the CTU of Trinidad and Tobago and other relevant agencies was cited as poor (United States Department of State, 2023b). A lack of collaboration between the CTU, the Immigration Division, and the Coastal Guard may hinder anti-trafficking efforts, considering the critical role these stakeholders play in the monitoring and prevention of trafficking.

The Dominican Republic faces similar issues regarding the rights of migrants and Haitian persons, with over 100,000 Dominicans of Haitian descent without citizenship. Despite granting many Venezuelans visas, the Ministry of Interior reportedly refused Dominican citizenship to hundreds of persons of Haitian descent. It declined the renewal of residence and work permits for over 200,000 migrants and even Haitians who had already obtained legal status, further increasing risks for trafficking (United States Department of State, 2023a). Haitians were also not given adequate attention in anti-trafficking initiatives, and migrants were not sufficiently screened for trafficking before being deported despite evidence showing increased trafficking of the group (Murray, 2020; United States Department of State, 2020a). However, it is essential to note that the Dominican Republic and Haiti have a tumultuous history, undoubtedly affecting collaboration in anti-trafficking efforts (Bass, 2019).

Sex work industries: Financial and social aspects

Sex work and tourism in both countries are inextricably linked to sex trafficking as the demand to fill positions in brothels, strip clubs, and the streets is high, promoting the continuation of sex trafficking (Sharp, 2015). In the Dominican Republic, exotic dancing and sex work are legalized, making those who already have engaged in these types of work especially vulnerable to sex trafficking. In contrast, sex work is illegal in Trinidad and Tobago. However, the island has been identified as having the highest demand for prostitution compared with other English-speaking Caribbean islands, and high rates of solicitation by local men continue to drive this demand (Venezuela Investigative Unit, 2021).

The sex work industry in Trinidad and Tobago is described as both obvious and hidden from society, with the sex trade being found in almost every district of the country and police officers being complicit in trafficking. Many of those complicit in the recruiting, transporting, controlling, and purchasing of vulnerable persons work within the government or law enforcement, making it increasingly difficult to prevent trafficking (Francis-Blackman & Andrew, 2022; Venezuela Investigative Unit, 2021).

Determining those who are willingly participating in sex work and those who are coerced or deceived into prostitution can be difficult, thus creating issues in identifying victims of sex trafficking (Sharp, 2015). Additionally, migrant women who are victims of sex trafficking often avoid reporting crimes out of fear of deportation, poor treatment by law enforcement, and potential reprisals by traffickers (United Nations Women, 2021a). Research showed that police officers in Trinidad and Tobago often requested sexual favors in exchange for not arresting sex workers (Francis-Blackman & Andrew, 2022), further highlighting corruption among law enforcement and a significant lack of rights for sex workers.

In the Dominican Republic, it is estimated that between 60,000 and 100,000 women participate in sex work, with an estimated 30,000 to 70,000 Dominican women being trafficked and exposed to physical and sexual violence (Pérez-Figueroa et al., 2020). In Trinidad and Tobago, it is estimated that over 100,000 women have experienced one or more acts of physical and sexual violence (Pemberton & Joseph, 2018). Unfortunately, not much data have been collected on the number of women participating in sex work and being trafficked through and within Trinidad and Tobago. Difficulty capturing these data could be due to inadequate or infrequent data collection methods, limited resources, and increases in migrant populations (Pemberton & Joseph, 2018; Venezuela Investigative Unit, 2021).

Poverty, illiteracy, gender inequality, stigma, and discrimination are all associated with female sex work in the Dominican Republic. Additionally, higher drug use was associated with greater sexual risk-taking, furthering the magnitude of this public health issue (Pérez-Figueroa et al., 2020). In a recent study, a Venezuelan migrant in the Dominican Republic reported how she responded to an ad for a waitress but soon learned that she would have had to perform sexual acts to make money (Paulino-Ramírez et al., 2023). Because of her financial needs, she was more vulnerable to accepting sex work to provide for her family. Governments must address the financial needs and lack of opportunities for women to mitigate the need to enter sex work. Furthermore, governments need to consider the correlation between political and economic instability in neighboring countries and the susceptibility of women to be recruited or kidnaped into sex work.

Policy recommendations

Expanding economic opportunities for women

Most academic studies and US TIP reports retrieved rarely identified and analyzed the relationship between gender inequality and the human trafficking or sexual exploitation of women. In both the Dominican Republic and Trinidad and Tobago, significant gender inequities exist, with gaps in salary, unemployment rates, and access to the formal job sector (United Nations Development Programme, 2021; United States Agency for International Development Dominican Republic, 2013). Limited educational and employment opportunities and financial hardships have been identified as heightening persons' vulnerability to trafficking and were cited by victims as the origin of their trafficking (Klabbers et al., 2023). Creating job programs centered around women can not only prevent sex trafficking but also increase productivity, spur economic growth, and instill better outcomes among migrant and native women.

By recognizing the importance of women's empowerment to social and economic stability, several global policies implemented by other countries can be adopted by both Trinidad and Tobago and the Dominican Republic. For instance, Bangladesh has continuously ratified international commitments to women's rights and has successfully rolled out measures such as its National Women Development Policy. Along with the overall aim of women's advancement, one of the targets of the action plan is to “increase employment opportunities for the skilled and unskilled female workforce.” In addition, they have ensured that budgetary plans for all ministries are women-inclusive and responsive (Government of the People's Republic of Bangladesh, Ministry of Women and Children Affairs, 2011).

To address poverty and encourage women's involvement in sustainable development, the Islamic Development Bank established a Women's Empowerment Policy. It highlighted concepts such as gender equity, and the intention includes identifying and eliminating barriers to women's well-being in all sectors by relying on the pillars of access, mainstreaming, agency, and learning (Islamic Development Bank, 2019). The United Nations Women has piloted migration legislation in Mexico and the Philippines to limit women's vulnerabilities in migrating to other countries. By creating gender-responsive migration policies, the hope is to remove barriers and protect women's rights in their quest for meaningful employment beyond local borders (United Nations Women, 2017). Creating similar policies would be especially beneficial in the Dominican Republic and Trinidad and Tobago as they continue to receive large numbers of migrants.

Eliminating corruption among state officials and improving victim services

Corruption among government, immigration, and law enforcement officials was frequently reported and seemed to facilitate the trafficking crisis in both countries. As described by US TIP reports, both countries have repeatedly failed to hold officials accountable for their involvement in trafficking crimes, undoubtedly leading to a lack of trust between the public and criminal justice systems. NGOs and the US Department of State play a pivotal role in monitoring and preventing trafficking, allowing them to be well-versed in the unique issues experienced in the Dominican Republic and Trinidad and Tobago. The governments of both countries must enable NGOs and the US to play a more significant role in the investigation and prosecution of human trafficking rings and cases. Better coordination and collaboration with NGOs and the US Department of State can potentially reduce present biases, expand the capacity to prevent and investigate trafficking, improve the accountability of complicit officials, and help to restore trust in the criminal justice system.

Robust victim services are crucial in mitigating the health issues associated with trafficking, and both countries were consistently described as providing inadequate victim care. The United Nations Women recommends that staff in victim care facilities be trained in culturally appropriate and gender-responsive approaches and the implementation of long-term reintegration and rehabilitation support to prevent further re-trafficking (United Nations Women, 2021b). When the needs of trafficked victims were assessed, some critical themes identified in academic literature include building trust, providing comprehensive needs assessments, ensuring confidentiality, and increasing multiagency collaboration. Trafficked victims often experience feelings of guilt and shame, warranting the need for sensitive, thoughtful, and private approaches by both law enforcement and healthcare workers to allow victims to improve their autonomy and feel safe (Hemmings et al., 2016). Healthcare workers often, unknowingly, directly interact with and treat trafficking victims. This unique position necessitates enhanced training of healthcare workers in identification and assistance to trafficking victims and trauma-informed care (Klabbers et al., 2023; World Health Organization, 2023). Comprehensive needs assessments can identify long-term health problems in addition to immediate needs, which may be beneficial in minimizing long-term healthcare costs and promoting better overall health (Hemmings et al., 2016). Furthermore, the collaboration between social services, healthcare, and law enforcement is necessary to create efficient victim care and expand knowledge of victims' rights; poor communication between these bodies was cited as a barrier to coordinated care.

CONCLUSION

This study provides a basis to critically examine the multidimensional human trafficking crisis in the Caribbean as a whole. It provides an analysis of the present human trafficking policies and legislation in the Dominican Republic and Trinidad and Tobago and the related cultural, geographical, and structural factors influencing the existing human trafficking crises in each country. Both Trinidad and Tobago and the Dominican Republic have legislation dedicated to monitoring and preventing various forms of trafficking and annually have been able to identify trafficking victims. However, relevant, protective policies related to migrants, refugees, and asylum seekers must be implemented to protect this vulnerable population by effectively reducing and eliminating the incidence of regional trafficking and by adequately controlling and coordinating high levels of migration. Women are particularly susceptible to sex trafficking due to limited access to job opportunities and gender-repressive norms and stereotypes. Highly concerted efforts must be aimed at penalizing traffickers, including government personnel and private enterprise owners. Human trafficking is a global public health issue that requires multisectoral attention; countries must urgently build their human, financial, legal, and social capacity to empower, protect, and uplift their vulnerable citizenry.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

ETHICS STATEMENT

The present study does not include human subjects and is based exclusively on published literature and data. The St. George's University Institutional Review Board does not require ethics approval for literature reviews.

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APPENDIX A

FIGURE A1 depicts a map of the Caribbean; highlighted by the red boxes are the Dominican Republic and Trinidad and Tobago.Source: Ghosh, (2022).

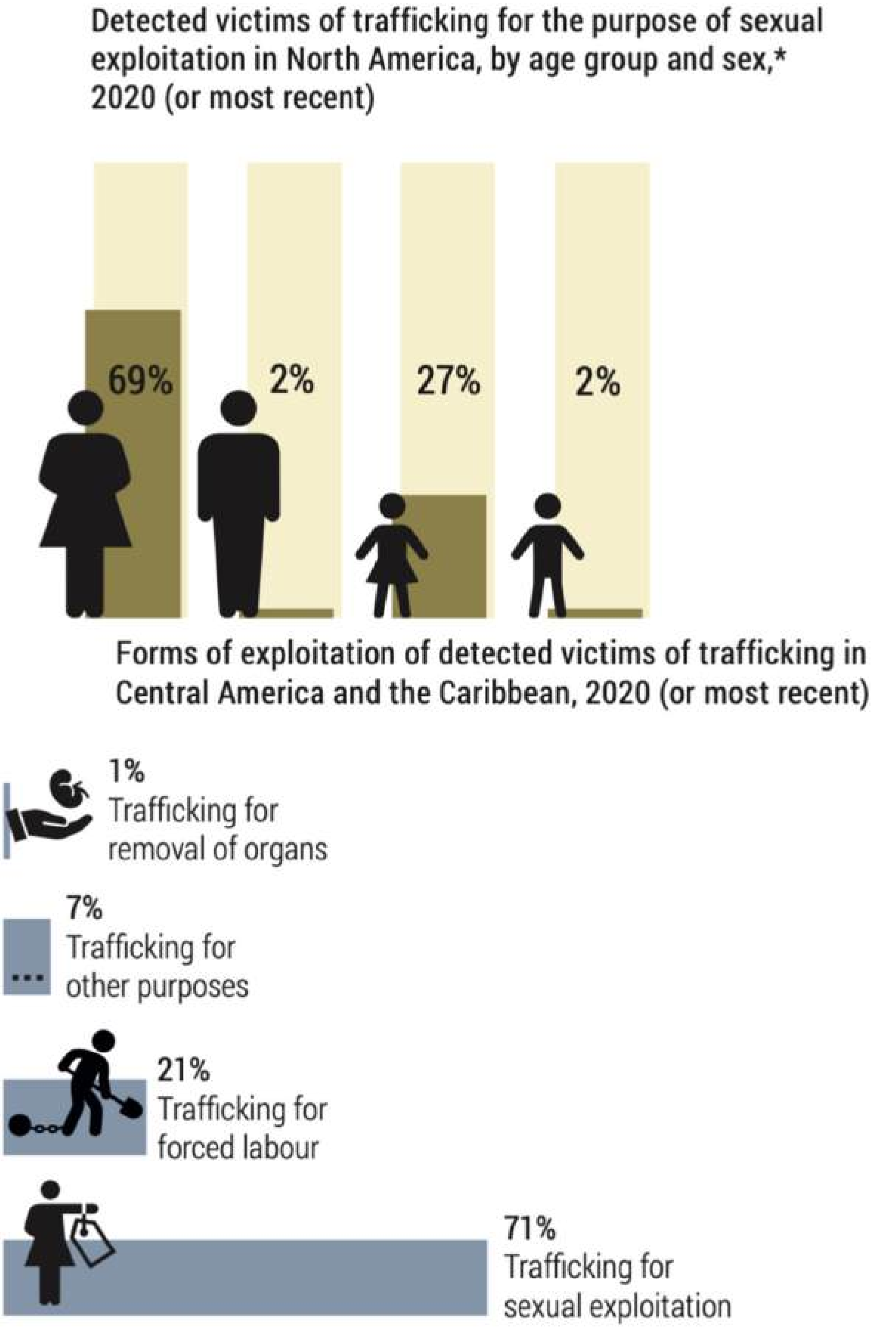


FIGURE A2 Two graphs by the United Nations on Drugs and Crime, displaying statistics on trafficking victims by age and gender and the forms of trafficking and exploitation.Source: United Nations Office on Drug and Crimes, 2022, p. 98.

TABLE A1 Search Terms, Keywords, and Eligibility Criteria.

Search Terms: "women sex trafficking Trinidad and Tobago", "women sex trafficking Dominican Republic", "sexual trafficking Dominican Republic", "sexual trafficking Trinidad and Tobago", "health policies against sex trafficking in Trinidad and Tobago", "health policies against sex trafficking Dominican Republic", "antisex trafficking policies Trinidad and Tobago", "antisex trafficking policies Dominican Republic", "sexual exploitation Dominican Republic", "sexual exploitation Trinidad and Tobago" "antisex trafficking policies."

Keywords: human trafficking, human rights, Caribbean, compliance, exploitation, vulnerability, sex trafficking, labor trafficking, female sex worker, Dominican Republic, Trinidad and Tobago, evidence-based policy, social and economic environment

Inclusion Criteria	Exclusion Criteria
Articles with open access, complete texts accessible from Google Scholar	Articles published before 2012
Articles published between 2012-2023	Articles discussing other forms of human trafficking
International organization reports between 2012-2023	Sex trafficking related to other genders and children
Articles relating to the sex trafficking of women	Articles not published in English
Articles relating to antisex trafficking policies and laws	
Articles published in English	
US TIP reports between 2018–2023	

Abbreviation: TIP, trafficking in persons.

TABLE A2 Compilation of Data Recorded in 2018–2023 US TIP reports.

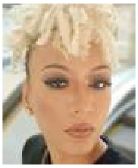
	Dominican Republic	Trinidad and Tobago
Total sex trafficking victims identified	582[a]	140
Total number of trafficking investigations	513[b]	170
Total number of traffickers prosecuted	289	30
Total number of defendants convicted	80	0

Abbreviation: TIP, trafficking in persons.

[a] In 2020, 195 victims were identified and this may include voluntary sex workers.

[b] Total number of investigations initiated by both the national police anti-trafficking unit and the attorney general's office in the Dominican Republic. The 2023 TIP does not include data on number of attorney general investigations.

AUTHOR BIOGRAPHIES



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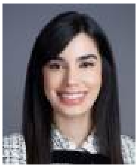

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RESEARCH ARTICLE

Enduring inequalities: Revascularization before and after the ACA

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Abstract

The use of revascularization (coronary artery bypass surgery [CABG] and percutaneous coronary intervention [PCI]) in the United States is declining, but they remain important procedures for the treatment of patients with coronary artery disease. There are large and long-standing disparities in the use of revascularization among patients hospitalized with heart disease. In this article, we investigate whether the implementation of the Patient Protection and Affordable Care Act (ACA) is associated with a reduction in disparities in the use of revascularization. We use data from the Agency for Healthcare Research and Quality (AHRQ)'s National Inpatient Sample (NIP) of the Healthcare Cost and Utilization Project (HCUP) project to compare the use of revascularization among patients 45 years and older in the United States in 2012 and 2018. For both years, we conducted multiple logistic regression analysis to assess the factors associated with coronary revascularization among patients hospitalized with heart disease. Hospitalizations for heart disease and the use of revascularization both fell between 2012 and 2018 at a rate that was greater than the reduction in heart disease deaths in the country. These findings are consistent with the clinical literature on the growth of medical management of heart disease. Disparities in the use of revascularization, by gender, insurance status, neighborhood, and race/ethnicity, were just as large after the implementation of the ACA in 2014. The expansion of insurance by the ACA, alone, was insufficient to reduce disparities in the use of revascularization in patients with diagnosed coronary heart disease in the United States.

KEYWORDS
Affordable Care Act, health inequalities, heart disease

Key points

- Hospitalizations for heart disease and the use of revascularization both fell in the United States between 2012 and 2018 at a rate that was greater than the reduction in heart disease deaths in the country.
- Disparities in the use of revascularization, by gender, insurance status, neighborhood, and race/ethnicity, have remained large following the implementation of the Patient Protection and Affordable Care Act (ACA) in 2014.
- The expansion of insurance by the ACA, alone, was insufficient to reduce disparities in the use of revascularization in patients with diagnosed coronary heart disease in the United States.

INTRODUCTION

Previous research has found that, in the United States, patients without health insurance, those covered by US public insurance (Medicare and Medicaid), minoritized populations, women, and people living in lower income neighborhoods, are far less likely to receive a revascularization in the United States, even after they have been hospitalized with heart disease, than privately insured, White patients, men, and those living in wealthier neighborhoods (Exworthy et al., 2006; Graham, 2016; Gusmano et al., 2014, 2019; Jabagi et al., 2018). The full implementation of the ACA in the United States has expanded access to insurance and, according to several studies, has improved access to health care. It is not clear, however, whether the implementation of the ACA, since 2014, has had a similar effect the use of surgical care, more specifically whether the use of revascularization among heart patients reflects any reduction in disparities, including the gender gap, among coronary heart patients in the United States.

BACKGROUND

Heart disease and the evolving role of revascularization

Mortality from coronary artery disease (CAD) and/or congestive heart failure (CHF) has declined, moderately, in the United States over the past decade, but continues to be a leading cause of death (Bray et al., 2021; Centers for Disease Control and Prevention, 2021). Although the use of medical management and lifestyle interventions have increased, revascularization procedures continue to serve as critical procedures for improving survival for patients with severe heart disease (Boden et al., 2007; Hawkes et al., 2006; Jia et al., 2020; Pflieger et al., 2011; Serruys et al., 2009).

Implementation of the ACA in the United States

Since 2014, the Affordable Care Act (ACA) has been fully implemented in most of the United States with the goal of improving access to health care by reducing the number of uninsured through insurance subsidies, Medicaid expansion (adopted in 40 states and the District of Columbia by 2023), and the formation of the Health Insurance Marketplace, along with insurance regulation reforms that improve coverage (Eltorai & Eltorai, 2017). The increased access to health insurance due to the ACA is associated with improvements in health measures such as chronic disease prevalence, age-adjusted mortality, and overall perceived health status (Sohn, 2017). In addition, the ACA has led to more equitable access to and use of health care (Buchmueller et al., 2016; Chen et al., 2016; Decker et al., 2017; Gutierrez, 2018; Renna et al., 2021). In particular, while a few studies found that Medicaid expansion in the United States was associated with reductions in rates of cardiovascular deaths, cardiovascular hospitalizations for the uninsured, and uninsured patients presenting with common surgical conditions (Akhabue et al., 2018; Charles & McEligot, 2018; Khatana et al., 2019; Metzger et al., 2021; Yuen et al., 2019). In this paper, we compare the use of revascularization in the United States during the years 2012 and 2018. It is important to note that, after 2018, several additional states expanded their Medicaid programs. Virginia and Maine expanded Medicaid in 2019, Idaho and Nebraska expanded in 2020, Oklahoma expanded in 2021, and South Dakota and North Carolina expanded Medicaid in 2023 (Kaiser Family Foundation, 2024). Currently, 10 states have still not expanded Medicaid.

In light of such findings, it seems reasonable to assume that the ACA has also improved access to specialized health services such as revascularization. There has, however, been mixed evidence in assessing whether the ACA reduced inequities in coverage and access to care (French et al., 2016). For example, some studies indicate that the ACA reduced gender and racial disparities in insurance coverage, but others find that the uninsured rate remained significantly higher in Black and Hispanic populations compared to White populations (Buchmueller & Levy, 2020; Buchmueller et al., 2016; Courtemanche et al., 2019; O'Hara & Brault, 2013). It is important to recognize that health insurance coverage is a helpful, but insufficient factor for improving access to necessary care. There are other substantial barriers to care (Cole et al., 2018; Mahkoul et al., 2023). Although high- and middle-income adults have reported a reduction in health-care access difficulties, disparities have persisted for younger adults, Hispanic patients, and patients of lower socioeconomic status (Karpman et al., 2015). Previous studies exploring access to revascularization services for patients hospitalized with CAD have come to different conclusions about whether there was a reduction in disparities following the passage of the ACA (Glance et al., 2020; Valdovinos et al., 2020).

METHODS

Data

We use data from the Agency for Healthcare Research and Quality (AHRQ) to identify patients diagnosed with CAD and CHF, age 45 and older, diagnosed and those who receive coronary revascularization. Specifically, we use the AHRQ's National Inpatient Sample (NIP) from the Healthcare Cost and Utilization Project (HCUP). The NIP includes data from more than 7 million hospital stays each year, drawn from all states participating in HCUP, which covers more than 97% of the US population. Weighted NIP data includes clinical diagnoses, procedures, length of stay, discharge status, demographics and insurance

TABLE 1 ICD Codes for patient diagnoses and procedures.

	ICD-9-CM Diagnosis Codes	ICD-9-CM Procedures Codes
CAD and/or CHF	401, 402, 404, 410-414.9, 428, 429, V12.50, V12.53, V12.59, V15.1, V17.3, V17.41, V45.81, V45.82	00.66, 36.03-36.19, 36.31, 36.39
	ICD-10-CM Diagnosis Codes	**ICD-10-PCS Procedures Codes**
Coronary revascularization	I10, I11, I13, I20-I25, I46.2, I46.9, I51, I70, Z82.4, Z86.7, Z95.5-Z95.9	0210x, 0211x, 0212x, 0213x, 0270x, 0271x, 0272x, 0273x, 02C0x, 02C1x, 02C2x, 02C3x, 02Q0x, 02Q1x, 02Q2x, 02Q3x

status, for more than 35 million national hospitalizations. To calculate age-adjusted population rates, we use weights derived from the 2000 US Census.

Identifying patients for analysis

To identify patients with heart disease and those who received coronary revascularization procedures, we use the International Classification of Disease Codes. For the year 2012, our analysis relies on the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). For the year 2018, we use the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM). The specific diagnoses and procedure codes used in the analysis are listed in Table 1. We include patients diagnosed with CAD and CHF because these are patients for whom coronary revascularization is appropriate. We are confident that this is an appropriate population for the analysis because patients diagnosed with CAD and CHF account for just over 99 percent of the coronary revascularization procedures in the NIP data set.

Regression analysis to identify factors associated with coronary revascularization

For both years, we present multiple logistic regression models to identify factors correlated with the use of coronary revascularization for hospital inpatients admitted with CAD or CHF. All models estimate the probability that patients receive a revascularization procedure. The independent variables in our regression models include age, gender, race/ethnicity, primary payer, and number of diagnoses, and median household income quartile of the patient's zip code of residence. The models also include, “age squared,” as well as a continuous age variable, to capture the curve of the relationship between age and the use of revascularization.

We ran two additional models as checks, but do not present either here because they did not generate significantly different outcomes. First, to check whether patients may be receiving revascularizations at nearby hospitals, we also ran a hospital fixed effects model. Second, we ran separate models on patients who were diagnosed with CAD and CHF, but both models generated similar results.

RESULTS

Age-Adjusted Rates of Inpatient Discharges for Heart Disease and Revascularization. Over the 2012–2018 period, the age-adjusted rates of inpatient hospital discharges for CAD and CHF decreased (Table 2). Among patients 45-64 years of age, the age-adjusted rate of

TABLE 2 Age-adjusted rates (per 100,000) of coronary revascularization and hospitalization with CAD and/or CHF in the United States; 2012 and 2018.

United States	2012	2018
Coronary revascularization		
45–64 years	365.1	306.8
≥65 years	852.6	686.5
CAD and/or CHF		
45–64 years	1845.4	1715.8
≥65 years	9050.8	7627.6

Note: Age-adjustment based on the 2000 US Census population.

hospitalization with CAD and/or CHF decreased by about 7%. Among patients 65 years of age and older, this rate decreased by about 15.7% (Table 2).

Among hospitalized patients in our sample, aged 45–46, the age-adjusted rate of coronary revascularization decreased by almost 16.9% (Table 2), The age-adjusted rate of coronary revascularization among those 65 and older, decreased by 19.4%. For both age cohorts, the decline in the use of revascularization exceeds the decline in hospitalization for heart disease.

Logistic regression analysis

In 2012 and 2018, age, gender, number of diagnoses, and income quartile zip code residence are all significantly associated with coronary revascularization in the United States (Table 3). The odds of women receiving a revascularization procedure were about 39% lower than among men in 2012 and about 41% lower in 2018. In 2012, the odds of receiving a revascularization were about 21% lower among people living in the lowest-income quartile postal codes, about 6% lower among patients living in the second lowest-income quartile postal codes, and about 3% lower among patients living in the third lowest-income quartile postal codes, compared with patients living in the highest-income quartile postal codes. In 2018, the odds of receiving a coronary revascularization were about 22% lower among people living in the lowest-income quartile postal codes, about 9% lower among patients living in the second lowest quartile income postal codes, and about 3% lower among patients living in the third lowest-income quartile postal codes, compared with patients living in the highest-income quartile postal codes.

When we examine the second set of models for the United States, which include the race/ethnicity and primary payer models, we find that in 2012 and 2018, age, insurance status, race/ethnicity, gender, number of diagnoses, and income quartile zip code residence were all associated with statistically significant odds ratios for revascularization in the United States (Table 3). The odds of women receiving a revascularization were about 36% lower than among men in 2012% and 38% lower than among men in 2018. The odds of revascularization were 50% lower among Non-Hispanic (NH) Black patients than NH White patients in 2012 and about 53% lower than NH White patients in 2018. The odds of revascularization were about 14% lower among Hispanic patients compared with NH White patients in 2012 and about 12% lower in 2018. The odds of revascularization were about 7% lower among Native American patients compared with NH White patients in 2012 and about 7% lower in 2018. In both years, NH Asian, Pacific Islander, and patients whose race was coded as “other,” were more likely to receive a revascularization compared to NH White patients (Table 3).

TABLE 3 Logistic regression predicting revascularization among patients hospitalized with CAD and/or CHF in the United States, 2012 and 2018.

Variable	*B*	S.E.	Wald	df	Sig	Exp(B)	95% CI for Exp(B)	
							Lower	Upper
2012								
Age in years	0.192	0.001	19,054.75	1	0.000	1.212	1.208	1.215
Age squared	–0.002	0.000	27,548.72	1	0.000	0.998	0.998	0.998
Number of diagnoses on the record	–0.066	0.000	57,489.44	1	0.000	0.937	0.936	0.937
Female	–0.445	0.003	23,695.42	1	0.000	0.641	0.637	0.645
Omitted: Male								
NH Black	–0.701	0.005	19,769.12	1	0.000	0.496	0.491	0.501
Hispanic	–0.151	0.006	719.23	1	0.000	0.860	0.850	0.869
NH Asian/Pacific Islander	0.121	0.010	1009.18	1	0.000	1.129	1.107	1.151
Native American	–0.069	0.018	15.13	1	0.000	0.934	0.902	0.967
Other race	0.233	0.007	1009.18	1	0.000	1.262	1.244	1.280
Omitted: NH White								
Medicare	–0.486	0.004	17,549.18	1	0.000	0.615	0.610	0.619
Medicaid	–0.710	0.006	13,302.97	1	0.000	0.492	0.486	0.498
Self Pay (uninsured)	–0.025	0.021	2.644	1	0.000	0.975	0.963	0.988
No charge	0.034	0.021	2.64	1	0.104	1.035	0.993	1.078
Other payer	–0.312	0.008	1370.10	1	0.000	0.732	0.720	0.744
Omitted: Private Insurance								
Lowest income quartile zip	–0.083	0.004	451.86	1	0.000	0.920	0.913	0.927
Second income quartile zip	–0.003	0.004	0.432	1	0.511	0.997	0.990	1.005
Third income quartile zip	–0.004	0.004	0.841	1	0.359	0.996	0.988	1.004
Omitted: highest income quartile zip								
Constant	–5.48	0.047	13,606.74	1	0.000	0.004		
2018								
Age in years	0.200	0.001	18,719.34	1	0.000	1.222	1.218	1.225
Age squared	–0.002	0.000	26,360.93	1	0.000	0.998	0.998	0.998
Number of diagnoses on the record	–0.076	0.000	65,386.51	1	0.000	0.927	0.927	0.928
Female	–0.474	0.003	24,864.18	1	0.000	0.623	0.619	0.626
Omitted: Male								
NH Black	–0.766	0.005	23,273.85	1	0.000	0.465	0.460	0.469
Hispanic	–0.131	0.005	646.20	1	0.000	0.877	0.868	0.886

(Continues)

TABLE 3 (Continued)

Variable	*B*	S.E.	Wald	df	Sig	Exp(B)	95% CI for Exp(B) Lower	95% CI for Exp(B) Upper
NH Asian/Pacific Islander	0.144	0.009	265.64	1	0.000	1.154	1.135	1.174
Native American	−0.072	0.018	15.35	1	0.000	0.930	0.897	0.965
Other Race	0.83	0.008	101.99	1	0.000	1.087	1.070	1.105
Omitted: NH White								
Medicare	−0.490	0.004	16,423.82	1	0.000	0.613	0.608	0.617
Medicaid	−0.678	0.006	13,950.73	1	0.000	0.508	0.503	0.514
Self Pay (Uninsured)	−0.168	0.008	451.13	1	0.00	0.845	0.832	0.859
No charge	−0.046	0.025	3.43	1	0.064	0.955	0.910	1.003
Other payer	−0.249	0.009	801.61	1	0.000	0.780	0.766	0.793
Omitted: private insurance								
Lowest income quartile zip	−0.077	0.004	348.03	1	0.000	0.925	0.918	0.933
Second income quartile zip	−0.034	0.004	67.88	1	0.000	0.967	0.959	0.975
Third income quartile zip	−0.002	0.004	0.26	1	0.608	0.998	0.990	1.006
Omitted: highest income quartile zip								
Constant	−5.58	0.050	12,614.85	1	0.000	0.004		

In 2012, the odds of revascularization for the uninsured (Self Pay) in the United States were 2% lower compared with patients who had private health insurance. Medicaid recipients had 51% lower odds than those with private insurance. Medicare beneficiaries had 39% lower odds of receiving a revascularization compared with patients with private insurance. The odds of revascularization were 27% lower for those with "other Government Insurance" compared with those with private insurance. For the year 2018, the odds of revascularization among uninsured patients were 15% lower than patients with private insurance 3). The odds of revascularization in 2018 were 49% lower among patients with Medicaid, 39% lower among patients with Medicare, and 22% lower among patients with "other Government Insurance," compared with patients with private insurance (Table 3). In both years, patients living in the first and second-income quartiles had lower odds of revascularization compared with patients living in the highest-income quartile neighborhoods. The odds of revascularization among the lowest- income quartile residents were 8% lower in 2012 and about 7% lower in 2018, after ACA implementation, compared with patients living in the highest-income quartile neighborhoods.

DISCUSSION

Hospitalizations for CAD and CHF as well as the use of revascularization for these patients declined between 2012 and 2018 at a rate that was greater than the reduction in heart disease deaths in the country. These findings are consistent with the clinical literature on the growth of medical management of heart disease (Gusmano et al., 2019; Kaasenbrood et al., 2018). Our analysis is based on administrative data that do not include clinical information, so it is possible that the decline in revascularization reflects a decline in the severity of heart disease among patients hospitalized for CAD and CHF. Similarly, we cannot account for individual patient characteristics that may influence the decision to proceed with hospital admission and revascularization. Although we cannot rule out these factors, neither are likely explanations of the declines in revascularization.

With regard to inequalities within the United States, our findings are consistent with previous research (Gusmano et al., 2014, 2019). At both dates (2012 and 2018) we examined, women had lower odds than men to receive a revascularization. This is striking because we limited the logistic regressions to patients age 45 and older when gender disparities in the incidence of. heart disease narrow so these disparities cannot be easily explained by the well-known gender differences in heart disease (Kentner & Grace, 2017). Despite extensive efforts by clinicians and advocates to promote awareness of heart disease among women, the gender disparities did not change over time.

With respect to household income by zip code, these findings are consistent with our expectations. There is significant income inequality in the United States and lower-income patients, even after the implementation of the ACA, face multiple barriers to access health-care services (Gusmano et al., 2023). Neighborhood-level differences in the use of revascularization among patients hospitalized with heart disease fell, only slightly, after the implementation of the ACA.

Patients hospitalized with heart disease who identified as Non-Hispanic Black, Hispanic, and Native American all had lower odds of receiving a revascularization than Non-Hispanic White patients. Moreover, these differences did not narrow after the implementation of the ACA. This stands in contrast to a recent analysis of New York City, the largest city in one of the states that expanded Medicaid under the ACA, in which racial and ethnic differences in the use of revascularization did narrow over the same time period (Weisz et al., 2024). When we examine the entire country and include both expansion and non-expansion states, the racial and ethnic difference not only remained, but the differences between Non-Hispanic Black and Non-Hispanic White patients, as well as the difference between Hispanic and Non-Hispanic White patients grew even larger.

The use of revascularization among patients on the Medicare and Medicaid programs, as well as those without health insurance, were lower than among those with private health insurance in both years we examined. Perhaps not surprisingly, the difference between uninsured patients and those with private insurance was larger after the implementation of the ACA. This may be due to the fact that patients who remain uninsured after the implementation of the ACA are more likely to be undocumented immigrants who face even greater barriers to care than other previously uninsured patients now covered by Medicaid or an ACA marketplace health insurance plan.

LIMITATIONS

Our findings indicate that any changes in treatment decisions for heart disease patients cannot be attributed, simply, to changes in disease. The decline in the use of revascularization may reflect a greater use of medical management and more appropriate treatment of disease, but it is not possible for us to evaluate this hypothesis with hospital administrative data alone. What is clear, however, is that inequities, by gender, race and ethnicity, and place, have remained high. There is strong evidence that the ACA has expanded insurance coverage and improved access to care for many lower and middle-income Americans (Sommers et al., 2015), but the overall impact of the law, especially given its uneven implementation among the US states, has not reduced, significantly, socioeconomic, racial/ethnic and gender disparities in the use of revascularization procedures.

CONCLUSIONS

The ACA dramatically expanded access to health insurance and improved access to health-care services in the United States. There was great optimism that the law would also help to address long-standing socioeconomic inequities in access to care. Unfortunately, our analysis of the use of revascularization among patients hospitalized with heart disease, before and after the implementation of the ACA, suggests that inequities by gender, race/ethnicity, insurance status and place have only increased. What explains this surprising finding?

One possibility is the uneven implementation of the law. Following the Supreme Court's decision in NFIB v. Sebelius, states could opt not to expand Medicaid without fear that they would lose federal matching funds for the existing Medicaid program. Several Republican states have not expanded Medicaid and we know that access to care for patients in non-expansion states is worse than expansion states. It is possible that the results from the national inpatient sample reflect the fact that the failure of some states to expand Medicaid limited the effect of the ACA on reducing inequities in the use of care. A previous study examining the use of revascularization within New York City found that there was some reduction in the differences between non-Hispanic White and Hispanic patients after the implementation of the law, so this suggests that our results may have been different if all states had expanded Medicaid. Nevertheless, differences in the use of revascularization by gender, between non-Hispanic Whites and non-Hispanic Blacks, and by place, in New York City, remained large after the implementation of the ACA, so the failure of some states to expand Medicaid is unlikely to explain the results we report here. It is more plausible to suggest that insurance expansion alone is insufficient to eliminate inequities in the use of health care. Even after controlling for insurance status, women, people from minority groups, and people who live in lower-income neighborhoods, are less likely to receive revascularization procedures after they are hospitalized with heart disease. Although we cannot rule out the possibility that these differences are the result of differences in patient need or preference, we do not think this is likely to explain the magnitude of the differences we document. Instead, our findings suggest that there are systematic biases within the health care system, which have not yet been addressed. Future research should investigate the clinical decisions of physicians and patients hospitalized with heart disease to better understand why these large inequities in care persist.

ETHICS STATEMENT

None of the authors report a conflict of interest. The study did not require Institutional Review Board approval because it relies on data from the U.S. Agency for Healthcare Research and Quality that do not include geographic identifiers below the zip code level.

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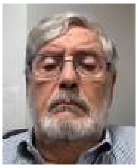

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RESEARCH ARTICLE

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The precedent of defensive medicine practice among physicians with a glance at the impact of the COVID-19 pandemic

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Abstract

The practice of defensive medicine is highly evident with the purpose of the legal self-interest of physicians. It might be widely increased during the coronavirus disease 2019 (COVID-19) pandemic to avoid lawsuits, especially in the absence of specific effective treatment. This study aimed to evaluate the practice of defensive medicine among the Egyptian physicians, and to identify the impact of the COVID-19 pandemic on malpractice suits. An electronic survey link was sent to the sampled physicians working at Faculty of Medicine, Tanta University Hospitals. It included personal information, two questions measuring the physicians' perceptions about defensive medicine, Defensive Medicine Behavior Scale (DMBS) and eight questions evaluating physicians' concerns in terms of the COVID-19 pandemic effects. The study enrolled 1074 physicians; 78.5% of them didn't possess sufficient knowledge about defensive medicine. About 73% of participants practiced defensive medicine more after the COVID-19 pandemic, and 68.2% demonstrated increasing concerns about malpractice suits after the emergence of COVID-19. DMBS was statistically significant high among surgical specialties physicians and those who spent less duration in the field of their expertise. There is a need to legislate a malpractice law to control the precedent increase of defensive medicine practice in Egypt. This will help to control the prevalence of defensive medicine practice, improve the quality of care, and reduce healthcare costs.

KEYWORDS

COVID-19, defensive medicine, Egypt, healthcare, malpractice

Key Points

- Defensive medicine refers to avoiding any specific high-risk approaches or patients or even asking for unnecessary investigation and assessment.
- Several literatures point to the increase of litigation for medical malpractice among healthcare professionals, which evokes both positive and negative protective behaviors among physicians.
- Defensive medicine implicates the health system since it distrusts the physician-patient relationship, increases healthcare costs, and reduces the quality of medical care.
- The emergence of the COVID-19 pandemic exaggerated this practice; in particular, there was a lack of specific treatment algorithms.
- Limited literature explores defensive medicine practice in surgery and emergency medicine. This study provides a broad vision about practices, concerns of various medical specialties physicians, and the degrees of adopting defensive behaviors in response to the COVID-19 pandemic.

INTRODUCTION

Both the Hippocratic Oath and the Declaration of Geneva obligate healthcare providers to prioritize the well-being and benefit of patients (Wiesing, 2020). However, because of the continuous increase in medical malpractice suits, physicians may adopt strategies of “defensive medicine” or defensive medical decision-making (Abdel Razik et al., 2021). According to Kapp (2016), defensive medicine is defined as “Clinical practice that is driven by the physician's perception of legal self-interest rather than by concern about the expectation of patient benefit.”

The literature divides defensive medicine into two categories: negative and positive. Negative defensive medicine is an avoidance behavior where physicians refuse to care for high-risk patients or perform risky procedures and may refer patients to other physicians or healthcare facilities. On the other hand, positive defensive medicine applies assurance behavior in the form of performing extra unnecessary tests, procedures, or referrals (Antoci et al., 2016; Garattini & Padula, 2020; Panella et al., 2017). Both these diversions from best medical practices risk harming patients. Although defensive medicine is considered a financial burden on healthcare systems, it may put patients at risk of unnecessary tests and procedures (Antoci et al., 2023; Panella et al., 2016).

Furthermore, defensive medicine has been associated with reduced trust in the physician-patient relationship, leading physicians to regard patients as potential plaintiffs and patients to mistrust physicians' motives (Baungaard et al., 2022). In addition, physicians have reported that defensive medical practices tend to result in greater healthcare inequalities, decreased medical authority, and decreased job satisfaction (Assing Hvidt et al., 2017, 2021).

The World Health Organization (WHO) declared the Coronavirus disease 2019 (COVID-19) outbreak a pandemic in March 2020, leading to widespread and strict regulations worldwide to prevent disease progression (World Health Organization, 2020). In Egypt, the COVID-19 pandemic's first wave was announced in March 2020 and peaked in June 2020; the effects of the pandemic continue to this day. Despite the removal of strict measures and regulations, people still live in fear of the emergence of new strains with the possibility of disease waves hitting the world again (Elhawary et al., 2023).

Recently, there has been a growing concern about the practice of defensive medicine in Egypt. However, the data regarding the magnitude of the problem is still limited (Hasan et al., 2021; Shehata et al., 2022). Moreover, clinical practice has been impacted by COVID-19 pandemic as many patients stopped going to health facilities due to the fear of contracting COVID-19. Specifically, the concern is that physicians might be incentivized to practice defensive medicine to avoid lawsuits related to misdiagnosis or improper treatment of such serious and infectious disease (Chen, 2020; Finucane et al., 2022).

Moreover, physicians' specialties significantly influenced their attitudes toward patients during the COVID-19 pandemic (Plaiasu et al., 2023). Significant disparities in legal compliance were observed between emergency medicine physicians and nonsurgical physicians that could be attributed to the unusual circumstances imposed by the pandemic (Collins et al., 2022; Gaucher et al., 2021). Specifically, anesthesiologists, intensivists, and obstetricians and gynecologists manage a considerable number of critically ill patients with high levels of stress, and burnout that could result in a decline in the quality of healthcare (Afonso et al., 2021; González-Mesa et al., 2021; Salyers et al., 2017). Nonsurgical physicians, on the other hand, were relatively less involved in the pandemic due to restrictions on seeking medical advice for patients with chronic diseases (De Donno et al., 2021; Plaiasu et al., 2023).

Since data concerning the relationship between the COVID-19 pandemic and defensive medicine are scarce (Finucane et al., 2022), the current study aimed to evaluate the Egyptian physicians' perceptions, concerns, and practice of defensive medicine. The study also assesses the impact of the COVID-19 pandemic on the magnitude of defensive medicine practice and malpractice suits.

METHODS

Study design and setting

This study was conducted as a web-based descriptive cross-sectional study at Faculty of Medicine, Tanta University Hospitals, Egypt. This faculty was established in 1963 and is located in Gharbia Governorate in the Middle of the Delta region. It includes 24 clinical departments in addition to 10 academic departments (Faculty of Medicine Tanta University, 2023). The total number of faculty members is 2877 divided into 2215 physicians at clinical departments, and 662 physicians at academic departments, according to the faculty members and residents' affairs departments rate. The Tanta University Hospitals accommodate 1932 beds and provide tertiary healthcare services for an average population of 10 million surrounding the Nile Delta governorates. The study took place within the period from the start of March 2022 to the end of August 2022.

Sampling

The sample size was calculated using the CDC EPI-INFO 2002 software program. The actual number of clinical physicians including residents was 2,215 physicians in clinical departments. Based on the published literature, the assumed prevalence of the outcome variable (the practice of defensive medicine) ranged from 83% to 94.2% (Calikoglu & Aras, 2020; Küçük, 2018). The minimum computed sample size was 483, taking into consideration a precision of 5%, a confidence level of 95%, and a margin of error of 0.5%. However, we involved more physicians in the sample to ensure a better representation of physicians in different clinical specialties and subspecialties and most of the professional ranks. The final sample size expanded to 1074 physicians.

Participants were recruited using a stratified random sampling technique. We included all the 24 clinical departments at the Faculty of Medicine, stratifying each clinical department according to the professional ranking of staff physicians as follows: resident, specialist, senior registrar, and consultant. A random sample from each professional category within each department was chosen using the Microsoft Excel random numbering function.

Eligibility criteria

Inclusion criteria entailed physicians at clinical departments who were on duty at the time of the study and those who had more than 6 months of experience. The study excluded physicians belonging to academic departments, as well as those in internships, physicians who were retired or on special vacations during the time of the study, and those who didn't respond promptly.

The study tools

An anonymous self-administered electronic questionnaire was used to collect the required data. Physicians were contacted by the authors, and an electronic survey link using Google survey format was sent to the participants' official college emails and cell phones to complete the chosen sample from each department within the 6 months of the study period in a systematic way. A reminder was sent by the authors to the chosen participant who didn't respond promptly. The settings of the form limit multiple submissions from the same participant who was complied to submit the response by registering his/her official mail.

Detailed information regarding the nature and aim of the study was illustrated at the beginning of the survey. A statement that the participants can withdraw at any stage of the survey was included. Information confidentiality was ensured. After acceptance, the respondents were able to ask questions via the provided E-mail address by the corresponding author as demonstrated in Appendix A.

The questionnaire used in this study was developed based on the Defensive Medicine Behavior Scale (DMBS) questionnaire developed by Başer et al. (2014), and Calikoglu and Aras (2020). The authors of the present study have added two extra questions to examine the effect of the COVID-19 pandemic on the adoption of defensive medicine practices and malpractice suits. The measuring tool was reviewed by four external professional experts in Community, Emergency Medicine, Forensic Medicine and Clinical Toxicology, whose feedback was taken into consideration and modifications were implemented accordingly. Test-retest reliability was good at 84% and the internal consistency coefficient was calculated for all items of the questionnaire including the DMBS; Cronbach alpha = 0.80, utilizing the SPSS program version 26.

The authors conducted this study throughout two waves; the duration of each was 3 months. The first wave included three sections. The first section was a personal information form that constituted independent study variables; age, gender, clinical designations, and specialty. As well as the total length of time in the profession and the total length of service in the field of expertise. In addition, two closed-ended questions with yes or no options were added to measure the perceptions of the participants about defensive medicine.

The second section was the Defensive Medicine Behavior Scale (DMBS) which represented the primary outcome variable of this study. A total of 14 questions were used in this section to evaluate items related to both positive (nine assurance questions) and negative (five avoidance questions) behaviors of defensive medicine. The answers to these questions employed a 5-point Likert scale which ranged from 1 (strongly disagree) to 5 (strongly agree). Then, the total score was calculated for each respondent (minimum: 14; maximum 70). For more precise expressions of the participants' responses, each of the strongly agree, agree, and neither agree/disagree options were considered as 'yes' while both disagree and strongly disagree responses were interpreted as 'no'. In the third section, six closed-ended questions with yes or no options were administered to detect the concerns of the participants about malpractice suits as an initiator for defensive medicine practice and these represented the second outcome variable of this study.

During the second wave, short educational notes were developed based on previous literature (Baungaard et al., 2022; Bhandari et al., 2019; Moosazadeh et al., 2014) and were sent to the participants to provide them with a precise explanation of the concept of defensive medicine (Appendix A). This was considered an essential step to enable the participants to answer the questions of the fourth part of the questionnaire. Two closed-ended questions with yes or no options were included in this section which aimed to evaluate the effect of the COVID-19 pandemic on the practice of defensive medicine and the physicians' concerns about malpractice suits, this represented the third outcome variable of this study. The second wave was sent only to physicians who gave a response to the first wave. Notably, participants who did not respond to the second wave, their response to the first wave were excluded from the analysis of the questionnaire.

Statistical analysis

The data were collected via online Google forms, which were downloaded as an Excel master sheet. The data sets were imported, re-coded, and analyzed using the SPSS 26.0 software program. Independent variables consisted of the participants' demographics and clinical experience. The three outcome variables included the DMBS, the physcians' concerns about malpractice suits as an initiator for defensive medicine practice, and the effect of the COVID-19 pandemic on the practice of defensive medicine. Descriptive statistics in the form of mean ± standard deviation (SD), median, and interquartile range (IQR) were used to present numerical variables. While categorical data were described using numbers and percentages. The normality test Kolmogorov and Smirnov was significant. Therefore, the nonparametric tests were deployed to compare variables within subgroups, including the Mann-Whitney *U* test and Kruskal-Wallis test followed by post hoc analysis. The Spearman correlation coefficient test was performed to examine the relationship between the DMBS scores and abnormally distributed independent variables. The level of significance was taken at a $p < 0.05$.

RESULTS

This study included 1074 physicians from 24 clinical departments at Tanta University hospitals. Table 1 shows that the mean age of participants was 35.1 ± 6.2 years, and 55.3% were males. About one-third of the participants were either residents or specialists (33.24% each), and the most common clinical professions were emergency medicine clinical toxicology, general & special internal medicine, and general & special surgery (24.58%, 21.23%, and 19.55% respectively). The mean length of time in the profession after graduation from medical school was 10.5 ± 6.5 years, while the mean length of clinical experience as

TABLE 1 Demographic data of studied physicians and their perceptions about defensive medicine (total=1074).

Independent variables		**Mean (Min–Max.)/*n***	**±SD/%**
Age (years)		35.12 (25–66)	±6.2
Gender	Male	594	55.3
	Female	480	44.7
Clinical designations	Resident	357	33.24
	Specialist	357	33.24
	Senior registrar	201	18.72
	Consultant	159	14.8
Major specialty	Medical	798	74.3
	Surgical	276	25.7
Specialty	Emergency Medicine & Clinical Toxicology	264	24.58
	General & Special Internal Medicine[a]	228	21.23
	General & Special Surgery[b]	210	19.55
	Pediatrics	87	8.1
	Anesthesiology, Surgical Intensive Care & Pain Management	72	6.7
	Cardiovascular Medicine	63	5.87
	Dermatology & Venereology	60	5.59
	Radiology & Medical Imaging	54	5.03
	Obstetrics & Gynecology	36	3.35
The total length of time in the profession (years)		10.50 (0.5–40)	± 6.5
The total length of service in the field of expertise (years)		8.41 (0–32)	± 5.8
Question		**Yes (*n*, %)**	**No (*n*, %)**
Did you hear about the concept of defensive medicine before?		570 (53.1)	504 (46.9)
Do you feel one possesses sufficient knowledge about defensive medicine?		231 (21.5)	843 (78.5)

Note: *n*, number; Min–Max., minimum to maximum; ±SD, standard deviation.

[a] Special Internal Medicine included the following specialties; Neurology & Psychiatry, Tropical Medicine & Hygiene Fevers, Physical Medicine, Rheumatology & Rehabilitation, Chest Diseases, Radiation Oncology.

[b] Special Surgery included the following specialties; Gastrointestinal Surgery, Pediatric Surgery, Vascular Surgery, Oncology Surgery, Orthopedic Surgery, Plastic & Reconstructive Surgery, Cardio-Thoracic Surgery, Neurosurgery, Urology, Otorhinolaryngology, Ophthalmology.

expertise was 8.41 ± 5.8 years. Moreover, more than two-thirds of the participants reported that they didn't possess sufficient knowledge about defensive medicine (78.5%), and less than half of them didn't hear about the concept of defensive medicine (46.9%).

Table 2 demonstrates the incidence of different positive and negative defensive medicine behaviors between the studied Egyptian physicians; the most common form of positive defensive behavior was "I explain medical procedures to my patients in more unnecessary detail to protect myself legally" ($n = 903$; 84.1%), and the least practiced behavior was

TABLE 2 Frequencies of positive and negative defensive medicine behaviors among the studied physicians (total = 1074).

	Behavior	Yes n (%)	No n (%)
Positive defensive medicine behaviors	• I order extra tests for my patients for legal protection	753 (70.11)	321 (29.89)
	• I hospitalize patients for reasons other than indications (e.g. social indication) to avoid legal problems	381 (35.47)	693 (64.53)
	• I prescribe as many drugs as I can to avoid legal problems	195 (18.15)	879 (81.85)
	• I spend more unnecessary time with my patients to protect myself legally	690 (64.25)	384 (35.75)
	• I explain medical procedures to my patients in more unnecessary detail to protect myself legally	903 (84.1)	171 (15.9)
	• I order more consultations on possible complications to avoid legal problems	879 (81.8)	195 (18.2)
	• I use imaging techniques more often to avoid legal problems	723 (67.3)	351 (32.7)
	• I keep more unnecessary detailed records to avoid legal problems	849 (79)	225 (21)
	• I place more emphasis on informed consent forms to protect myself legally	858 (79.9)	216 (20.1)
Negative defensive medicine behaviors	• I prefer to use noninvasive protocols instead of interventional treatment protocols to avoid legal problems	597 (55.6)	477 (44.4)
	• I avoid treatment protocols with high complication rates to avoid problems	669 (62.3)	405 (37.7)
	• I avoid patients with complex medical problems to avoid legal problems	420 (39)	654 (61)
	• I feel uncomfortable in practice as malpractice is appearing more frequently in the media	759 (70.7)	315 (29.3)
	• I avoid patients who are likely to sue to avoid legal problems	678 (63.1)	396 (36.9)

Note: *n*, number.

"I prescribe as many drugs as I can to avoid legal problems" ($n = 195$; 18.15%). For the negative defensive behavior, the most common form was "I feel uncomfortable in practice as malpractice is appearing more frequently in the media ($n = 759$; 70.7%), while the least practiced behavior was "I avoid patients with complex medical problems to avoid legal problems" ($n = 420$; 39%).

Table 3 illustrates that most of the participants would feel secure in practice if they had professional insurance (68.2%), and nearly half of them considered changing their specialty or profession due to malpractice anxiety (48.6%). The majority of studied physicians agreed that the number of malpractice lawsuits has increased in recent years (88.8%) and believed

TABLE 3 Concerns of the studied physicians about malpractice suits as an initiator for defensive medicine practice (total = 1074).

Question	Yes *n* (%)	No *n* (%)
1. Did you have concerns about malpractice when choosing a specialty?	783 (72.9)	291 (27.1)
2. Do you have any lawsuits due to malpractice in the practice of medicine?	165 (15.4)	909 (84.6)
3. Do you consider changing one's specialty or profession due to malpractice anxiety?	522 (48.6)	552 (51.4)
4. Do you think professional liability insurance make one feel secure during professional practice?	732 (68.2)	342 (31.8)
5. Do you think number of malpractice lawsuits increased in recent years?	954 (88.8)	120 (11.2)
6. Do you think that malpractice lawsuit will have an impact on medical performance?	1017 (94.7)	57 (5.3)

Note: *n*, number.

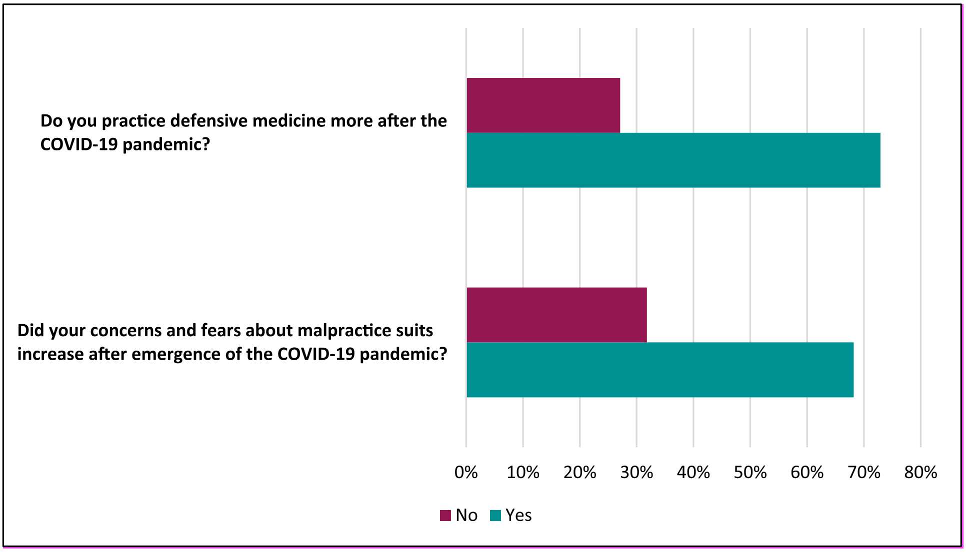

FIGURE 1 Physicians' concerns about defensive medicine practice and malpractice suits after the COVID-19 pandemic (total = 1074).

that the malpractice lawsuits would impact medical performance (94.7%). At the same time, the majority didn't have any lawsuits due to medical malpractice (84.6%).

Additionally, most participants showed increasing concern and fear about malpractice suits after the emergence of the COVID-19 pandemic (68.2%). Furthermore, more than two-thirds of the participants (72.9%) practiced defensive medicine more after the COVID-19 pandemic as shown in Figure 1.

The mean DMBS was 39.46 ± 8.3 and ranged between 14 and 56. As illustrated in Table 4, a statistically significant association between the surgical specialties and the adoption of defensive medical behavior ($H = 4.73$, $p = 0.02$) was detected. There was no statistically significant difference between males' and females' DMBS or their clinical

TABLE 4 Relationship between DMBS and basic characteristics of the studied physicians (total=1074).

Independent variable		**DMBS**		**Test statistics**	***p* Value**
		Median	**IQR**		
Gender	– Male	40	(35–46)	0.88	0.3
	– Female	40	(44–35.5)		
Major	– Medical	40	(35–44)	4.73	0.02*
	– Surgical	43	(34–48)		
lawsuits due to malpractice in the practice of medicine	– Yes	40	(46–46)	0.35	0.7
	– No	40	(35–46)		
Clinical designations	– Resident	40	(35–45)	4.41	0.2
	– Specialist	42	(36–46)		
	– Senior registrar	41	(36–45)		
	– Consultant	37	(32–44)		
The total length of time in the profession (years). “length of time working as a physician after graduation from medical school”	– 0–< 10 ($n = 477$)	40	(35–46)	3.14	0.2
	– 10–<20 ($n = 519$)	37	(36–45)		
	– ≥20 ($n = 78$)	36.5	(28–44)		
The length of service in the field of expertise. “length of time spent working your clinical specialty.”	– 0–< 10 ($n = 477$)	40	(35–46)	5.9	0.03*
	– 10–<20 ($n = 519$)	40.5	(36–45)		
	– ≥20 ($n = 78$)	36	(27.5–44.25)		

Abbreviations: DMBS, Defensive Medicine Behavior Scale; IQR, interquartile range; *n*, number.

*$p < 0.05$.

designations. The total length of time in the profession didn't show any significant differences. While the length of experience in the clinical specialty was significantly associated with DMBS; the participants who spent 10–<20 years in their field had the highest DMBS ($H = 5.9$, $p = 0.03$) than their colleagues.

The Spearman correlation coefficient analysis indicated a nonsignificant negative relationship between the age of participants and the positive and negative DMBS ($r = –0.09$, –0.06, $p = 0.08$, 0.2 respectively). The analysis also detected the same relationship in regard to the total length of time in the profession ($r = –0.06$, –0.02; $p = 0.2$, 0.6) and serving in the field of clinical expertise ($r = –0.06$, –0.01; $p = 0.2$, 0.8) as shown in Figures 2–4.

DISCUSSION

The current study investigated the different forms of defensive medicine practice. When studying the assurance behaviors, the most frequently reported items were the more unnecessary detailed explanation of the medical procedures to the patients, ordering more consultations on possible complications, and more emphasis on informed consent forms, followed by keeping more unnecessary detailed records. Fortunately, these behaviors are expected to increase treatment accuracy with no extra cost either to the patients or the healthcare system despite being time-consuming and can exhaust nonfinancial resources (Moosazadeh et al., 2014). Notably, behaviors that significantly increase the cost of healthcare were the least practiced including the hospitalization of patients for nonmedical purposes and prescription of non-indicated drugs.

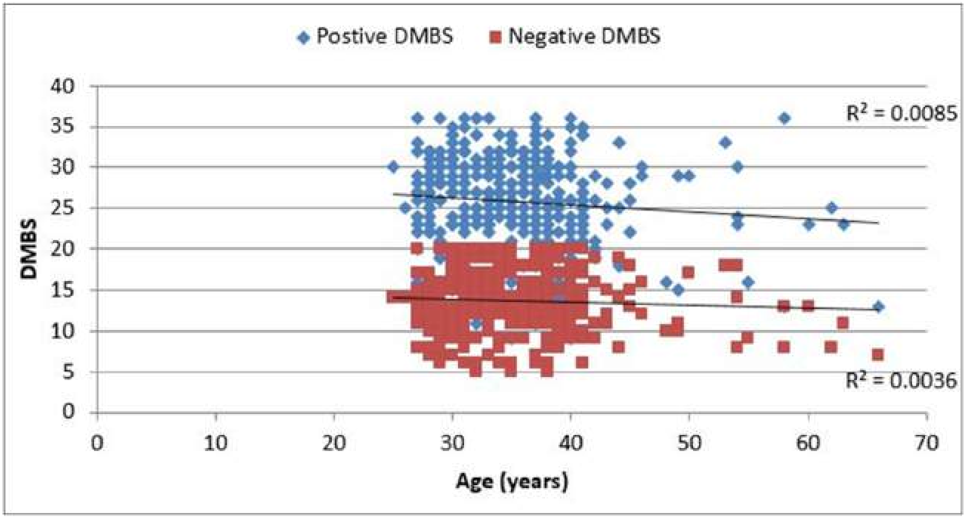

FIGURE 2 The correlation between participants' age and Defensive Medicine Behavior Scale (DMBS).

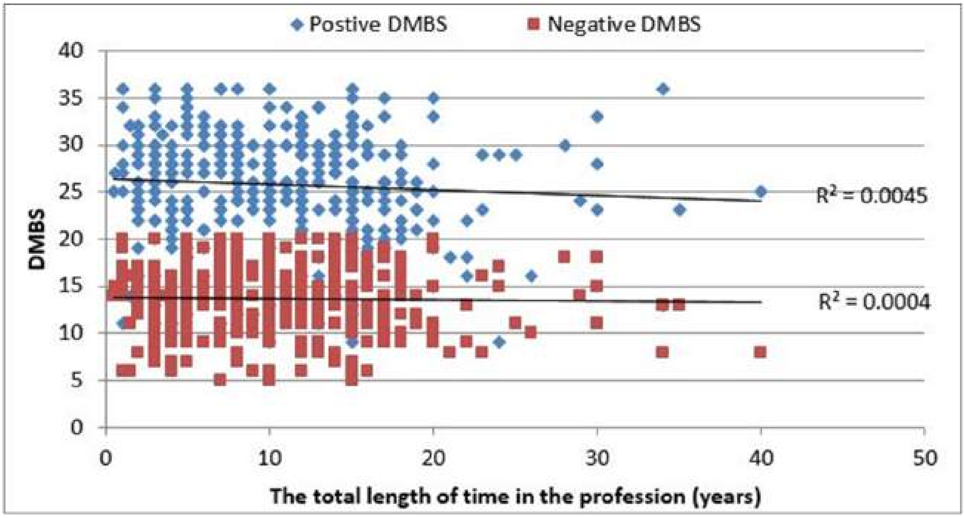

FIGURE 3 The correlation between physicians' length of time in the profession and Defensive Medicine Behavior Scale (DMBS).

These results were more or less following the study of Hasan et al. (2018), which was conducted in the Kingdom of Bahrain on a sample of primary healthcare physicians. In this study the most frequently reported assurance behaviors were more detailed history-taking (66.4%) and ordering more tests than medically indicated (60%), while the least frequently reported behavior was the suggestion of invasive procedures to confirm the diagnosis (20.2%).

In this context, a Turkish study conducted by Kolcu and Ozceylan (2021) showed that the allocation of more time to patients and the explanation of medical practices in great detail were the highest practiced forms of assurance defensive medicine (63.7% and 61.5% respectively). While the prescription of drugs more than indicated and keeping more detailed records was the least frequently reported (49.8% and 26% respectively). The detected

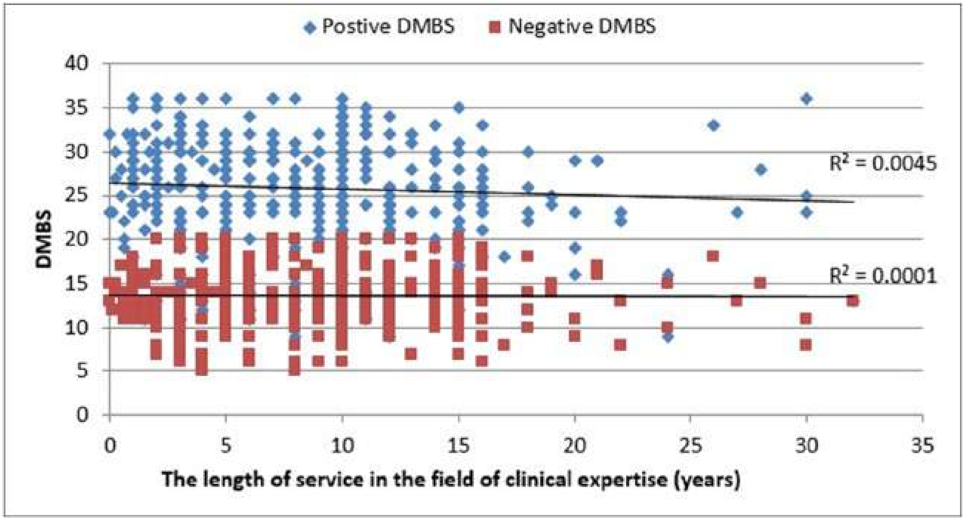

FIGURE 4 The correlation between physicians' length of serving in the field of clinical expertise and Defensive Medicine Behavior Scale (DMBS).

variations among different studies demonstrate the influence of socioeconomic factors and the availability of diagnostic tools in different clinical settings.

Regarding negative defensive medicine behaviors, the highest percentage (70.7%) of the participants indicated that they feel uncomfortable in practice because of the increased rate of reported malpractice lawsuits through several types of media. Then, avoidance of patients who are likely to sue the physician was reported by 63.1% of participants. The least number of participants (*n*: 420, 39%) reported avoiding patients with complex medical problems. Such practice is caused mainly by the fear of physicians being sued. This ultimately results in work-related stress and burnout and can adversely affect patients' safety and outcomes (Kolcu & Ozceylan, 2021). Likely, Ortashi et al. (2013) in the United Kingdom determined that 9.3% and 20.6% of hospital doctors reported refusal of the treatment of high-risk patients and avoidance of high-risk procedures respectively. These behaviors could be explained by the fact that the physician's reputation is his main source of income; so, he claims that he has all the right to take suitable actions even if these actions are sometimes unethical to protect his reputation which is considered his capital (Al-Balas & Al-Balas, 2021).

Data obtained from the present study suggest that defensive medicine is practiced widely. This was also concluded by previous reports from Italy, Turkey, the United States, and Japan which revealed that 60%, 72%, 73%, and 98% of physicians reported practicing defensive medicine respectively (Calikoglu & Aras, 2020; Hiyama, 2006; Panella et al., 2017; Zhu et al., 2018). Unfortunately, this practice constitutes a significant financial burden on healthcare systems all over the world. For example, defensive medicine was found to cost the public healthcare systems in Italy and Austria about €10 billion and €420.8 million per year, respectively (Antoci et al., 2019).

Though the current study demonstrates the wide practice of defensive medicine, the analysis of the physicians' perceptions about defensive medicine showed that nearly half (53.1%) of the participants were aware of the concept of defensive medicine and only 21.5% felt that they had sufficient knowledge about it. The literature revealed inconsistent results regarding this point; studies from Sudan, Turkey, and the United Kingdom showed that

42.7%, 78.1%, and 89.2% of their target populations were aware of defensive medicine (Ali et al., 2016; Kolcu & Ozceylan, 2021; Ortashi et al., 2013).

In this study, 88.8% thought that the number of malpractice lawsuits increased in recent years. This finding was not surprising as high incidences (98% and 90.6%) were also noted in previous studies by Bhandari et al. (2019), and Ortashi et al. (2013) respectively. Patients have become more aware of their rights than before and avail themselves of these rights through litigation (Mosime et al., 2016). Moreover, patients have high expectations regarding management quality, low morbidities, and mortality rates, and when these expectations are not fully met, violent repercussions can result against medical staff (Zhu et al., 2018). Additionally, lawyers try to reach maltreated patients to represent them in front of the court (Pienaar, 2016). These factors are supposed to predispose to the continuous increase of medical malpractice litigation.

The medico-legal environment and the liability of malpractice claims are important initiators for the practice of defensive medicine among physicians (Nahed et al., 2012). According to Sobh et al. (2022), Egyptian healthcare settings have witnessed a significant increase in malpractice claims recently. Another crucial issue is that Egypt's legal framework may support patients in medical malpractice cases while healthcare institutions and insurance providers do not provide physicians with any legal help (Arafa et al., 2023). Data obtained from the current study reinforce this statement as the majority of the participants (94.7%) reported that malpractice lawsuits will have an impact on medical performance and (72.9%) had concerns about malpractice when choosing their specialties. Moreover, despite being so difficult, (48.6%) declared considering changing their specialty or profession because of the malpractice anxiety. Physicians turn to defensive medicine to relieve stress, protect their safety, and ensure the continuity of their practice (Zhu et al., 2018). However, the perspectives of physicians towards professional liability and defensive medicine are influenced by studying forensic medicine as concluded by Aulino et al. (2023).

Unfortunately, the legal aspects of malpractice claims raise a dilemma. Malpractice is defined as deviation from the standard of care. However, the legal characteristics of the standard care lack objectivity as it is considered what other competent physicians would have done in similar situations. Subsequently, it is expected that physicians will practice defensive medicine following what their colleagues are doing (Shehata et al., 2022). This also could explain why a large proportion of the participants indicated the practice of defensive medicine despite only 15.4% of them having malpractice lawsuits during their medical careers. The practice of defensive medicine is not solely related to physicians' concern about litigation. Concerns about loss of professional reputation, the negative image among colleagues, and patients' avoidance are other contributing factors (Garattini & Padula, 2020; Keren-Paz, 2010).

68.2% of physicians reported that professional liability insurance makes them feel secure during professional practice. A higher percentage (84.7%) was reported by Shehata et al. (2022) in a study conducted on a sample of Egyptian anaesthesiologists. According to Kamel et al. (2015), anesthesiologists are sued more than most specialists. This sense of insecurity may be partially alleviated in the presence of liability insurance, especially in middle-low-income countries.

Globally, the COVID-19 pandemic has disrupted health systems and access to emergency facilities through the exhaustion of essential healthcare services and the delay of these services (Abubakar et al., 2024). In addition, the pandemic has raised concerns about the resurgence of paternalism among physicians and the discriminatory practices related to resource allocation in different health institutions (Fins, 2020; Merlo et al., 2021). Although the COVID-19 pandemic was an extraordinary event that challenged existing medical care standards and practices and was often beyond the control of practitioners, it was not an excuse for unlawful conduct (Plaiasu et al., 2023).

During the era of the COVID-19 pandemic, medical professionals and healthcare institutions faced several challenges regarding the provision of healthcare services, allocation of different resources, and applying effective infection control measures. Instead of face-to-face meetings with physicians, many patients preferred remote consultations and telemedicine. Consequently, there is a substantial risk of misdiagnosis due to insufficient visual cues increasing the anxiety of the physicians towards litigation and the practice of defensive medicine (Sloan et al., 2021). As a consequence, many medico-legal implications and issues of legal liability of professionals have arisen all over the world for avoidable errors (Filograna et al., 2021; Hartley & Perencevich, 2020).

Although the Egyptian Medical Syndicate has recently submitted a draft for a Medical Liability Law to Parliament, Egyptian medical professionals are still subjected to both Civil Code No. 131/1948 and Penal Code No. 58/1937 if they commit errors resulting in patients' injury or death (Beccia et al., 2022). This could support our finding that the majority of the participants agreed that the COVID-19 pandemic increased their concerns about malpractice suits and the practice of defensive medicine.

Antoci et al. (2022) have offered explanations for the potential ongoing escalation of defensive medicine during the COVID-19 crisis. They stated that the initial manifestations of COVID-19 are simulating the clinical presentation of winter flu and other seasonal diseases. When physicians become responsible for such patients with potentially infectious manifestations, they find themselves trapped in the practice of defensive medicine by different means to avoid failure in the diagnosis and treatment of these patients who may be COVID-19 infected. They also highlighted the awareness of the population about the life-threatening complications related to COVID-19 that evokes questioning about the sound medical practice and the possibility of litigation. In addition, they emphasized that in the absence of well-established effective treatment against COVID-19, physicians must protect themselves against the unexpected complications of an ineffective or wrong treatment plan.

Regarding the relationship between DMBS and the physicians' characteristics, the present study detected a statistically significant association between surgical specialties and the adoption of defensive medical behavior. Consistently, Bhandari et al. (2019) reported that the practice of defensive medicine was more common among surgical specialties when compared to nonsurgical specialties (61% vs. 39%). This could be explained by the fact that although all medical practitioners are susceptible to medical lawsuits, surgeons are at a higher risk for litigation as they usually face acute medical problems and poor outcomes may be inevitable, thus they are driven towards the practice of defensive medicine more than their colleagues (Nahed et al., 2012).

Interestingly, in the current study, DMBS is not affected by lawsuits due to malpractice. This result could signify that physicians may be involved in defensive medicine due to negative experiences gained from colleagues who already faced lawsuits. This finding also raises a concern about ‘clinical judicial syndrome' which is triggered by the sudden announcement of the litigation and the lawyers' aggressive language during the court trials. Given that, defensive medicine psychologically benefits physicians even if they did not experience litigation (Garattini & Padula, 2020).

The present study revealed that age did not have a significant relationship with the practice of defensive medicine. Moreover, the length of time in the profession and the clinical designations didn't show any significant differences regarding the DMBS. However, there was a significant association between the time spent working in the field of expertise and the practice of defensive medicine with the DMBS was significantly lower in physicians who spent 20 years or more in the field of specialty compared to other groups. This could suggest that the experience and confidence gained by physicians are determined mainly by years spent in the practice of their specialties rather than the age or the time spent in the profession as a whole. In contrast, Ortashi et al. (2013) found that defensive medicine practice was significantly lower in those aged more than 40 years in comparison with those who were less than 40 years ($p = 0.001$) and in consultants rather than other grades ($p = 0.000$). However, when they performed backward logistic regression analysis they concluded that only consultant grade was associated with defensive medicine practice.

In the study of Bhandari et al. (2019), the practice of defensive medicine among senior grades including lecturers and above was significantly higher rather than among residents (69.4% vs. 30.6%). They stated that residents work under the supervision of their seniors who uphold the major responsibilities and face medico-legal issues. They also did not detect any significant relation between the years of work experience and practicing defensive medicine.

In the same context, fear of litigation is the major driver of the practice of defensive medicine. Once practiced by senior physicians, it will be disseminated to younger physicians, even if unconsciously and unintentionally. Because medicine is based on clinical experience and skills acquired from senior physicians rather than self-study, this practice will become a fundamental part of the treatment protocols (Al-Balas & Al-Balas, 2021).

CONCLUSIONS AND POLICY IMPLICATION

The prevalence of the practice of defensive medicine was high among the participating Egyptian physicians, particularly among practitioners of surgical specialties and those who spent less duration in the field of their expertise. Including unnecessary details when explaining medical procedures to patients was the most frequently reported behavior. The COVID-19 pandemic increased this practice due to fears of litigation among physicians.

In Egypt, many factors may have contributed to the emergence of defensive medicine practice including the rise of aggressive actions against medical staff, the aggressive attitude of the media against the medical teams, the absence of career insurance for doctors, and the increase in litigation suits due to the absence of governing malpractice law.

Defensive medicine potentially affects the healthcare system by posing health risks to patients, reducing the quality of care, and increasing healthcare costs. That directly implicates the approaches to managing the diseases and arouses the need for algorithms and guidelines for treatment plans. Healthcare leaders should emphasize the health practitioners' moral, legal, and ethical responsibilities, and should develop policies that protect them against malpractice and lawsuit claims. This could help control the prevalence of defensive medicine practice, improve the quality of care, and reduce healthcare costs.

LIMITATIONS AND RECOMMENDATIONS

The cross-sectional design of this study did not allow for causal analysis. In addition, this study was conducted in only one central tertiary hospital. Thus, it is recommended to replicate this study in various healthcare settings to portray a collective picture of different forms of the physicians' defensive medicine practices, and its implication on the quality of the provided medical care, especially after the COVID-19 pandemic. However, based on the results of this study, there is an urgent need to approve a new malpractice law in Egypt as soon as possible to improve the physician-patient relationship and to help control the epidemic of defensive medicine practice.

AUTHOR CONTRIBUTIONS

All authors contributed equally to the study in the form of conceptualization, data curation, data analysis, interpretation, writing the original draft, and reviewing and editing the final draft.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The study was carried out after obtaining the approval of the research ethics committee of the Tanta Faculty of Medicine (approval number: 35265/2/22). Moreover, the study was conducted according to the Declaration of Helsinki, 1964, and its later amendment. Confidentiality of the data was ensured by making a code number for each participant. Informed consent was obtained from all individual participants included in the study.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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Breast cancer screening and early detection programs in Iran: A health policy analysis and recommendations

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Abstract

Screening and early detection programs for breast cancer (BC) have significantly reduced mortality rates and enhanced survival rates globally. Breast cancer screening programs in low- and middle-income countries like Iran need improvement. This study examines Iran's breast cancer screening and early detection (BCSED) policies, employing the Policy Triangle Model in two phases: a review of 27 documents including various related sources related of policies and strategies, followed by 20 semi-structured interviews across four distinct levels: policy, regional, clinical, and community levels. Content analysis for documents and MAXQ-DA_{2020} software for the second phase were used, and findings integrated. In our analysis of 27 national documents and 20 interviews, we found 10 themes, 19 sub-themes, and 42 specific codes across four dimensions of the mentioned framework. Main themes in the context dimension covered deficient interactions, deficiency in knowledge management, cultural challenges, and socioeconomic challenges. From the analysis of 27 national documents, we recognized service excellence schemes, personal health encouragement, and service levels. Policy formulation and monitoring and evaluation emerged as central themes for the process dimension, while stakeholder challenges were prominent in the actors' dimension. BCSED programs are multifactorial issues. Proposed strategies to address these issues include the dedicated funds for BC prevention programs, strengthening the Ministry of Health's stewardship role, elevating public awareness, and conducting systematic screening trials in select cities to provide valuable national evidence for future policymaking.

KEYWORDS
breast cancer, early detection, health policy, Iran, policy analysis triangle, screening

Highlights

- Breast cancer is recognized as the most widespread cancer and the primary cause of death among women across the world.
- Previous research have demonstrated that screening and early detection programs aim to detect diseases in their asymptomatic stages, thereby enhancing the potential for successful health outcomes.
- Although Iran launched a breast cancer screening program in 2014, its implementation faces challenges, and there is limited data on the participation and adherence of Iranian women to breast prevention programs.
- Some low- and middle-income countries have experienced positive effects from implementing screening programs and it shows that Iran may achieve to this potential to improve health outcomes.
- This study aims to conduct a comprehensive analysis of Iranian policies for breast cancer screening and early detection programs during last two decades using the policy triangle model, filling a gap in previous research.

INTRODUCTION

Breast cancer is recognized as the most widespread cancer and the primary cause of death among women across the globe (Farhood et al., 2018; Ferlay et al., 2015). In 2019, MENA (Middle East and North Africa) region as containing 20 countries including Iran reported 835,576 prevalent cases of breast cancer, causing 35,405 deaths and contributing to 1,222,835 DALYs (Disability-Adjusted Life Years) (Azadnajafabad et al., 2023). This represents almost 95% of the YLL (Years of life lost from mortality) burden in the region, with a noteworthy increase in age-specific incidence rates (ASR) for breast cancer (227.5%), surpassing population growth (73.8%) and aging (81.8%) between 1990 and 2019.

A geographic disparity in breast cancer incidence among Iranian provinces is depicted in Figure 1 (Bray et al., 2018).

Two groups of researchers have demonstrated that screening and early detection programs for breast cancer significantly enhance the prognosis and outcomes of the disease (Shadmani et al., 2017; Sung et al., 2021).

Screening aims to detect diseases in their asymptomatic stages, thereby enhancing the potential for successful health outcomes (Mathers et al., 2006). Screening programs are conducted through two types: opportunistic and mass screening. In opportunistic screening for breast cancer, a woman independently decides to undergo sporadic screening mammograms at her discretion. In mass or population-based or organized screening, women are systematically

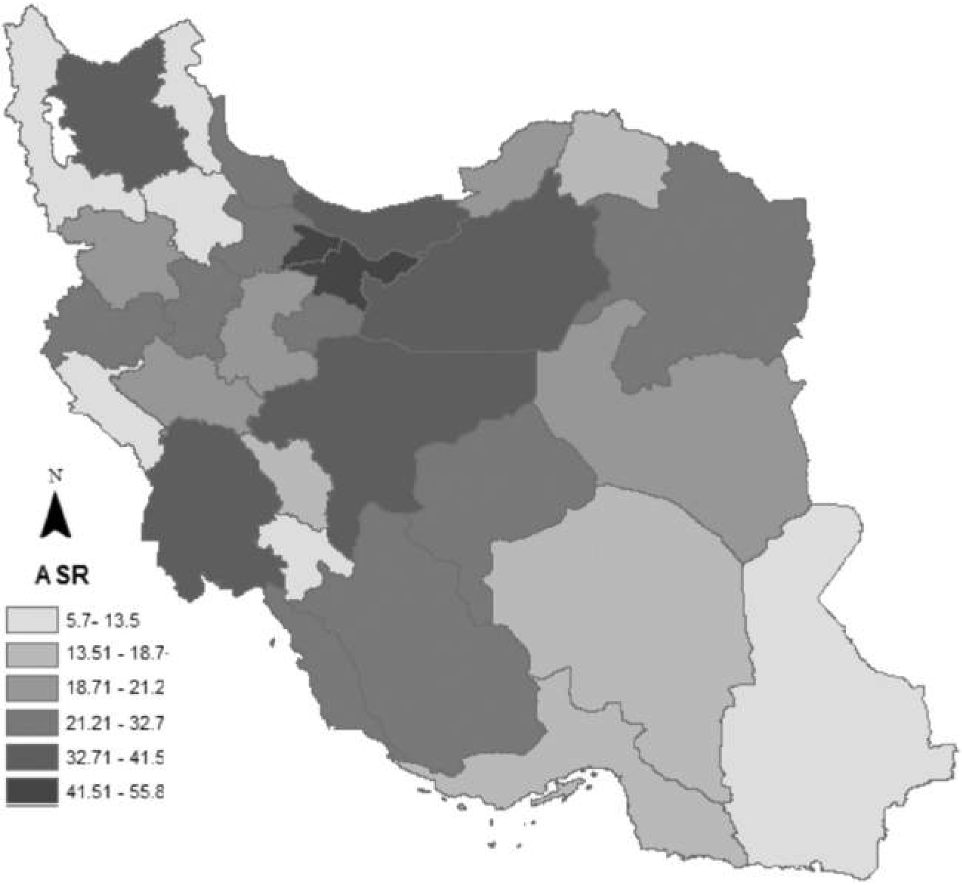


FIGURE 1 The geographic distribution of age-specific rate (ASR) of BC among Iranian women in 2017.

invited to have mammograms at predetermined intervals. The objective of breast screening is to decrease breast cancer mortality, particularly when conducted on a large scale in a population setting and is considered as one of the health system responsibilities (Kazeminia et al., 2022).

Early detection programs involve regularly examining individuals displaying warning signs of cancer. In the intervals between evaluations, the focus is on identifying symptoms and distinguishing significant cases from less critical ones (Khatib & Modjtabai, 2006). Important cases are then referred to higher-level and better-equipped centers for more comprehensive diagnostic measures. According to the American Cancer Society recommendations, there are three modes for the early detection of breast cancer (Day et al., 1989). These include awareness programs or breast self-examination, clinical breast examination, and mammography. Mammography is considered essential for early detection, capable of diagnosing small masses (tumors less than 2 cm), facilitating timely treatment, and improving the long-term survival of patients.

While some low- and middle-income countries have experienced positive effects from implementing screening programs, many still have poorly organized screening programs for breast cancer ("Irapen"—Iranian Ministry of Health, 2017). For instance, Dasgerdi et al. reported in 2022 that in Iran, there is no organized national breast cancer screening program, and limited information is available regarding the uptake and compliance of breast prevention programs among Iranian women; all screening is conducted on an opportunistic basis (Sullivan et al., 2021). In Iran, the National Cancer Control Program is a crucial initiative within the non-communicable disease control plan, focusing on three types of preventable cancers (Dastgiri et al., 2022). Following the National Cancer Control Program, the “Irapen” initiative is an executive plan encompassing three types of cancer: breast, cervical, and colorectal (Khatib & Modjtabai, 2006). Its implementation aligns with the Global Action Plan for 2013–2020 (National Cancer Management Program, 2013). In addition, in 2018, the “Health Transformation Plan” has indeed significantly impacted the Iranian health system in the field of cancer, aims to integrate the control of three mentioned types of cancers into the health system's responsibilities.

Iran initiated a population-based screening program for breast cancer in 2014–2015, prioritizing clinical examination followed by mammography and treatment procedures within the health system network. However, the current program operates on an opportunistic screening basis due to the health system challenges. Notwithstanding all the initiatives in cancer control in Iran, breast cancer remains a significant health concern among Iranian women. Considering the implications of this cancer on marital relationships and childbearing, and noting the positive and significant correlation between incidence and mortality rates, policy analysis of early detection and screening programs becomes crucial. Moreover, following the Sustainable Development Goals (SDGs) established by the United Nations in 2015, nations are committed to addressing a range of global challenges including health issues (World Health Organization, 2013). And women's health is consistently prioritized at all stages of life through these goals.

To the best of our knowledge, no previous research has conducted a comprehensive analysis of Iranian policies for breast cancer screening and early detection (BCSED) programs using the policy triangle model. This study aims to fill this gap by providing a detailed policy analysis within the framework proposed by Walt and Gilson, specifically designed for health policies (Daher-Nashif & Bawadi, 2020).

METHOD

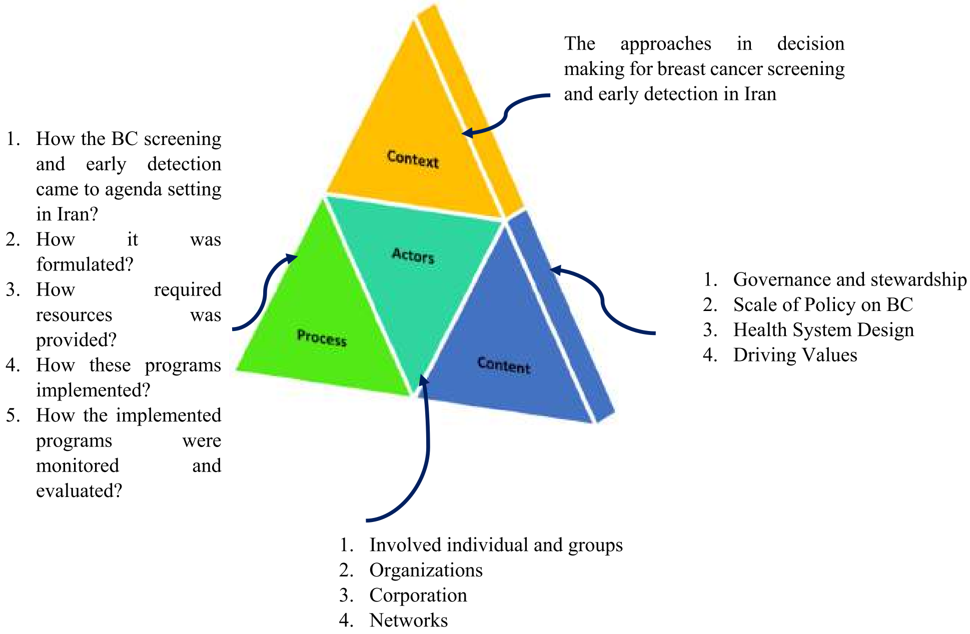
Study design and setting

This study pursued to assess and observe the practical translation of policies into the implementation of BCSED policies in Iran using Walt and Gilson's triangle policy model through a qualitative retrospective analysis carried out within a specific timeframe, from April 2023 to March 2024 at two sections. The framework encompasses four main categories: context, content, process, and actors as the core component of this triangle. Figure 2 shows this framework.

The triangle policy framework is a recommended approach for analyzing health policies in developing countries such as Iran, a middle-income nation (Walt & Gilson, 1994). It facilitates the examination of problems, the stewardship role of health systems, and the involvement of various actors in addressing an issue.

Review of current national documents on policies regarding BCSED

The research team examined a set of 27 documents including various sources related to policies and strategies concerning early diagnosis and management of breast cancer among Iranian population. Through this analysis, the documents were assessed to identify major content themes within Iranian society. These documents included national action plans, strategies, policy documents, legislative materials, diagnosis protocols, laws, regulations, and official reports. They were carried out through a review of internally published studies by Persian key words, and guidance of key informants at the Cancer Department for



The approaches in decision making for breast cancer screening and early detection in Iran

1. How the BC screening and early detection came to agenda setting in Iran?
2. How it was formulated?
3. How required resources was provided?
4. How these programs implemented?
5. How the implemented programs were monitored and evaluated?

1. Governance and stewardship
2. Scale of Policy on BC
3. Health System Design
4. Driving Values

1. Involved individual and groups
2. Organizations
3. Corporation
4. Networks

FIGURE 2 The triangle policy model for analyzing breast cancer screening and early detection in Iran.

Non-communicable Diseases of the Iranian Ministry of Health, the National Library of Iran, and internet hand search. The relevant policy documents were then obtained by contacting the appropriate centers, institutions, and organizations. Subsequently, data collection from these policy documents was conducted using a checklist specifically designed by the researchers. We obtained the accessible ones, and for those with restricted access, we obtained permission from the National Library through a letter of our university introduction. Our search spanned from the inception of the agenda of breast cancer screening in Iran in 2000 to the conclusion of 2022. Subsequently, to analyze the data, a three-stage content structure was utilized (Walt et al., 2008). This method involves identifying, analyzing, and reporting patterns (themes) in the text, proving to be valuable in qualitative data analysis. The document's details were extracted initially, followed by an explanation of its purpose to the team. Additional relevant knowledge was then incorporated, and the document was summarized accordingly.

Semi-structured interview with key informants (KIs) on BCSED

Interviewees were selected via purposive sampling, and since the number of experts in breast cancer screening policies in Iran is limited, a select group was asked to recommend other key individuals for interviews using the snowball technique to explore additional participants (Campbell et al., 2020; Naderifar et al., 2017; Nyimbili & Nyimbili, 2024; Rai & Bikash, 2015). Sampling was operated following WHO guidelines, ensuring representation across four distinct levels of the health system: policy, regional, clinical, and community levels (World Health Organization, 2014). The participants at policy level representatives from the Iranian Ministry of Health, the Cancer Administration Office, and Parliament Members of the Health Council. At regional level they were officials and academicians from medical universities, independent researchers, members from health insurance organizations, and the Iranian Medical Council; specialties and subspecialties from public and private clinical level; and Non-Governmental Organizations engaged in cancer programs, and staff from community level. The participants had no prior familiarity or established relationship with the interviewer. Each participant provided informed consent by signing an acceptance agreement before the commencement of the interviews. No audio recordings were made without the explicit consent of the participants, and confidentiality was strictly maintained throughout the process. Initially, three in-depth interviews were conducted using a pretested to validate the questionnaire designed, following the standard practice in qualitative studies (Qualitative Research in Health Care, 2020). Then, the primary researcher (Z. D.) conducted semi-structured interviews with 20 cases: 17 face-to-face, 2 online virtual, and 1 by phone, with open-ended questions to ensure comprehensive data collection. The interviews lasted between 45 and 77 min, with a median duration of 40 min. Given the varying levels of the interviewees, our questions naturally adapted. For example, discussions with policymakers revolved around the agenda-setting process, financial resources, equipment and staff acquisition, necessary medical school training, policy development, implementation obstacles, as well as policy monitoring and evaluation. Interactions with regional managers primarily focused on policy execution, resource needs, and implementation challenges. Conversations with specialists emphasized policy effectiveness, their role in policy formulation, and recommendations for improving policy impact, especially in a Muslim society. Engagements with the patient community centered on the disease's personal impact, treatment affordability and accessibility, sociopsychological dimensions, and the difficulties encountered by frontline nongovernmental organizations assisting these individuals. The interviews were conducted until the 15th session when no new issues emerged, indicating saturation, no new themes, subthemes, or codes emerged from the conversations. The remaining interviews reiterated the same content. To ensure adequate diversity and reduce the risk of missing important perspectives, we conducted interviews with an additional five individuals. This meticulous approach aimed to capture a holistic understanding of the subject matter and to affirm that no significant insights were overlooked or excluded from the analysis. The recorded interviews were transcribed before the analysis and coding stages. Initial general codes for analysis were proposed by the central research team and later refined through discussions with partner teams. Qualitative data analysis was conducted using MAXQDA_{2020} software.

Finally, the data analysis process conducted as follows. Initially, the categories were extracted by the primary researcher, followed by data coding by two researchers. The steps involved in data analysis and coding were as follows:

- Familiarization with the data (repeatedly reading the implemented texts, immersing in the data),
- Identifying and extracting primary codes (finding data closely linked to primary codes),
- Developing themes (organizing primary codes into relevant themes),
- Reviewing and finalizing identified themes,
- Naming and defining themes,
- Ensuring code and theme reliability (reaching consensus between coders through discussions and dispute resolution).

Data analysis incorporated acceptability, transparency, triangulation, repeatability, and reliability criteria. And ultimately, to optimize breast cancer screening programs and early detection in Iran, we are provide evidence-based recommendations to health policymakers.

RESULTS

Accompanied with documentary analysis, a total of 20 Key Informant (KI) interviews were conducted which included from various levels of involvement, including top-level government policymakers, middle-level government managers, parliament policymakers, epidemiologists, gynecologists, breast oncologists, breast pathologists, academic researchers, cancer registry officers, insurance company members, NGO members, primary health care providers, and service users from different cities of Iran. Most of the interviews (17 cases) were conducted in person by the first author (Z. D.), but those who resided in different cities were interviewed virtually or over the phone. Before the interview, a consent letter was sent via email, and once they confirmed and signed it, the interview took place and was recorded with prior arrangement. Table 1 displays the demographic characteristics of the participants.

TABLE 1 The characteristics of interview participants.

Variables	Number
Gender	
Male	7
Female	13
Education level	
High school diploma	2
Bachelor	2
Master	2
Ph.D.	5
Medical physician	1
Medical specialist	8
Position	
Top-level government policymaker	2
Middle-level government manager	2
Parliament policymaker	1
Epidemiologist	1
Gynecologist	1
Breast oncologist	2
Breast pathologist	1
Academic researcher	2
Cancer registry officer	2
Insurance companies member	1
NGOs	1
PHC service providers (midwife)	2
Service users	2
Total	20

The findings are structured following the “Policy Triangle Framework.” Context as one of the dimensions of this framework encapsulates the economic, political, demographic and sociocultural elements influencing policy formulation. Content, another dimension, includes various policy elements such as policy purposes, strategies, action plans, and scientific evidence. Actors, the other dimension, denote the individuals and groups involved in policy formulation and implementation. Lastly, the process represents the dynamics and interactions among actors across the policy cycle, regarding agenda setting, planning, implementation, and monitoring. We have tried to incorporated acceptability, transparency, triangulation, repeatability, and reliability criteria in our analysis (Henry Poduthase, 2015). In total, we have explored 10 themes, 19 subthemes, and 42 specified codes through these four components.

Context analysis

Iran, a developing country in Western Asia, is one of the most densely populated nations within the WHO's East Mediterranean Region (EMRO), estimates to have a population of around 88,550,570 in 2022. Iran, where approximately 96.6% of the population adheres to Islam, is classified as a middle-income country. The nation, in 2022, recorded a gross domestic product (GDP) of US $413.49 billion, with annual inflation at 43.5%, annual GDP growth of 3.8%, and a GDP per capita of US $4,669.6 (World Bank Open Data, 2022). The reported percentage of current health expenditure as a share of GDP was US $5.77 in 2021 (World Health Organization, 2024). The “Health Transformation Plan” in 2018 has indeed significantly impacted the Iranian health system over the past decade.

The reform plan, in the field of cancer, aims to integrate the control of three types of cancers, including the breast cancer, into the health system's responsibilities. For this objective, three levels of cancer clinics, within the healthcare network system (HCNS), have been categorized:

1. The 1st Level Clinics: present prevention, early detection, and screening services in alignment with the “Guidelines for the Management of Early Cancer Detection Services” (Motlagh et al., 2022). These clinics will serve as referral points from primary health services (PHC) within the HCNS and are located nationwide.
2. The 2nd Level Clinics: operate as cancer diagnosis and treatment centers, providing essential facilities including diagnostic (Dx) such as mammography, and treatment/therapy (Tx) such as radiotherapy, outpatient chemotherapy, supportive and palliative care. This type of clinics are found in the heart of major cities.
3. The 3rd Level Clinics: offer more extensive and comprehensive cancer cares, containing diagnostic services via high-tech imaging (including PET scans), and a wide range of treatment options like radiotherapy, outpatient and inpatient chemotherapy, supportive and palliative care, and surgical procedures. Third-type clinics offer services exclusively in provincial centers.

Based on the WHO Cancer Country Profile 2020, Iranian cancer profile, illustrating existing resources in cancer control, is presented in Table 2 (Cancer Country Profile of Islamic Republic of Iran, 2020).

Despite these initiatives, several challenges persist in the early detection and screening of breast cancer in Iran. In addressing these issues, we have adopted the policy triangle model, placing initial emphasis on understanding the context in which four themes, and seven subthemes have been derived from the 17 codes, which are further elaborated below and described in Table 3.

TABLE 2 Iranian health system capacity (workforce and equipment) per 10.000 cancer patients.

Infrastructures	Year		Workforce	Year	
Availability of population-based cancer registry (PBCR)	2019	High quality PBCR	Available staff in ministry of health who dedicates significant proportion of their time to cancer	2019	Yes
Quality of mortality registration due to cancer	2007–2016	Low	Radiation oncologist	2019	22.2
External beam radiotherapy (photon, electron)	2019	11.0	Medical physicist	2019	31.8
Mammography	2020	58.6	Surgeons	2014	115.5
CT scanners	2020	77.5	Radiologist	2019	211.1
MRI scanners	2020	27.5	Nuclear medicine physician	2019	18.2
PET scanners	2020	0.5	Medical and pathology lab scientist	2006	Not clear

Theme 01—Deficient interactions

Intersectoral action is recognized as a coordinated collaboration among multiple sectors within and outside the health domain to achieve health outcomes more efficiently and effectively than when operating independently (World Health Organization, 1986). Two subthemes and five related codes have been identified for this theme and are presented in Table 3 and we are trying to explain them in this section.

Throughout our assessments, absence of interaction has been identified and categorized in two subthemes: insufficient internal interactions within the health system and inadequate external collaborations involving other ministries engaged in the management of noncommunicable diseases, including cancer.

In terms of insufficient internal interactions within the health system, despite the establishment of a systematic network, such as the clinics mentioned earlier, recent years have witnessed suboptimal implementation processes, resulting in various challenges. One of these challenges is the division of responsibilities among various vice-chairs. In Iran's health system, the Health Vice (Hygiene Vice), Treatment Vice, and Food and Drug Vice collaborate on cancer-related matters. While the practical responsibility for early cancer detection and screening lies within the Health Deputy's scope, the lack of essential coordination and potential conflicts of interest among the three deputies prevent the proper execution of the work process, especially in referral system. As highlighted by one of the health ministry's interviewees, the absence of coordination in this process leads to issues:

> Our goal is to shift early diagnosis to mammography for individuals over 40, facilitating the process by promptly setting tasks related to mammography within the three levels of clinics in the health system network. This approach aims to reduce waiting times and ensure the efficiency of our workflow. Despite our intentions, our workflow has faced challenges including an unorganized referral system and the customized implementation of standard operating procedures, leading to difficulties for the individuals we referred. (MKI-06)

External interactions with other ministries reveal insufficient coordination among responsible entities. Investigations into breast cancer risk factors in Iran highlight the

TABLE 3 The main themes, subthemes, and specified codes extracted based on health policy triangle model.

Dimensions	Policy	Themes	Subthemes	Codes
Context		Deficient interactions	• Insufficient interactions within the health system	• Unorganized workflow in referral system • customized implementation of standard operating procedures
			• Insufficient interactions between the health system and other involved ministries in NCDs	• No autonomous budgetary for cancer prevention or screening at PHC level • Unintegrated public awareness programs • Other priorities for interaction than BC
		Deficiency in knowledge management	• Inadequate management of infrastructures • Discontinuity of previous programs	• Insufficient integration in information registration systems • Incomplete agreements with insurance institutes • Fluctuating of performance in standards • Treatment-oriented approach • Lack of commitment to previous plans • Diverse management approaches
		Cultural challenges	• Religion and beliefs	• Societal taboos surrounding women's sexual organs
			• Traditional behaviors	• Accumulation of cultural misconceptions regarding female chastity
		Socioeconomic challenges	• Social challenges	• Limited breast cancer awareness among women • Smoking, drug and alcohol consumption • Lake of social support
			• Economic challenges	• Unstable economic conditions • Lack of monthly income • Lack of health supplemental insurance coverage
Content	Early detection	Service quality	• Service accessibility	• Geographical limitations • Insufficient insurance coverage

TABLE 3 (Continued)

Dimensions	Policy	Themes	Subthemes	Codes
				• Suboptimal communication between medical staff and patients
			• Service standardization	• Insufficient funds allocated for breast cancer prevention • Disorganized referral system in health system network • Shortage of specialized workforce • Inadequate M and E programs • Process-focused stewardship role for MOH
			• Information management	• Nationwide inconsistencies in information integration
			• Stakeholders involvement	• Insufficient collaboration among stakeholders • Conflict of interests
	Screening	Promotion of individual health	• Rising awareness	• School-based educational and sensitizing programs • Education and public outreach initiatives • Evidenced-based identified risk factors
		Service stratification	• Standard operating procedures	• Conducting the target groups through a well-organized infrastructure
Process		Policy formulation	• Limitations of Scientific Principles in Policy Formulation	• Underutilization of HTA capacity • Limitations of standard operating procedures
		Monitoring and evaluation	• Inadequate Planning for M and E	• Unsystematic (Process-Focused) monitoring and evaluation systems
Actors		Stakeholder challenges	• Stakeholders authority	• Role Acceptance • Providing evidenced-informed policies
			• Stakeholders interest	• Conflicts of interest • Conflict in dual roles (supervision and provider)
			• Stakeholders involvement	• Merit-based decision making in the system

multidisciplinary elements within a spectrum of social determinants of health. This includes environmental, social, and most importantly economic factors, involving diverse organizations in society and reflecting the complex interplay of factors contributing to breast cancer risk. This weak collaboration has been mentioned by one of interviewees:

> In the field of early diagnosis or screening programs, the health deputy has no autonomous budget. Indeed, during the formulation of the yearly budgetary plan, the Ministry of Economy and Finance did not allocate a distinct budget for cancer prevention within the scope of the Ministry of Health. (MKI-11)

Furthermore, besides the budgetary constraints, other key stakeholders, such as the Ministries of Education, Sciences, and Sports and Youth, are influential partners of the Ministry of Health with the potential to enhance health awareness regarding breast cancer and its modifiable risk factors. However, as one academician points out:

> Integrating breast cancer prevention education into the curricula of the Ministries of Education and Sciences presents an opportunity to educate teenagers and young individuals on modifiable risk factors, thereby contributing significantly to breast cancer reduction. Collaborative efforts, such as implementing regular national programs with the Ministry of Sports and Youth, can promote a healthy lifestyle and prevent youth inactivity. Unfortunately, there is a lack of willingness on the part of the involved parties to make efforts in this domain. (AKI-12)

In light of these conditions, it seems that intersectoral cooperation and interactions may be influenced by competing priorities arising from the limited resources within each sector. As one researcher pointed out:

> Currently, in our country, road accidents and cardiovascular diseases take precedence for inter-sectoral cooperation. Considering the disease burden, these two issues are given higher priority, leaving lower attention for concerns such as breast cancer in inter-sectoral interactions. (RKI-09)

Theme 02—Deficiency in knowledge management

Long-term cancer control programs require thorough planning, continuous monitoring, and informed adjustments to remain committed to previous steps, and meeting stakeholders' needs. In this process, knowledge management is crucial for effective leadership. We have identified two subthemes and six corresponding codes within this overarching theme (Table 3), which will be further elaborated in the following sections.

As the primary one, despite the development of documented instructions for early breast cancer detection, inadequate management of infrastructures in the implementation phase faces numerous challenges. The first challenge is associated with the lack of integration in the health registration system.

The "Integrated Health System", known in Persian language by the abbreviation of its initial letters as "Sib" was established in 2015 to register, maintain, and update electronic health records for Iranians. However, its usage is not uniform across all provinces of Iran, as some regions employ separate systems for recording health information. This lack of integration poses challenges, such as heightened workload for collection personnel, the necessity to re-enter information into the Sib system, and restricted access between the public and private health sectors. One of the official experts in cancer registry system explain this issue more clearly:

> We now have other systems similar to the Sib system, such a “Integrated information system of Mashhad University of Medical Sciences in north-east of Iran” Known in Persian by the abbreviation of their initial letters as “Sina” and a specially designed system “Health information software” known as “Naab” in Golestan University of Medical Sciences in northern of Iran, which function independently without proper integration into the Sib system. Moreover, the lack of a standardized software and information registration system in both the government and the private sector poses obstacles to the solid transmission of information to the Ministry of Health. (AKI-23)

Recently, the Ministry of Health has approved free in charge early detection of breast cancer. This strategic procurement initiative offers free services covered by insurance institutions for first-level referrals. However, certain issues persist; for instance, one of the interviewees indicated:

> While some of the services such as mammography or sonography for breast cancer at the triple clinics are seemingly covered by insurance institutes, the agreement is not comprehensive, leaving expenses for essential equipment and consumables, such as biopsy needles during procedures, uncovered. This imposes a financial burden on individuals due to the high associated costs. (SKI-28)

Another interviewee acknowledges that while standards have been announced at various levels of the health system, the implementation has not extended to levels two and three due to a lack of resources and knowledge managment. The interviewee states:

> Planning has been exclusively conducted at level one, specifically at Primary Health Care (PHC) centers. However, no clear plan has been developed for levels two and three, which serve as referral centers for confirming the diagnosis and continuing the required treatment. Consequently, individuals referred from level one to level two or three may experience confusion, and the frustrating process makes stop their willingness to continue. (RKI-09)

Another issue with the ineffective execution of Ministry of Health policies during implementation is the shortcoming of qualified individuals in crucial roles. According to statistics, before the year 2000, only 12.5% of Iranian medical students were women, and the government responded by setting a goal that half of new students would be female (Azarmina, 2002). Today, one-third of the medical students in Iran's medical schools are women. All the residency positions in obstetrics/gynecology are reserved for women, as are half of the positions in internal medicine, general surgery, and cardiology. In many other specialties, including orthopedic surgery, urology, neurosurgery, ophthalmology and psychiatry, women must fill at least 25% of the residency positions (Beyraghi & Soklaridis, 2019). Despite efforts to educate specialized personnel in diagnostic and therapeutic imaging at medical science universities. The quantity of adequately trained personnel appears insufficient. Furthermore, the majority of clinical group trainings at various levels tend to prioritize treatment over prevention and early detection. For instance, as signified by a parliamentarian:

> Our health system is predominantly physician-oriented, with doctors carrying management roles in the execution stages. The education provided to doctors in our medical universities primarily focuses on clinical issues and treatment. Throughout their training, doctors are not equipped with the skills to be successful managers or to address the reduction of disease burdens. Consequently, their managerial approach is treatment-oriented and prevention is a lower priority. (PKI-20)

Discontinuity of previous programs is another essential factor to ensure effective leadership in long-term cancer control programs, as emphasized by some of the interviewees, for example, one of them indicated that:

> The priorities of the health system depend on the managers in charge with their different approaches. Screening or early detection of breast cancer, for instance, may be a priority for one manager who plans extensively for it. However, with a change in management, the subsequent manager may not prioritize the same issue. Consequently, there is no commitment to maintain the previous initiatives, leading to potential challenges in the implementation process and resource wastage. (RKI-15)

Theme 03—Cultural challenges

We have traced out two subthemes and two corresponding codes within this theme (Table 3), which will be elaborated upon in the following paragraphs.

Despite the health system's ongoing efforts, within specified time frames aligned with global campaigns, to raise awareness about noncommunicable diseases, including cancer, challenges persist, particularly in the context of breast cancer. Unlike other cancers, discussing breast cancer encounters cultural taboos due to the societal perception of the breast as a sexual organ. While medical students of both genders understand and try to appreciate this stigma as part of being a woman in a Muslim country, this cultural aspect becomes apparent in awareness campaigns like the October initiative. Two interviewees highlighted:

> There is constraint on using the term ‘breast’ in the media. We are compelled to substitute it with ‘chest cancer.’ However, this substitution is scientifically inaccurate and may lead to misconceptions, associating it with thoracic cancers instead of specifically addressing breast cancer. (RKI-03 and RKI-09)

Despite recognizing factors such as physical activity as protective against breast cancer in Iranian studies, cultural constraints pose challenges for women to readily access public spaces and sports opportunities for exercise (Ataollahi et al., 2015; Holakoei et al., 2006; Jafarinia et al., 2016; Kashfi et al., 2000; Namiranian et al., 2014; Rahimi et al., 2016; Rouhparvarzadeh et al., 2014; Saki et al., 2011). Although some public parks have established limited sports spaces for women, the insufficient number of these spaces restrains accessibility for all women. A female patient interviewee highlighted:

> As a woman, exercising in public spaces isn't easy. Full coverage is required, and it's better to have a family member, preferably a man, with you to make it look like proper exercise to the community. Without these precautions, it might

> be misinterpreted. Consequently, I choose fewer public spaces like parks for my physical activities due to these restrictions. (PaKI-10)

Various cultural factors are identified as barriers to participation in breast cancer prevention programs among Iranian women in different studies. These include feelings of embarrassment and shame, societal stigma, and the influence of fatalistic and religious beliefs (Azami-Aghdash et al., 2015; Bashirian et al., 2021; Faryabi et al., 2023; Ghahramani et al., 2020; Haghighi et al., 2022; Hajizadeh et al., 2023; Khazaee-pool et al., 2014; Momenimovahed et al., 2020; Morowatisharifabad et al., 2015; Noori et al., 2021; Razi et al., 2023; Saeedi et al., 2022; Tabrizi et al., 2018). As another female patient noted:

> Maybe if I had help earlier, my condition wouldn't have advanced to this stage. My friends mentioned that mammograms in the health center we were referred to from our region are conducted by male staff. I felt embarrassed at the thought of a man performing it, so I hesitated for a month or two before getting a mammogram. (PaKI- 11).

As the evidence indicates, cultural accumulation in traditional societies like the Iranian context significantly influences considerations that can either disrupt or encourage educational planning or the rate of acceptance about a health issue. In Iranian culture, there is often a reluctance to discuss female genital cancers, including breast cancer, particularly in the presence of men. This issue is presented by a gynecologist:

> Schools lack training programs aimed at enhancing awareness among adolescent girls regarding self-care practices, such as individual breast examinations. This absence leaves teenage girls seeking accurate information in a secure environment, pushing them to turn to online platforms where they may encounter incorrect and unclear information. (GKI-25)

Theme 04—Socioeconomic challenges

The elements of socioeconomics such as public health education, social support, community protection, and economic conditions play a crucial role in shaping individuals' capacity to make informed health decisions, manage housing and healthcare costs, cope with stress, and address various aspects of their lives. Six codes and two subthemes are discussed in this section in below, that are considered in Table 3.

The inadequacies in women's awareness of breast cancer, as well as deficiencies in understanding screening and early detection programs, represent significant societal challenges evident in multiple studies within the Iranian context (Farhadifar et al., 2016; Hatefnia et al., 2010; Majidi et al., 2017; Mirzaei-Alavijeh et al., 2018). These studies have highlighted a pronounced correlation between women's awareness, increased rates of clinical breast examinations, and the attitudes of women—especially within Muslim communities like Iran—toward adopting breast cancer screening initiatives, with a specific emphasis on the role of mammography. This challenge is noted by one of the researchers:

> The current health program lacks a consistent effort to raise awareness among women. Initiatives, like the October campaigns, are time-limited and lack continuity. The challenge is that simply providing information is not enough; creating awareness requires additional facilities. Moreover, ethical concerns

> limit how much information can be shared, especially when the facilities are not enough to meet the increased demand caused by higher awareness. (RKI-09)

Unstable economic conditions, particularly in recent years, have escalated public stress levels, notably among women. The rising stress levels have contributed to an increase in the consumption of tobacco, drugs, and alcohol among women. Internally conducted studies have identified these behavioral patterns as contributing factors in the heightened risk of breast cancer (Faryabi et al., 2023; Khoramdad et al., 2022; Mohamadi et al., 2023; Motie et al., 2021; Rostampour et al., 2023). One of the midwives, operating as the primary point for women's screening and early diagnosis within the health network in one of the first level clinics, remarked:

> In earlier years, the women seeking our services led healthier lives, with a minimal number engaging in smoking or drug and alcohol abuse. However, in recent times, there has been a notable rise in the prevalence of these substances among our clientele. When inquired about the reasons behind their consumption, economic challenges, and unfavorable social circumstances are frequently cited. The escalation is often seen as a coping mechanism to alleviate the stress induced by adverse economic conditions. (OKI-19)

Social support is defined as the perception and reality of being cared for, having assistance available from others, and, most notably, being a part of a supportive social network. Certain studies in Iran demonstrated a positive correlation between the positive role of social support with women's attitudes and their participation in breast cancer screening programs (Hajizadeh et al., 2023; Joulaei et al., 2023; Momenimovahed et al., 2020; Noori et al., 2021; Saeedi et al., 2022). An executive manager from an NGO that supports cancer patients said to us:

> Some of those who come to us are individuals who have discovered our organization during their most desperate moments. They have received a diagnosis of breast cancer, but lack the necessary support or people in their lives to assist them through this challenging journey. When they encounter the companionship we offer, they regain hope to persevere through the treatment process. (NGKI-16).

In the absence of an effective referral system, where patients are not adequately managed, patients often attempt to alleviate their stress by covering the expenses associated with private diagnostic and treatment centers. At this critical point, economic factors play a significant role. Women who have a steady monthly income or supplementary insurance find it easier to navigate the process. On the contrary, women without a fixed monthly income or supplementary insurance coverage tend to be more hesitant, leading to delays in diagnosis and treatment. This issue is mentioned by one of the interviewees:

> Women who are employed and benefit from either fixed monthly or supplementary insurance are more inclined to access early diagnostic services from private centers. Supplementary insurance significantly alleviates the financial burden of treatment costs, providing assurance to the patient and their family. However, a critical concern arises with a group of vulnerable women who face heightened risk factors for breast cancer. Unfortunately, the existing health system lacks a comprehensive plan to address the specific needs of this vulnerable population. (RKI-02)

Content analysis

Content includes a systematically devised framework of strategic objectives and corresponding actions, meticulously structured to operationalize and manifest policies. A comprehensive review was conducted on 27 documents, comprising 8 strategic and development documents, 2 national development programs related to cancer, 5 comprehensive national plans, 10 national guidelines, and 2 recent reports from cancer registries. For this section, we have outlined two policies, three overarching themes, six subthemes, and 15 specific codes, each of which will be elaborated on in the following explanations.

Theme 01—Service quality

In the pursuit of providing service quality goals of cancer early detection programs, some elements play remarkable roles. They are considered as external factors. External factors such as geographical limitations, insufficient insurance coverage, and prolonged waiting lists for mammography screening services, which collectively contribute to restricted service accessibility. Besides, in Iranian society, characterized by diverse ethnicities, languages, dialects, and traditions, suboptimal communication between health staff and service users prevents access to services, resulting in decreased service coverage.

A major challenge arises from the lack of standardization in services, various factors contribute to this issue, as outlined before. These include the country's geographical dispersion, the presence of multiple decision-making centers, and inadequate equipment and manpower. Furthermore, an analysis of broader policy frameworks, including development plans over the past two decades, indicates a notable lack of emphasis on prioritizing cancer prevention and screening programs in the Iranian context. The insufficient funding for cancer prevention, coupled with the absence of a well-organized referral system, contributes to the imperfect implementation of standard operational procedures for patient referrals.

Although, universities of medical sciences have been established in big cities of Iran, and each of them has its own teaching hospitals to educate general medical staff, clinical experts, at the specialist, subspecialist, and at Ph.D. levels in related fields, depending on their existing facilities, a significant challenge lies in the training and underutilization of human resources, preventing efforts to achieve service standardization. Additionally, challenges associated with cancer early detection strategies include the acknowledged inadequacy in monitoring and evaluation systems, a topic to be further explored in the process analysis. Notably, the Ministry of Health operates with a process-focused stewardship role rather than an outcome-centered approach.

As additional recognized inadequacy within breast cancer early detection policies refers to the absence of collaborative efforts among the respective stakeholders. As explicitly articulated in the National Cancer Management Plan, concerted collaboration among all stakeholders is imperative for the realization of the objective to ameliorate the burden associated with cancer risk factors. In the context of Iran, challenges such as the impact of personal interests and the restricted participation of senior managers in the formulation of guidelines contribute to a less-than-optimal alignment of directives. Based on a manager from one of the insurance companies:

> Some senior insurance managers previously believed that according to the law, the primary responsibility for breast cancer screening lies with the Ministry of

> Health and insurance companies are not required to perform screening; so they did not consider it among the responsibilities of their institution. (IKI-16)

Theme 02—Promotion of individual health

In the pursuit of individual health promotion goals within cancer screening programs, a significant challenge arises from inadequate public awareness. The improvement of individual health is shaped by a cohesion of internal and external factors. We discussed the external elements in early detection content analysis part above. Internal elements, including personal awareness and sensitization is discussed in next paragraph.

The deficiency of public awareness lies in the insufficient societal understanding of screening programs for breast cancer especially among women. Despite women's increasing presence in science, health, and even some managerial roles in recent years, their basic needs have been overlooked. This knowledge gap can be attributed to deficiencies in the educational system, from school-based education to university and public information initiatives.

However, despite the extensive research on breast cancer risk factors in Iran, the findings have not been effectively communicated to the public and specific target groups. The information is scarce, with limited dissemination mostly confined to academic circles. This contrasts with the potential to reach a broader audience by utilizing popular media channels like radio and television or through engaging documentary programs or official social media.

Theme 03—Service stratification

The ultimate challenge includes defects in the classification of health services, deficiencies in the mentioned referral system, and inadequacies in standard operating procedures. These issues contribute to confusion and, at times, lead to the cancellation of the follow-up process for patients.

Process analysis

Traditionally, the policy process has been characterized by distinct steps, passing from problem definition to alternative specification, resource allocation, implementation, and finally monitoring and evaluation of the policies (Lasswell, 1956). However, in recent years, there has been a shift toward a new approach aimed at enhancing our understanding of the policy process. In total, the term “process” refers to the activities undertaken to activate the policy cycle. Two themes, and two subthemes derived from three codes of this dimension, including the shortcomings related to applying scientific principles in policy making and the deficiencies in monitoring and evaluation systems, that will be discussed below and highlighted in Table 3.

Theme 01—Policy formulation

In the development stage of protocols for early detection and screening of breast cancer, it is crucial to rigorously adhere to scientific principles in policymaking. This commitment to scientific principles has an imperative impact on different phases of the policy cycle, such as the implementation, and at the evaluation phases.

The effectiveness of health policies connects significantly to the profundity and quality of policymakers' knowledge of the topic. A crucial tool in this regard is Health Technology Assessment (HTA), a systematic approach to evaluating various aspects of healthcare technologies and interventions. Globally, HTA plays a key role in ensuring the efficient allocation of healthcare resources and in delivering the most effective and cost-effective services to patients. However, this approach is underweighted within Iranian health system. The economic evaluation of mammography screening at three specific intervals in Iran suggests its lack of cost-effectiveness, particularly in the second and third rounds (Haghighat et al., 2016). The World Health Organization (WHO) advises different screening strategy for developing or underdeveloped countries. One of the key persons of the MOH stated:

> In 2014, the WHO issued a policy document categorizing countries into three groups based on resources:
> 1. High-resource countries
> 2. Low-resource countries with suitable infrastructure
> 3. Low-resource countries with inadequate infrastructure
>
> For groups two and three, the WHO did not recommend screening but rather emphasized early diagnosis or screening through clinical examination. Iran is situated through the third category, so performing mammography is not recommended as a mass screening for us. (MKI-06)

The approach of evidence-informed health policy, characterized by decision-making guided by the best available scientific evidence, is a fundamental aspect in policy formulation (Rajabi, 2012). However, there are identified gaps, as noted by an epidemiologist:

> It is too early to perform mass population mammography in our country. There is a lack of solid screening evidence to inform such a decision. Even basic indicators in this field, such as the response rate index, have not been established. To date, a comprehensive national recall rate as the necessary standard is absent, and proper follow-up of referred patients has not been implemented to provide evidence of the undertaken efforts. (EKI-21)

Theme 02—Policy monitoring and evaluation

As the final phase of the policy cycle, monitoring and evaluation (M and E) furnish evidence-based information crucial for refining and enhancing policies. However, in Iran, this phase confronts several challenges.

The design of monitoring and evaluation should be integral to the formulation phase before program implementation. However, for breast cancer screening programs, the focus has primarily been on the process, neglecting the importance of tracking the program's outcomes. As one the interviewees said:

> A significant budget, prompted by representatives from specific cities, was allocated by the parliament to establish mobile screening centers for breast cancer. However, the choice of cities was influenced by parliamentary members'

> opinions rather than epidemiological considerations. Containers with mammography equipment and specialists were sent for screenings, and individuals diagnosed were recommended to initiate treatment. Regrettably, there was no subsequent follow-up, no monitoring and evaluation, creating a gap in certainty and continuity of care. Although the charitable effort is praiseworthy, the absence of proper planning and monitoring programs leads to resource inefficiencies and provides a false sense of reassurance. (RKI-09)

Actor analysis

A stakeholder analysis as the core of policy analysis in three angle model is an approach aimed at comprehending the individuals or groups involved in a health innovation planning process (Franco-Trigo et al., 2020). Stakeholder analyses lay the foundations to inform appropriate planning processes and execute strategic actions. Given the multifactorial nature of breast cancer, the development of policies involves various stakeholders. While some stakeholders possess substantial potential, their role tends to be passive in policy implementation. The following provides details on stakeholders with potential impacts on breast cancer early detection and screening programs.

The Ministry of Health (MoH) is a central stakeholder in shaping cancer control policies in Iran (Dastgiri et al., 2022; National Report of the National Cancer Registration Program, 2018). The Center for Non-communicable Disease Management in this ministry, particularly its cancer office, serves as a key authority for breast cancer control. Other stakeholders include insurance organizations (IOs) like the Social Security Organization and Iran Health Insurance Organization, the Ministry of Welfare (MW), Ministries of Sciences and Education (MS and E), and Ministry of Sports and Youth (MS and Y), the Islamic Consultative Assembly (ICA), the Parliament Research Center (PRC); the Expediency Discernment Council the Cancer Institute of Iran (EDCCII), the Iranian Academy of Medical Sciences (IAMS), the Islamic Republic of Iran Broadcasting (IRIB), the Iranian Society of Oncology (ISoO), gynecologists, and private clinics.

Based on the acquired information, stakeholders demonstrated heterogeneous levels of engagement, spanning a spectrum from low to high participation. Noteworthy the findings indicate that specific stakeholders such as MS and E, MW, MS and Y, ICA, PRC, EDCCI, IAMS, and IRIB despite holding substantial influence in cancer early detection and screening, display an absence of coordinated engagement. The participation of organizations such as the Planning and Budget Organization, the Food and Drug Administration of Iran, municipalities, and governorates requires improvement. Meanwhile, specific organizations, including the Cancer Institute of Iran, the Motamed Cancer Institute, and Insurance Organizations, demonstrate satisfactory engagement and should be maintained. Various divisions within the municipality's Social and Cultural Affairs Department, specifically the Women's Department of the Municipality and the Social and Cultural Deputy, have the potential to initiate efforts in promoting women's health. Additionally, the activities of certain NGOs focused on cancer are also relevant to women's health. demonstrates the matrices. Utilizing the collective capacity of these offices or other similar offices can profoundly influence the identification and training of target groups for breast cancer.

In the subsequent paragraphs, we will discuss the stakeholder analysis derived from the interviews, emphasizing themes such as challenges related to stakeholders' authority, interest, and involvement. A summary of the presented one theme, three subthemes, and five codes of this dimension is provided in Table 3, and is elaborated in below.

Theme 01—Stakeholders' challenges

Identifying various types of stakeholders' authority, including subject expertise, societal position, and individual experience, is crucial for gaining a deeper understanding of key stakeholders in a health topic. Even in breast cancer-related projects involving key stakeholders, they fail to fulfill their roles effectively. As one of the interviewees stated:

> In breast cancer research projects assigned to research institutions, the research sponsor does not designate a scientific supervisor. Their support is limited to providing financial resources, leaving research centers with autonomy. This autonomy may lead to conflicts of interest in the interpretation of results. (RKI-09)

However, key stakeholders in the health system may sometimes have a passive role rather than actively engaged in this area. One of the parliament interviewees explained it as below:

> Conversely, individuals within the health system have no authority to intervene in budget allocation or participate in planning actively. Their role is often limited to a symbolic presence, as the decision-making power lies with influential figures in the parliament who despite their good intentions, these decisions may result in untargeted initiatives. (PKI-20)

Another challenges is conflict of interest. It occurs when an individual or organization is involved in multiple interests, whether financial or otherwise, creating a situation where prioritizing one interest may clash with another. As mentioned by one interviewee:

> Since the health system is known as the country's health supervision body, it bears the responsibility of being the service provider, service policymaker, and strategic service purchaser. This extensive integration poses challenges for the health system in effectively fulfilling its role as the ultimate supervisor, encountering difficulties in achieving successful outcomes and making variety of conflicts of interests. This inefficiency translates to a waste of time and resources within the health system, ultimately impacting the valuable time of breast cancer patients, for whom time is crucial. (PKI-13)

Another issue in stakeholder discussions regarding BCSED is the lack of adherence to ongoing programs. It seems that with the recent change in senior management at the Ministry of Health, there have been alterations in planning, leaving previous initiatives incomplete. This could lead to time and resource wastage. The viewpoint expressed below by an individual from the Ministry of Health has been acknowledged and considered by nearly all interviewees:

> As management transitions occur, the emphasis on early diagnosis may decrease due to diverse perspectives within different networks. Nonetheless, the establishment of a deputy for early detection and screening in health insurance in 2020, driven by the efforts of the cancer administrative office, represented a significant development. Achieving a unified focus on screening requires coordination with other insurance and organizations. However, the momentum faced a suspension in September 2021 with a change in

> government, leading to a pause in screening services pending decisions from the new management. (MKI-06)

This conflict is not limited to macro-level stakeholders but is also observed among micro-levels, as one of the interviewees pointed out:

> Public trust in the health system is lacking, particularly in large cities where individuals hesitate to visit first-level health centers. The perception is that the system leaves patients midway without proper follow-up on their treatment process. Therefore, people feel that their time is wasted, and the correct diagnosis is not provided. The absence of a planned approach to reassure and build trust in the health and treatment network contributes to underutilization of resources in these centers, resulting in only a limited number of individuals seeking services. (PKI-20)

Another concern depends on the underutilization of the capabilities and competencies of various individuals or organizations in addressing challenges. A researcher from the National Institute of Health highlights this by stating:

> We often fail to engage all stakeholders in addressing health challenges. For instance, we have never leveraged the involvement of knowledgeable individuals in this field. There's a prevailing assumption that due to its leadership role, the health system can autonomously address all health issues. However, we have overlooked whether meritocracy is sufficiently embedded in the structure of the health system or not. (RKI-15)

CONCLUSION AND PROPOSED RECOMMENDATIONS

The current challenge of budget allocation within the health vice-deputy department poses a significant obstacle to effective BCSED initiatives. These initiatives collectively serve to enhance breast cancer awareness, accessibility to screenings or early detections, and the overall effectiveness of the healthcare system in addressing this crucial health concern. To overcome this issue, the following recommendations are categorized for consideration by Iranian health systems and policymakers:

Health system strategies

1. **Establish an independent budget and performance-based funding:** Advocate for the creation of an independent budget specifically allocated to the health vice-deputy department. This dedicated budget should prioritize BCSED programs, ensuring sufficient resources for their implementation. And implement a performance-based funding model where the effectiveness and outcomes of breast cancer screening programs determine future budget allocations. This approach encourages efficiency and accountability in program implementation.
2. **Preserving health system stewardship:** Ensuring the health system continues its leading role in implementing BCSED policies by promoting all stakeholders engagement and collaboration across sectors such as health, finance, transportation, education, agriculture, and trade.

3. **Enhancing infrastructure:** Improving overall infrastructure by upgrading equipment, providing comprehensive workforce training, refining the referral system, and establishing an integrated web-based health information system.
4. **Executing targeted educational programs:** Implementing focused public educational initiatives to raise awareness and enhance public understanding of BCSED. Using media channels to communicate the importance of early diagnosis can help generate public interest and political will.
5. **Prioritizing modifiable risk factors:** Recognizing the modifiable nature of the majority of breast cancer risk factors among Iranian women, policymakers should institute a structured program targeting risk factors and social determinants of health (SDH) in their investment strategy to indirectly reduce breast cancer incidence.
6. **Expanding health insurance coverage for screenings:** Enhancing financial accessibility to screenings by incorporating them into health insurance coverage, thereby ensuring more individuals can benefit from these preventive measures.
7. **Establishing population-based cancer registries:** Developing comprehensive cancer registry systems nationwide to enhance monitoring and tracking of cancer incidence, facilitating informed decision-making.
8. **Facilitating screening access through policies:** Creating policies that simplify access to screening services, with a focus on reducing urban–rural disparities, ensuring equitable access to screening and early detection programs for all segments of the population.

Community engagement strategies

1. **Engaging trusted community leaders:** Involve influential figures, including community leaders and religious figures, who enjoy the trust of the population, in promoting awareness, emphasizing the importance of breast cancer screening, organizing awareness campaigns, and promoting a supportive environment that encourages women to partake in breast cancer screening programs.
2. **Leveraging non-governmental organizations (NGOs):** Integrate NGOs into educational initiatives overseen by the health system, drawing on their successful experiences in addressing breast cancer. Hold NGOs accountable for their role in advancing awareness about risk factors and the significance of screening and early detection.

LIMITATION OF THE STUDY

There were some limitations in our study concerning some key informants involved in breast cancer:

1. Despite a few key informants in national media, none agreed to participate in our interviews.
2. Other organizations, including *the Planning and Budget Organization, and the Ministry of Welfare* also declined to have dialogue with us.

To the best of our knowledge, both organizations have the opinion that the Iranian Ministry of Health is the primary authority on the issue and do not consider themselves as main stakeholders in this field.

AUTHORS CONTRIBUTIONS

Zeinab Dolatshahi: Study design; National documents search strategy; interviews; data gathering; transcribing interviews; preparing and writing the manuscript; submitting the manuscript; data analysis. **Pouran Raeissi Dehkordi**: Study design; preparing and writing the manuscript; data analysis. **Hassan Abolghasem Gorji**: Study design; data analysis. **Seyed Massoud Hashemi**: Data analysis. **Nahid Reisi**: Data analysis. **Toraj Harati Khalilabad**: National documents search strategy; data analysis.

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ETHICS STATEMENT

This study is solely built on published literature, data, national published documents, and expert interviews, without involving human subjects. Prior consent was obtained from all interviewed experts. The research is conducted in accordance with the ethical code IR.IUMS.REC.1402.416 issued by Iran University of Medical Sciences.

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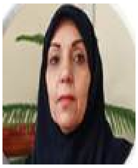

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RESEARCH ARTICLE

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"Patriarchy permeating health policymaking": Influence of gender on involvement in health policymaking from nurse leaders' perspective

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Abstract

Despite a greater percentage of women in the healthcare workforce, women are underrepresented in leadership positions. Researchers have examined the influence of gender on women involvement in policy-making and leadership in male-dominated professions. However, no research has explored nurses' perspectives about the role of gender in impacting their involvement in health policymaking in female-dominant profession. This study explores nurse leaders' perspectives on how gender can influence their involvement in health policymaking in Pakistan. Eleven nurse leaders with at least 1 year of experience in policymaking participated in semi-structured interviews. The data were analyzed using reflexive thematic analysis. Four themes emerged: Patriarchy Permeates Health Policymaking; Women's Social Status and Nurses' Involvement in Policymaking; Intentionally Disregarding Nurses' Insights on Policy Forums; Condescending Attitudes Towards Women Nurses on Policy Forums. The underrepresentation of nurses in health policymaking is influenced by gender and social biases and stereotypes against women and the negative social image of the nursing profession. Healthcare organizations must play an active role and develop policies to combat gender-based discrimination and curb the underrepresentation of nurses in healthcare policymaking.

KEYWORDS

gender, healthcare, health organizations, health policy, Nursing, policymaking

Key Points

- Nurse leaders perceived that nurses' involvement in health policymaking is affected by social perception of gendered roles and leadership traits.
- Power imbalance and discrimination against women is a significant driver of lower participation and involvement of nurses in health policymaking.
- Nurse leaders reported that despite participating in the policy forums, they were often the "silent partners."

INTRODUCTION

The global health-care workforce is estimated to be 65.1 million, 70% of which is women (Boniol et al., 2019, 2022). While there is a greater percentage of women than men in health care workforce, women mostly occupy nonleadership positions (Shannon et al., 2019). For example, van Daalen et al. (2022) reported that in World Health Assembly delegations from 1948 to 2021, men comprised 82.9% of the delegations compared to no more than 30% of women. Feminist scholars have historically articulated the underrepresentation of women in policymaking, suggesting that women are still expected to align with traditional gender roles in society, undermining their role in leadership and policymaking (Bustelo, 2017; Lombardo et al., 2017; Reingold et al., 2020).

Sociological and health system theory and research highlights that gender disparity has been prominent in leadership and policymaking, with women's involvement and progression in leadership and policymaking affected merely due to gender bias (Dhatt et al., 2017; Lombardo et al., 2017; Shannon et al., 2019). Gender equality in leadership and policymaking is critical to ensure that the skills and experiences of both women and men are utilized for optimizing the health-care system and creating a balanced workforce to address multifaceted health-care challenges (World Health Organization, 2021b). Paradoxically, while nurses constitute the largest segment of the healthcare workforce (Boniol et al., 2022) and a large majority of nurses are women, their representation and participation in health-care policymaking remains low (Rasheed et al., 2020; Rumsey et al., 2022).

As direct care providers, nurses are critical agents of change within health-care settings (World Health Organization, 2021a). Drawing from their sustained interactions with patients and their families, nurses play an instrumental role in developing, revising, and implementing health policies beneficial to patients, their families, the health-care workforce, and the health-care system (Kunaviktikul, 2014; Rasheed et al., 2020). Health policymaking refers to the development of policy plans, engaging in decision making, and directing actions to accomplish specific goals in a community or society or health care system (World Health Organization, 2012). In today's rapidly demanding healthcare environments, nurses should be involved in health policymaking (Rasheed et al., 2020; Rumsey et al., 2022) because using their experiences and ethical and moral compass, nurses can analyze the broader issues and microlevel consequences and outcomes affecting the quality of care (Salvage & White, 2019). Despite the importance of nurses in health-care system, nurses' voices remained mostly unheard at global policies forums (Rasmussen et al., 2022).

Numerous studies (AbuAlRub & Foudeh, 2017; Barzegar Safari et al., 2020; Hajizadeh et al., 2021) and reviews (Rasheed et al., 2020) document barriers to nurses' involvement in health policymaking and outline nurse leaders' views on how to enhance nurses' representation in policymaking (Inayat et al., 2023). An array of reported barriers includes: limited knowledge and experience in policy development, communication constraints, organizational structural issues, leadership issues, intra and interprofessional power dynamics, and the marginalized role of nurses (AbuAlRub & Foudeh, 2017; Barzegar Safari et al., 2020; Hajizadeh et al., 2021; Rasheed et al., 2020). These studies offer valuable insights into nurses professional and health system-level issues towards participation in health policymaking. However, to date, no studies have examined how gender distribution and female dominance in nursing could influence nurses' involvement and representation on leadership and policy forums.

The involvement of women generally and nurses specifically in policymaking is a concern globally, but it is a bigger issue in developing and patriarchal societies and contributes to additional disparities for not only working women but also affects the quality of life and services available to women generally. Previous research suggests that gender norms can shape women's participation in leadership and policymaking as well as their career projection into higher leadership (Bustelo, 2017; Lombardo et al., 2017; Muktar et al., 2022; Vong et al., 2019). Therefore, this study was designed to generate knowledge about gender influence on nurses' involvement in health policymaking. The findings can be useful for stakeholders to understand the importance of nurses' participation in policy-making and how this can be facilitated.

PURPOSE

The purpose of this study is to explore nurse leaders' perspectives on the impact of gender on nurses' involvement in health-care policymaking.

METHODS

Research design

This qualitative study was conducted as a part of a larger convergent mixed methods study about nurses' perceptions of their role, barriers, involvement, and impact of involvement in health policymaking. For the qualitative phase, a descriptive qualitative approach was used to better explore first-person accounts and the direct experience of participants to generate findings for practice and policymaking (Sandelowski, 2000, 2010). The COREQ guidelines were followed for reporting (Supporting Information S1: File 1).

Sample and setting

This study was conducted in Pakistan and the target population included all nurses with experience in leadership and management roles in various capacities working in four major cities (Islamabad, Lahore, Karachi, and Rawalpindi) in Pakistan. Maximum variation purposive sampling was used to ensure diverse representation for in-depth exploration of the studied phenomenon. The inclusion criteria were: (a) nurses with at least 1-year experience of working as nurse managers, nurse leaders, or policymakers for regulatory bodies, educational institutions, and hospitals or health care centers and (b) nurses with at least 1 year of experience in policymaking positions.

Data collection

Nurse leaders were recruited through email, social media, and physical posters. The willing nurse leaders contacted the researchers with the information provided on the recruitment flyers and set up the most convenient time and date for the interview. Data were collected from December 2020 to July 2021. One doctoral-prepared and one doctoral student conducted semi-structured interviews with nurse leaders. All data collectors were experienced qualitative researchers. The semi-structured guide was developed based on the previous literature (Ditlopo et al., 2014; Rasheed et al., 2020; Sarnkwawkum & Oumtanee, 2018). The guide included questions about nurses' role in policymaking, personal, organizational, and systematic challenges and issues, and factors impeding nurses' involvement in health policymaking. Before the interviews, the researchers provided detailed study information and requested the leaders to sign the consent form. The interviews were conducted in both English and Urdu and were audio-recorded. During the interviews, the researchers engaged in active listening skills and noted personal observations. The adequacy of the number of interviews was assessed based on the data saturation principle (Saunders et al., 2018). After nine interviews, no new data seemed to emerge from the participants' accounts. Therefore, to ensure that saturation was reached, two additional interviews were conducted. Saturation was confirmed.

Data analysis

We used reflexive thematic analysis because it is a valuable method to analyze the viewpoints of participants to generate relevant themes for informing practice. Constructivist and inductive stances were followed to generate themes that are reflective of social and cultural discourses and meanings intrinsic to the data (Braun & Clarke, 2021; Clarke et al., 2019). The six-step process of reflective thematic analysis was used. First, the verbatim transcripts were read several times to understand the overall meaning of the participants' views and the researchers jotted down preliminary insights about the data. Second, content-driven codes were developed using a combination of inductive, semantic (explicit), and latent (implicit) coding. The initial codes were combined for further refinement and analysis. The codes with similar meanings and relationships were combined into initial themes, which refer to broader patterns of meanings. Third, the preliminary themes were evaluated against the data set and codes and were refined as needed. Fourth, the potential themes were refined and/or discarded and the selected themes were collated based on their relevance and content into final themes. Fifth, the final themes are named and defined. Finally, the conceptual meaning and account of each theme were written and evaluated before finalization (Clarke et al., 2019).

Rigor

The interview guide was developed based on qualitative literature and an integrative review of nurses' involvement in policymaking and politics. The initial version of the interview guide was evaluated based on the first two interviews, and questions were refined in terms of language. Two researchers worked together during the data analysis, reflected upon the preliminary themes, resolved conflicts, and then finalized the themes. The data collectors and analysts accounted for personal biases and maintained personal journals. The credibility of the research was ensured through purposeful sampling. An audit trail as data were coded and saved in MAXQDA for analysis and all the analytical moves employed during analysis and interpretation were discussed and shared within the team. Member checking was completed as the transcripts were sent back to seven nurse leaders (Shenton, 2004). A thick description of study methods and findings was presented in terms of contextual and interpretative narrative (Younas et al., 2023).

Ethical considerations

Ethical approval was obtained from the relevant board (IRB#IRBEC/BIH/015/2020). Informed consent was obtained from the participants and no identifying information was collected to ensure confidentiality and anonymity. The data were encrypted and password-protected, and only the research team had access to the data.

FINDINGS

Demographics

Eleven participants completed interviews, of which seven were women ($n = 7$) and four were men. The age ranged from 38 to 64 years. Most of the participants had at least a master's degree in nursing, health care management, or health system management and one nurse leader had a doctorate in nursing. Additional certifications included diplomas in hospital administration and human resource management. The clinical working experience of the nurse leaders ranged from 2 to 20 years, the educational experience ranged from 5 to 22 years, and the experience in leadership and policymaking ranged from 2 to 12 years. The leaders had worked in educational, clinical, and health policymaking with local and global healthcare organizations such as Pakistan Nursing Council, World Health Organization, Pakistan Nursing Foundation, COVID-19 Taskforce, & National Health Care Associations.

THEMES

Based on reflective thematic analysis, we generated four themes to capture the influence of gender on nurses' involvement in health policymaking. Each of the themes is discussed in detail with supporting quotes as follows and illustrates with codes and subthemes in Table 1.

Patriarchy permeates health policymaking

This theme captured the nurse leaders' account that patriarchal culture affects health care organizations and policymaking environments. The leaders expressed that men dominate the health system, environments, and policy forums and are the primary decision-makers for patient care, the health care workforce, and unit and organizational level changes. The leaders shared that no organization could escape from male dominance and patriarchal culture, and patriarchal thinking permeates almost every aspect of health care. They noted that in health care, male dominance manifests as physicians taking leadership roles and getting involved in policymaking for the nursing workforce. This leads to the limited involvement of nurses in policymaking:

> Our society is male-dominant, and in the medical profession, most physicians are male. Physicians believe they can do everything, so they affect nurses' involvement in leadership roles. This is a critical factor that leads to the insufficient involvement of nurses in policymaking. (Nurse Leader, Age 44)

Nurse Leaders expressed that since nursing remains a female-dominated profession, it bears the brunt of this patriarchal culture where men in health care have the power to dictate their decisions. They noted that, socially, men, in general, and physicians in health care

TABLE 1 Themes, subthemes, and codes.

Theme	Subthemes	Codes
Patriarchy permeates health policymaking	Male dominance in leadership and policy positions	Male physicians take general leadership roles
		Male managers perform nursing leadership roles
		Limited roles for female nurses as policymakers
	Men in leadership control policymaking	Women nurses need hard work to get recognition at policy forums
		Limited visibility of competent nurses at policy forums
		Men in leadership positions make policy decisions
		Nurses are expected to only implement policies
Women's social status and nurses' involvement in policymaking	Female dominance in nursing makes it a lower-tier profession	Low respect for the nursing profession in society and health care
		Public places more trust in men for decision making due to male dominant society
		Medicine is highest ranked profession in health care
		Women's status in society affect nursing image
	Low social status for women	Women are not considered assertive and/or persuasive
		Men are believed to be more decisive than women
		Lack of respect for women in society
		Negative views about women' competencies and abilities in society
Intentionally disregarding nurses' insights on policy forums	Resisting nurses' insights during policymaking	Men on policy forums ignore nurses' views
		Competent nurse leaders not asked to provide inputs on policy forums
		Physicians more vocal than nurses on policy forums
	Nurses “silent stakeholders” on policy forums	Nurses are expected to agree to men's decisions
		No appreciation for nurses who share insights
		Nurses struggle to make their voices heard

TABLE 1 (Continued)

Theme	Subthemes	Codes
Condescending attitudes towards women nurses on policy forums	Incivility towards nurses on policy forums	Rude behaviors towards nurses
		Outright rejection of nurses' views
		Derogatory tone of voice towards nurses
		Rolling eyes at nurses' comments
	Men demonstrating dominance over nurses on policy forums	Male physicians verbally resisting nurses' participation on policy forums
		Men on policy forums believe women nurses should have passive roles
		Lack of support from male administrators for women nurses participating on policy forums
		Men controlling the narrative on policy forums

settings, in particular, are considered superior to women and this superiority and patriarchal culture impacts the involvement of nursing professionals in policymaking forums and leadership roles. It was also expressed that despite having the knowledge, skills, and competencies to take on leadership and policymaking roles, nurses have to work hard to increase their visibility and competence as policymakers:

> Even if nurses share valid points and offer reasonable suggestions, the decision-making is in the hands of men who lead the task force. I think nurses' role in policymaking is connected to women's role in society. Living in a dominant male society, women are required to follow what men dictate to them. In the history of Pakistan, we had one female prime minister who was elected three or four times. All other prime ministers are always men. Women's participation in general politics is very low, so you can imagine how far nurses can go in health system-level policymaking. I am not downgrading our profession, but the nursing profession has all the traits of a marginalized profession in a male-dominated and dictated society. There are more women in nursing, men do not want to join the profession, and our image is very bad. Even today, when a woman wants to join the nursing profession, people look at them as if they are alien. Working night shifts in hospitals is considered an open invitation to sex. How can we become visible in the policymaking race when our image is the worst of all the professions in our country? (Nurse Leader, Age 47)

Women's social status and nurses' involvement in policymaking

Nurse leaders explained that the image of women in society is intertwined with the involvement of nurses, in general, and women nurses in health policymaking, in particular. They expressed concerns about the hierarchical healthcare system in which the nursing profession is placed at the lowest level compared to medicine and allied healthcare professions. They noted that comparisons across professions are quite common. When such comparisons are biased due to sociocultural beliefs about and attitudes toward women, it can negatively impact women, especially in nursing, which remains a female-dominated profession. More specially, they noted that medicine is in social terms more respected than nursing partly because men dominate the field of medicine. They elaborated that limited social respect for women translates into the policymaking culture. Hence nurses being mostly women, do not receive the respect that they deserve in policymaking forums:

> In male dominant society, patients trust physicians more so than nurses because in patients' view, physicians are more qualified and experienced than nurses. So, the nursing profession and nurses themselves are devalued. When people compare the two professions, they always rank the medical profession higher than the nursing profession. I think this plays a role in the lack of nurses' involvement in policymaking. (Nurse Leader, Age 42)

Nurse leaders linked the low social image of women to the patriarchal culture and the trust that the public places in female-dominated professions. Women are expected to do as they are told and perform caring and other responsibilities while accepting male authority. The same expectation pervades the policy-making arena. Respondents expressed that there is a mistaken social belief and stereotype that women are not assertive, persuasive, or leaders, hence they cannot be influential policymakers in health care. This belief was also expressed by one male nurse leader who argued that men are more decisive than women, which is why nursing—a female-dominated profession—fails to get equal representation in policymaking forums. Nevertheless, other nurse leaders noted that the public places more trust in men because of the ingrained belief that men are primary decision-makers and better leaders, which ultimately affects how nurses are not involved in policymaking. As one participant explained:

> The social system, hierarchical culture, and patriarchal system do not help either. Nurses are probably the lowest on the hierarchy of health care professionals. Even pharmacists and physiotherapists are given more respect and value than nurses. I do not mean to compare, but nurses are not the most likable profession than medicine, pharmacy, and allied health care. The female dominance linked to the patriarchal culture also affects nurses' involvement in policy making. We live in a culture where most do not respect women, and nursing is mainly a female-dominated profession, so eventually, people do not respect nurses either. (Nurse Leader, Age 43)

Intentionally disregarding nurses' insights in policy forums

Nurse leaders mostly agreed that nurses' involvement in policymaking is low because of ingrained social stereotypes about women and their leadership abilities and the dominance of men as leaders. They also expressed that when nurses join the policy forums and take on leadership roles, the men in leadership positions ignore their insights, views, and contributions. There is a lack of acceptance and male resistance towards women taking on leadership roles:

> There are many nurses who have a vast knowledge of clinical and social healthcare issues, but when they apply for policy positions or jobs, no one calls

> them because they are nurses. When nurses are invited to attend policy meetings, no one values their opinion because nursing is an underrated profession in Pakistan. (Nurse Leader, Age 47)

Nurse leaders discussed that nurses are often invited on policy task forces and policymaking forums as “silent stakeholders” expected to nod their heads and accept decisions. They noted that despite possessing a wide range of knowledge about patient care, the healthcare system, and social issues, nurses who serve on policy forums are intentionally disregarded. It was noted that nurses and their views are generally not valued nor taken seriously because of the social belief that nurses are less competent and knowledgeable than other professions, mainly medicine.

> Nurse leaders such as nurse specialists are included in the policymaking committees, but their opinions are not valued. Only nomination of nursing directors or department heads, but no one values their insights and views. (Nurse Leader, Age 55)

The leaders also explained that nurses have to work harder to prove their worth and competence to become policymakers. However, joining policy committees and task forces have their own challenges, such as making their voices heard and getting appreciation for their valuable experiences and insights:

> Nurses are not respected in our health care. Even if they have the education and expertise required to sit on the policy forums, they are not particularly invited to serve on the boards. If one or two nurses make it to the policy forums with their own efforts and work, their views are not taken seriously. When nurses speak up, many physicians and health administrators just shut them up or literally ignore their comments. (Nurse Leader, Age 48)

Condescending attitudes towards women nurses on policy forums

Nurse leaders noted that discrimination and incivility towards nurses is common in the workplace. They explained that because a social image of women as weak and dependent on men permeates the health care culture nurses, despite their skills and competencies, they are not respected and valued. Respondents noted that such negative behaviors towards nurses can shatter their confidence to become active members of policy committees. Those nurses who want to share their views and contribute to developing and changing policies experience outright rejection from other individuals, particularly men on the policymaking committees:

> Our society undermines nurses' role, which affects nurses' confidence to participate in health or any kind of policymaking. In my 10 to 15 years of nursing experience, I have witnessed how female nurses have been mistreated in hospitals, communities, and educational settings and on various policy forums. (Nurse Leader, Age 47)

Nurse leaders noted that uncivil and discriminatory behaviors towards nurses on policy forums could take many forms, such as the “silent treatment,” outright rude comments, men dominating the conversations, using derogatory tone of voice, and rolling eyes at their comments. It was also noted that men expect women nurses participating in policy forums to agree with everything that male administrators express. These leaders noted that this expectation is linked to the belief that nurses are sub-ordinates of physicians and men in health care and men can dictate any task. The social media negative image of nurses as sensual objects and tools for men's gratification also comes into play when women nurses are invited to participate in the policy forums. It was noted that male physicians have a strict mentality about the role of nurses, and they are resistant to changing this negative image. Therefore, they often mistreat nurses in the healthcare culture as well as policy forums. The leaders expressed that these condescending attitudes towards women nurses are reflective of low respect and stereotypical images of women as leaders and nurses as policymakers in male-dominated health care culture and leadership:

> When nurses join policy forums, they are not respected, particularly male administrators, and physicians often say mean things about nurses and often speak to them rudely. I feel nurses' involvement in policymaking is greatly affected by how they are treated in the health care system. The incivility towards nurses, particularly female nurses, is common, and it affects their involvement and sharing of experiences on policy forums. (Nurse Leader, Age 41)

DISCUSSION

The present study aimed to explore the influence of gender on nurses' involvement and participation in health policymaking. While studies explored the involvement of women in male-dominant professions (Muktar et al., 2022; Vong et al., 2019), this is the first study to explore the influence of gender on participation in policymaking in a female-dominated profession. The core findings are that nurse leaders perceived nurses' involvement in health policymaking to be affected by social perceptions of gendered roles and leadership traits. Men in the roles of physicians and administrators often control the participation of women in health policy forums, dictate policy narratives to them, and control the extent of their participation even if they join policymaking forums or task forces. The findings highlight that power imbalance and discrimination against women is a significant driver of lower participation and involvement of nurses, particularly women nurses, in health policymaking.

The first two themes about patriarchal culture in health care and the inadequate social image of women in society speak to the global issue of women's underrepresentation in leadership across the healthcare sector. Studies conducted in Cambodia (Vong et al., 2019), Zimbabwe, Kenya (Dhatt et al., 2017), Ethiopia (Muktar et al., 2022), and Spain (Pérez-Sánchez et al., 2021) identified gender as one of the primary determinants influencing representation and participation of individuals in health care in leadership positions, organizational decision-making, and policymaking. The negative social image of nursing—and particularly women in nursing—contributes to gender bias, gender segregation, and power struggles among men and women within the healthcare system (Ashraf et al., 2020; Godsey et al., 2020; González et al., 2023; Mason et al., 2018). A recent scoping review of nurses' image in social media highlighted that negative and stereotypical image of nursing persists (González et al., 2023). Additionally, nurses' role in healthcare policymaking is generally not recognized (Rasheed et al., 2020). Mason et al. (2018) reviewed 365 articles on health and health policy and reported that nurses were quoted in only 2% of the articles and never sourced in stories about healthcare policymaking. A World Health Organization (2021b) report also highlighted that in nursing and health care, the work and task distribution is often segregated based on health care professionals' gender (World Health

Organization, 2021b). These findings call attention to the importance of addressing gender inequality within female-dominated professions. While ample research has established that men in nursing experience stigma, barriers, and discrimination due to the gendered nature of the profession (Cottingham, 2019; Cottingham et al., 2016; Saleh et al., 2020; Zeb et al., 2020), an integrative review noted that both men and women are prone to experiencing discrimination. However, the types, nature, and consequences of discrimination may differ by gender (Gauci et al., 2023). A recent meta-synthesis also highlighted that some men employ manipulative strategies to increase their visibility at the expense of the rights of women nurses (Younas et al., 2022). Younas et al. (2022) argued that while it is important to address discrimination against men in nursing, they also emphasize that strategies to address injustice against male nurses should not deprive women nurses of their rights.

Several areas of future research can be drawn from these findings. First, comparative studies could explore the barriers, participation, and extent of participation of men and women nurses in healthcare policymaking. Second, qualitative studies should focus on exploring the experiences of only male nurses who have been involved in policymaking and their perceived gender and profession-based barriers. Finally, studies could explore the influence of patriarchal and hierarchical healthcare culture and power struggles on men and women nurses' involvement in health-care policymaking.

Nurse leaders reported that despite participating in policy forums, they were often “silent partners.” Consistent with this finding, Aspinall et al. (2021) also reported that women nurses are underrepresented in health policymaking and their viewpoints and valuable perspectives are often ignored within interdisciplinary teams. This finding that men ignore the viewpoint of women nurses on policymaking forums is consistent with the notion of testimonial injustice in healthcare. Testimonial injustice refers to the notion that a listener implicitly or explicitly fails to recognize the viewpoints of a narrator because the listener considers the narrator's views less credible (Fricker, 2007, 2008). Testimonial injustice from a listener could be based on social, racial, cultural, ethnic, or identity prejudices and stereotypes (Fricker, 2008). In this study, the prejudice against women nurses on policy forums and men intentionally ignoring or undervaluing their perspectives in healthcare policymaking is based on gender bias and negative and stereotypical images of women in society. Fricker (2007) noted that testimonial injustice occurs mainly due to social and identity power. Social power refers to individuals' active and intentional or passive and unintentional capacity to control others' actions and identity power pertains to the idea that individuals control others' narrative and acts based on their identity such as male, female, and transgender (Fricker, 2007). Testimonial injustice is both an individual and social phenomenon (Fricker, 2007, 2008). Therefore, to address testimonial injustice against women nurses in health policymaking, health-care organizations, and leadership should play a proactive role and develop policies that call for equal representation of men and women in healthcare policymaking.

The final theme of condescending attitudes towards women nurses, in particular, and nurses, in general, is intertwined with incivility against and mistreatment of women in leadership positions. Previous studies also noted that women in leadership positions experience abuse, harassment, misogyny, and incivility (Folke et al., 2020; Mavin et al., 2014). Nurse leaders also noted that the mistreatment was often directed from the male physicians, highlighting that interprofessional collaboration among physicians and nurses could undermine the delivery of quality care and effective policymaking.

Given this mistreatment of women nurses in health policymaking, health-care professionals, leaders, and organizations must take proactive steps to raise awareness of this gender inequality, develop and test collaborative strategies to address this mistreatment, and place strategic measures to hold those liable who engage in mistreatment. Future research is warranted to develop, test, and evaluate organizational-level strategies to address mistreatment in policy forums. Additional research could also explore the strategies that women in leadership positions propose as viable for disrupting their mistreatment. Understanding the broader perspective of women in leadership about systemic factors of mistreatment and individual and system-level strategies to combat mistreatment is essential to ensure that strategies are not proposed and developed by men in leadership positions alone.

LIMITATIONS

The study sample included South Asian nurse leaders working in a male-dominated culture. Therefore, the transferability of findings may be limited because of the differences in leadership, women's involvement in leadership, and more expanded roles and recognition of women in leadership roles in other countries and contexts. Therefore, the findings should be contextualized before being extended for analytical generalizability. Future research is warranted in other distinct contexts to explore the difference in nurse leaders' views about gender's impact on health policymaking. The nature of organizational culture across workplaces within Pakistan could have also influenced the perspectives of nurse leaders on the role and influence of gender in their involvement in policy forums.

CONCLUSIONS

Women are underrepresented in leadership and policy positions in male-dominated professions. This study provides evidence that women in the female-dominated profession of nursing are prevented from taking on leadership roles and participating in policymaking. The underrepresentation of nurses in health policymaking is influenced by gender and social biases and stereotypes against women and the negative social image of the nursing profession. The underrepresentation of nurses in health-care policymaking is detrimental to promoting diversity, inclusion, and equality in health-care workforce leadership. Nurses are key players in health-care settings, controlling their participation in health-care policymaking based on gender biases and negative social images, and treating them as silent partners in policy forums, is a disservice to patients hoping to achieve biased free and quality health care. Health-care organizations must play an active role and develop policies to combat gender-based discrimination and curb the underrepresentation of nurses in healthcare policymaking.

AUTHOR CONTRIBUTIONS

Shahzad Inayat, **Ahtisham Younas**: Study design. **Shahzad Inayat**, **Ahtisham Younas**: Data collection. **Shahzad Inayat**, **Ahtisham Younas**, **Parveen Ali**: Data analysis. **Shahzad Inayat**, **Ahtisham Younas**, **Parveen Ali**: Study supervision. **Shahzad Inayat**, **Ahtisham Younas**, **Parveen Ali**: Manuscript writing. **Parveen Ali**, **Ahtisham Younas**: Critical revisions for important intellectual content.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

ETHICS STATEMENT

Ethical approval was obtained from the Bahria International Hospital, Lahore, Pakistan (IRB#IRBEC/BIH/015/2020).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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THEORETICAL ARTICLE

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Rethinking and advancing the movement of resistance, activism, and advocacy in health in four central arenas of the Middle East Region

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Abstract

The Middle East region has a long history of resistance, activism, and advocacy movements in health, most recently as part of the 2011 region-wide Arab Spring. Despite this storied history, however, movements of resistance, activism, and advocacy in health in the region are rarely unpacked, examined, or documented. This historical and contextual analysis aims to examine the long-standing confiscated health rights and subsequent experiences of resistance, activism, and advocacy in health in populations in Palestine, Lebanon, Egypt, and Iraq. Promoting a health equity and health rights-based approach is key to achieving Universal Health Coverage and health-related Sustainable Development Goals, particularly in contexts that experience fragile socioeconomic and humanitarian conditions and political instability such as many countries in the Middle East. Marginalized populations, including Palestinians living under Israeli occupation, Lebanese Lesbian, Gay, Bisexual, and Transgender+ (LGBT) communities, Egyptian women and girls affected by Female Genital Mutilation, and Iraqi refugees and Internally Displaced Persons, have been severely impacted by decades of oppression, conflict, and displacement. These populations have faced various forms of discrimination, neglect, and violence that have hindered their access to quality healthcare and basic health rights. Rather than relying on government efforts, local and international movements to advocate for and protect the health rights of these populations are key. Innovative approaches, strategic dialogue and collective actions are prerequisites for promoting resistance, activism, and advocacy in health in all country's systems structure. This analysis highlights the important of this social public health issue in the most turbulent region and provides evidence to guide all countries to realize equitable human rights for health for all populations.

KEYWORDS

activism, and advocacy in health, Health equity, health rights, movements, resistance, the Middle East Region

Key Points

- The health rights of marginalized populations in the Middle East, including Palestinians living under occupation, LGBT+ communities, women and girls affected by Female genital mutilation, and Iraqi refugees and IDPs, have been severely impacted by decades of oppression, conflict, and displacement.
- Despite these challenges, there have been efforts by local and international organizations, activists, and movements to advocate for and protect the health rights of these populations.
- Resistance, activism, and advocacy movements should be recognized as local and regional priorities, contributing to realizing health equity and integrating the health rights-based approach into the social and health systems.
- Rethinking and advancing the movement of resistance, activism, and advocacy in health is a necessary step in improving health for marginalized populations, and strategic dialogue between all stakeholders is the first step forward.

INTRODUCTION

Movements of resistance, activism, and advocacy in health encompass a range of dynamic and strategic efforts aimed at addressing and rectifying systemic barriers, injustices, and disparities that impact individuals' access to healthcare and their overall well-being. Such movements involve proactive engagement, mobilization, and collective action to challenge existing norms, policies, and practices that perpetuate health inequities and hinder communities from attaining their rightful health rights. Movements of resistance, activism, and advocacy in health strive to amplify the voices of those who have been historically marginalized or oppressed, empowering them to assert their rights, demand accountability, and drive transformative change within healthcare systems and broader societal structures.

The Middle East region has a long history of resistance, activism, and advocacy in health, particularly in response to political, social, and economic challenges. In many cases, resistance in health is the application of unarmed civilian power using non-violent methods and it is directed at oppressive regimes or policies that prevent people from accessing the healthcare they need.

Despite significant challenges, many people and organizations in the region have worked tirelessly to address issues such as access to healthcare, reproductive rights, and public health crises, advocate for the rights of marginalized communities, and decrease the impact of conflict and displacement on health. For example, during times of political unrest, activists may organize medical relief efforts to help those affected by violence or displacement, resisting their own subjugation while also building community (Bayat, 2002). In recent years, there have been several health-related social movements and initiatives in the Middle East region that have sought to challenge the status quo and advocate for better health outcomes (UN Women, 2021; United Nations, 2023b).

In the complex and dynamic region of the Middle East, the health rights of marginalized populations have long been a pressing issue, shaped by decades of instability, oppression, conflict, and displacement. This analysis examines the experience, challenges, and struggles faced by four specific marginalized groups—Palestinians living under occupation, LGBTQ+ communities in Lebanon, Egyptian women and girls affected by Female genital mutilation (FGM), and Iraqi refugees and IDPs—in their pursuit of equitable, sustainable, and affordable access to quality healthcare and basic health rights.

We selected these four cases because they demonstrate the intersection of multiple different social forces, such as displacement and social norms, with health outcomes. Despite their unique contexts and experiences, these populations share a common thread of facing discrimination, neglect, and violence that have impeded their ability to lead healthy and dignified lives. The analysis also explores the historical and contemporary factors that have contributed to the erosion of their health rights, as well as the local and international efforts that have been undertaken to address these challenges. By shedding light on the struggles and achievements of these marginalized populations, the analysis underscores the urgent need for comprehensive and inclusive approaches to health and human rights and integrating these approaches into the social and health systems in the Middle East.

HEALTH RIGHTS UNDER DECADES OF OPPRESSION IN PALESTINE

The aftermath of World War I precipitated a period of significant change throughout the region deemed the "Middle East" by the powers of the West. The small area between the Mediterranean Sea and the Jordan River, populated mostly by a Palestinian Arab majority and a Jewish minority, became part of the British Mandate. Almost immediately, the British agreed to establish a "national home for the Jewish people" in the territory, against the will of much of the land's native inhabitants, exacerbating a chain of events that eventually led to the establishment of the state of Israel in 1948, displacing hundreds of thousands of Palestinians in a Nakba ("catastrophe" in Arabic) that has, in many ways, persisted to this day—including through neglect and attacks on Palestinian rights to health.

We live in what is often considered a "postcolonial" period, having only just recently emerged from nearly 500 years of both settler colonialism, where settlers claim land and displace local populations as in the United States, Canada, Australia, and South Africa, and forms of extractive colonialism, where colonizers only desire the resources and/or labor of colonized lands and people. At the same time, the U.N. still recognizes 17 non-self-governing territories, most in the Caribbean and the South Pacific, that remain administered by history's most prominent colonizing powers (UN, 2023c). Euphemistically, the definition of these territories highlights those "whose people have not yet attained a full measure of self-government." Notably, Palestine is not on this list, because of the Palestinian Authority (PA) and its supposed role in self-government.

Yet the state of Israel is the only sovereign entity on the lands known today as the occupied Palestinian territory (made up of the West Bank and Gaza Strip) and Israel, while it continues to seize and reappropriate Palestinian land. Despite Israel's legal obligations as an Occupying Power since 1967, the country's politicians have long made it clear that Palestinian health rights are not a priority. After Israel began its occupation of the West Bank and Gaza, the already weak Palestinian health care system (previously administered by Jordan and Egypt, respectively) was now administered by the Israeli Ministry of Defence, with some supervision from Israeli physicians.

When the PA was established in the mid-1990s, so too were the government ministries meant to eventually take responsibility when a Palestinian state was to be established (meant to be within 5 years of the Oslo agreement). Since then, Palestinian health has primarily been within the purview of the Ministry of Health (MoH). However, the ministry is highly dependent on inconsistent foreign aid and tax income, and due to funding shortfalls as well as Israeli-imposed movement restrictions, public services are insufficient to meet population needs. As a result, the health system also includes the United Nations Relief and Works Agency for Palestine Refugees (UNRWA) for Palestinians and their descendants displaced in 1948, nongovernmental organizations (NGOs) that are both local and international and private facilities, seen as the highest quality but cost-prohibitive for many (United Nations, 2023a).

However, the Palestinian health system continues to operate under the restrictions of military occupation in the West Bank and siege in the Gaza Strip. Aside from restrictions on movement of people and goods that significantly delays, limits, or prevents entry and exit to the occupied territories as well as travel within the West Bank, Palestinians are subject to other forms of repression, discrimination, and violence that make it impossible to achieve a responsive and adequate health system that improves outcomes. Movement restrictions, including a large part-concrete/part-barbed wire fence separation wall enveloping and cutting into the West Bank, hundreds of movement barriers like gates, dirt mounds, and checkpoints within the West Bank, a complete sea, land, and air blockade of the Gaza Strip, and a complex and expensive system of Israeli-issued medical permits required for Palestinians to leave the territories for needed care, have impaired Palestinian health outcomes, despite billions invested by international donors. A growing literature base consistently finds the negative health outcomes created by such restrictions, including in cancer care (Halahleh & Gale, 2018), children's care (Waterston & Nasser, 2017), cardiovascular care (Collier & Kienzler, 2018), mental health (Giacaman et al., 2011), and overall poor health (McNeely et al., 2018). Other Israeli actions like demolitions of Palestinian homes (Marie & Saadadeen, 2021) and forcible home invasions by Israeli military forces (Moss et al., 2021) have also been shown to have detrimental effects on Palestinian health.

While the world systems have nominally prioritized universal health coverage (UHC) as part of adherence to the United Nations health-related Sustainable Development Goals (SDGs), the current reality in Palestine, particularly in Gaza, has revealed the ineffectiveness of asymmetrical systems of power. The UHC, human rights frameworks and conventions, and health-related SDGs remained a wishful promise when they obscure the inequity that has been perpetuated in regions of Palestine.

Health has historically been a space for organizing and resistance in Palestinian communities, including during periods of intensified violence and restrictions, as with the first and second Intifada (uprising). For example, Palestinians formed health committees to push back against the obsolete ideas of the Palestinian medical establishment, decrease Israeli dependence, and bring health services to underserved areas. By 1993, before the signing of the Oslo Accords, health committees were delivering an estimated 60% of primary care services (Hanbali, 2022). However, a significant NGO-ization of Palestinian civil society was brought on by the infusion of funding from the Oslo Accords, where the goals and methods of Western funders were prioritized over the needs and desires of Palestinian communities (Dana, 2013). Alongside this de-politicization of the health sector, Israel continues its repressive actions to criminalize Palestinian efforts to organize, even around health care. For example, in 2021, Israel raided and shut down the Palestinian Health Work Committees, one of the main providers of services in the West Bank, and also arrested its director, Shatha Odeh, with no warrant, and held her in prison for nearly a year (Addameer, 2021).

Since October 2023, there have been an alarming number of casualties and injured residents in Israel's assault on Gaza, which has been termed a genocide by many global experts. Gaza has now become one of the most uninhabitable locations on Earth. The effects of the ongoing war and siege on Gaza extend beyond the mere loss of land and houses, with irreparable damage to the physical, mental, and social well-being of Palestinians for generations to come. Still, Palestinian health workers have shown significant resistance to their own elimination, continuing to work in hospitals and refusing to abandon patients. More than 400 have been killed in these conditions.

If history is any precedent, there is little likelihood of meaningful political interventions from the international community, with the future especially uncertain after the Hamas attacks in Israel on October 7, 2023, and the subsequent devastating Israeli campaign in Gaza. Instead, they have continued to offer Israel complete impunity despite mounting evidence of Israeli treatment of Palestinians amounting to the crime of apartheid. Thus, it is vital that Palestinians and their allies find ways to re-integrate health into efforts toward liberation and realization of Palestinian health rights. International actors that genuinely wish to support Palestinian health justice should go beyond offering humanitarian support to challenge Israeli policies that limit Palestinian health rights as well as support Palestinian movements and initiatives. Humanitarianism alone will never be sufficient to attain Palestinian rights. Only through the pursuit of both justice and sovereignty can their health rights be truly realized.

A RIGHT-BASED APPROACH TO THE HEALTH OF LGBT+ COMMUNITIES IN LEBANON

A human rights-based approach to health is defined as a commitment by countries to develop rights-compliant, effective, gender transformative, integrated, accountable health systems and implement other public health measures that improve the underlying determinants of health, like access to water and sanitation (WHO, 2023). In Lebanon, and more specifically Beirut, is known as “Gayrut,” or the “gay paradise of the Arab world” (Nagle, 2022; Reid-Smith, 2012), due to its higher levels of sexual tolerance than the rest of the Middle East countries (Healy, 2009). “Lesbian, gay, bisexual, and transgender” LGBT+ individuals are often perceived as challenges to society's stated moral values, religious beliefs, and cultural norms across the region. As a result, Lebanon became a home to numerous state and non-state actors who collaborate to destroy the country's queer spaces and harass LGBT+ individuals and activists (Nagle, 2022). These movements are supported by the Penal Code of Lebanon, Article 534, which states that “any sexual relations that contradict the laws of nature” are punishable by a prison sentence of 1 month to 1 year and a fine of between 200,000 and one million Lebanese pounds (Helem, 2008). On the other side, some activists establish specialized NGOs to promote LGBT+ rights, and some joined more radical movements that engage in intersectional struggles that advocate for anti-imperialism, antiracism, and resistance to sectarianism and patriarchy (Naber & Zaatari, 2014).

Fulfilling the rights of LGBT+ people has become a substantial part of being considered a liberal democracy at the global level (Dandashly, 2022). However, the situation is complex in countries that have a strong religious identity and where religious groups are active (Ayoub, 2014; Siegel, 2020). In Lebanon, even before the beginning of local LGBT+ activism, there was animosity towards homosexuality based on moral, sociocultural, and religious grounds. Article 534, together with other laws that criminalize sex work, drug use, and trafficking, made LGBT+ people vulnerable, not only within their families but also by the state (Mandour, 2019).

After the Arab Spring, LGBT+ activism in Lebanon has gradually expanded and activists began to gain experience, participate in high-level discussions, and create their own organizations (Dandashly, 2022). One example is the "Lebanese Coalition of LGBTIQ rights" that was formed by LGBT activists in Lebanon, with the first demand raised being protection (Mandour, 2019).

Access to healthcare is a primary LGBT+ right that needs additional advocacy in Lebanon. LGBT+ people receive low-quality care due to stigma, lack of information among healthcare practitioners, and insensitivity to the community's specific needs (Hafeez et al., 2017). They are more likely to be subject to physical or sexual abuse, exposed to sexual transmitted diseases (STDs), and experience mental health problems (Conron et al., 2010; Van Leeuwen et al., 2006).

Public perception of the LGBT community remains a concern (Nasr & Zeidan, 2015). However, with the significant expansion in activism, visibility, health research, and policy, including an upsurge in LGBT rights activism, attitudes toward them are gradually shifting (Farchichi, 2012; Gereige et al., 2018; Ibrahim et al., 2016; Naal et al., 2018; Wagner et al., 2012; Wright et al., 2017). In particular, healthcare providers' attitudes and practices towards LGBT patients have changed and many health providers have shown more of a willingness to respond to their medical needs (Abdessamad & Fattal, 2014; Naal et al., 2020).

Furthermore, considerations for LGBT mental health have been incorporated into the Lebanese Ministry of Public Health's (MoPH) national strategic plan (Ministry Of Public Health, 2015). Mental health providers were less likely than others to consider homosexuality as a mental health illness (Naal et al., 2020). However, despite some shifts in the attitude towards the LGBT communities in Lebanon, they still face discrimination and obstacles in social, legal, and healthcare sectors (Abdessamad & Fattal, 2014), which discourage many of them from seeking medical care (Mayer et al., 2008).

Consequently, the Lebanese Medical Association for Sexual Health (LebMASH) worked to improve LGBT access to healthcare services (Naal et al., 2018). LebMASH created the first directory of LGBT-affirming healthcare providers in Lebanon, known as LebGUIDE. The main aim of LebGUIDE is to enhance the health of LGBT+ individuals by providing equitable and inclusive access to knowledgeable and LGBT-affirming healthcare professionals nationwide, including mental health professionals (Lebmash, 2022). When it was first launched in 2017, LebGUIDE included 50 medical professionals, from a range of medical specializations. The user-friendly and dynamic directory enables LGBT individuals to rate their experiences with the healthcare professionals listed and include any remarks (Naal et al., 2018).

However, prejudice and discrimination may persist as a result of lack of training of health professionals, resulting in low-quality healthcare and poor health outcomes. Training of healthcare providers on the particular needs and challenges of LGBT communities is a must (Hafeez et al., 2017).

A broader grassroots approach to LGBT+ equity in Lebanon should be seen as part of a broader "right-based approach" to help this community overcome barriers to healthcare access and locate health providers who support diversity, equity, and inclusivity of healthcare as a human right.

HEALTH AND SOCIAL MOVEMENTS TO FIGHT FGM AND ITS MEDICALIZATION IN EGYPT

FGM refers to “all procedures involving partial or total removal of the external female genitalia or other injuries to the female genital organs for nonmedical reasons” (WHO, 2018). FGM is a violation of human rights and although widely criticized, it is still a commonly used practice in many countries throughout the world, especially in Africa and Asia (El-Gibaly et al., 2019).

In Egypt, the prevalence of FGM was 50% in 2008 (A tag-Eldin, 2008). The Egyptian Family Health Survey (EFHS) in 2021 demonstrated that 86% of married women between 15 and 49 years old have experienced FGM (Ministry of Health and Population, 2022). However, the percentage of mothers who plan to circumcise their daughters has reduced to 13% in 2021 (Ministry of Health and Population, 2022) in comparison to 35% in 2014 (Abd-Elhakam et al., 2022; Ministry of Health And Population, 2015b; UNFPA, 2023a).

FGM has received wide international attention, reaching its peak in Egypt after the International Conference on Population and Development (ICPD) in 1993, (Boyle et al., 2002; Van Raemdonck, 2013). Consequently, the “National Task Force against FGM” was established in 1994 with an overarching aim to apply new approaches to protect girls' and women's health-related rights (EL Dawla, 1999). The task force was able to conduct its activities within the framework of international rights activism and development discourse. However, there was difficulty engaging in feminist postcolonial practices due to some political-cultural positions that were part of the “colonizing ideology” (Van Raemdonck, 2013).

FGM is rooted in Egyptian social culture, which in many cases is upheld by religious beliefs, and any movement that has tried to terminate it entirely has failed (El-Gibaly et al., 2019). Therefore, Egyptian activists started discussions with the religious authorities in the country until 2007, when the Azhar Supreme Council for Islamic Research released a statement confirming that FGM has no root in the Islamic Sharia or its provisions (Al-Awa, 2012). That move resulted in a real transformation in women's attitudes towards FGM; however, there remains some resistance to its termination (UNFPA, 2023a).

FGM “medicalization” is a common approach in Egypt, where FGM is carried out by health practitioners, in an effort to lessen its complications while still satisfying cultural demands (Refaat, 2009). The rate of medicalization among girls and young women (≤19 years), increased from 55% in 1995 (Ei-Zanaty et al., 1996) to 74% in 2014 (Ministry of Health And Population, 2015a) even though the practice was made illegal in 2008 (El-Gibaly et al., 2019).

After the task force was dissolved in 1999, the National Council for Childhood and Motherhood (NCCM) served as a fresh venue for anti-FGM activities (Van Raemdonck, 2013). In 2003, the NCCM launched the “FGM Free Village Model” as a country-wide project (Barsoum et al., 2011). The inclusion of the NCCM in the anti-FGM campaign gave access to public media and prominent religious leaders to reinforce significant changes in the legislation at multiple levels in the subsequent years (Van Raemdonck, 2013).

In 2007, MoHP issued a ministerial decree (271) that banned everyone, including health professionals, from performing FGM in health organizations (UNFPA, 2023a). Moreover, FGM was criminalized by a new law approved by the Egyptian Parliament in 2008 which established a custodial sentence between 3 months and 2 years in prison for health practitioners who conduct FGM (UNFPA, 2023a). Under new amendments (Article 242) in 2016, they will face between 5 and 7 years in prison—or up to 15 years if the practice results in death or deformity (National Council for Women, 2020; UN Women, 2023; UNFPA, 2023a).

The National Strategy to combat FGM (2014–2018) was launched by the National Population Council (NPC). The implementation of that strategy was supported by UN agencies which helped the NPC start a TV campaign called "ENOUGH FGM," widely broadcasted on national TV till the end of 2015 (UNDP, 2023). Moreover, UNFPA developed a training program in 2014 for legal staff to raise awareness on all aspects of FGM and identify gaps in the current legal and administrative arrangements that constraint the implementation of law (UNFPA, 2023a). Another training was provided by UNFPA and MoHP for doctors on how to address FGM prevention and care and in 2017 the 'Doctors Say No to FGM' initiative aiming to stop the medicalization of FGM was also launched (UNDP, 2023).

Since the approval of the law in 2008, the UNFPA-UNICEF Joint Programme to Accelerate the Abandonment of FGM has been working to support law reform, research and data analysis, capacity building for health professionals, and community engagement (UNFPA, 2021). Through the establishment of the National Committee to Eradicate FGM in 2019 (National Council for Women, 2020), a number of national campaigns were launched such as the radio campaign #ProtectHerFromFGM which increased calls to the national child helpline where people could ask questions about FGM, particularly from a religious perspective (UNFPA, 2022).

Early activists (e.g., the task force) have made a significant contribution to shaping the dominant discourse on FGM (Berkovitch & Bradley, 1999; Brennan, 1989; Ramphele, 1988). Robust awareness campaigns regarding the FGM penal code that were launched through collaborative efforts of the UN agencies, the NPC, MoPH, and the Prosecution office resulted in increased law enforcement. Since 2015, Egypt witnessed a new turning point in the fight against FGM with the sentencing of the first doctor to be found guilty of the practice and another six criminal cases were referred to public prosecution in 2016–2017 (UNDP, 2023). However, more investigation is still required since cases of activism, resistance, and health-related mobilization are insufficiently examined in the Arab world, including in Egypt (UNFPA, 2023b).

THE HEALTH OF IRAQI REFUGEES AND IDPS

In the more than 20 years since the United States and its allies invaded Iraq, the recklessness of the decision and the destruction of the war have only become more apparent. Ultimately, the weapons of mass destruction did not exist, the invasion and occupation only planted seeds for further terrorism, and the Iraqi people have suffered the consequences for decades, including the many millions displaced from their homes.

Of course, Iraq had been undergoing humanitarian crises before the 2003 invasion, largely due to economic sanctions placed on the country in 1990 due to the Iraqi invasion of Kuwait and the subsequent Gulf War in 1990–1991, causing widescale poverty and the deterioration of health and education systems. While economic and social conditions were a significant contributor to displacement in that period, the increasing authoritarianism of the Iraqi regime also led to more Iraqis applying for asylum (Chatelard, 2009). Yet the country's displacement crisis was about to get exponentially worse.

Indeed, the US-led invasion in 2003 led to decades of war, conflict, and ongoing political instability. The toll on the Iraqi population was significant, and many fled the country entirely, causing one of the largest displacement crises in the region. An estimated 1 in 25 Iraqis left their homes due to fighting, and many from within the country's professional classes; engineers, lawyers, academics, and artists were among the first to leave the country. The healthcare sector was similarly affected—about half of the country's doctors left shortly after the invasion (Cost of War, 2023). Those working in such sectors often had the resources to leave and attempt to build new lives elsewhere. Several years after the beginning of the war, however, those leaving the country were more likely to be poorer and less educated.

Further, as the waves of migration increased, neighboring Arab governments began to enact stricter migration policies to prevent further migration.

Although many Iraqis have since returned to their homes or resettled outside of the country, it is estimated that today, about 1.2 million Iraqis live as internally displaced persons (IDPs), and almost 70% have been displaced for more than 5 years (UNHCR, 2023). Most live on a combination of informal work, remittances, or aid, yet circumstances vary depending on their pre-existing socioeconomic condition and the policies of their host country. For example, Jordan was hesitant to offer robust health and education services to refugees for fear it would attract more. While Syria was initially more open to Iraqi refugees, it was difficult for refugees to declare formal status in the country, preventing them from working, accessing healthcare, or attending school (Harding & Libal, 2012). Yet even refugees resettled in wealthy countries like the United States faced hardships in accessing health services had a high prevalence of chronic conditions (Taylor et al., 2014), and continued to face high mental health burdens (Slewa-Younan et al., 2015).

For years, unemployment among these populations was high, rendering them largely unable to afford adequate food, shelter, and health care. The housing conditions of many IDPs and refugees are also unsanitary and crowded, and access to clean water was also scarce. Infectious disease spread was common, including in children, and the psychosocial burden among IDPs is also high (Ladek, 2012; Seidi et al., 2023). Not surprisingly, food security was a significant issue for Iraqi refugees, even those that were relatively well-integrated within host communities in countries like Jordan and Syria. In fact, this may in fact limit their ability to know about and access needed services since many are based in camp settings (Doocy et al., 2011).

Despite decades of repression under the regime of Saddam Hussein and then by the militant Islamic State, Iraqis have persisted in mobilization and resistance efforts. Most recently, the Tishreen uprising that began in the fall of 2019 was led primarily by youth, and demanded an end to government corruption, high unemployment, and lack of public services. Political parties were eventually borne out of the protest movement. The message of the movement was simple: “we want a country.” For this movement, demanding democracy, service provision, and accountability, this surely included a country that serves all, including IDPs (Halawa, 2021). In 2020, Iraqi doctors themselves planned protests due to lack of jobs and unsafe working conditions (Mahmoud, 2020). Aside from formal protests, Iraqis have been building movements throughout social sectors to meet population needs. Iraqis have developed organizations to help assist IDPs within the country, leveraging use of technology. Once such organizations, for example, proposed creating videos to help prevent the spread of disease in these populations as a way to manage overloaded health facilities in places where IDPs fled, like Kurdistan (Strasser, 2015).

The multiple humanitarian crises experienced by Iraqis in recent decades have taken a significant toll on the country, one with one of the longest histories of recorded civilization in the world. The massive, forced migration crisis expedited by the 2003 invasion led to millions of Iraqis that found themselves out of their home, possibly out of their country, and unclear about the future. While Iraq has yet to achieve the political stability and democracy needed to truly meet its citizen's needs, it is vital that the energy and ambition of the country's people must be cantered in any efforts to rebuild.

GAPS, LESSONS LEARNED, AND THE WAY FORWARD

Despite the different historical and political dimensions of these four disparate communities, tracing the trajectory of the different movements that developed organically as a result of each setting provides helpful lessons about what is successful—and where gaps remain.

This analysis adopts the social movement action framework (SMAF) as a guiding theoretical and practical framework for strengthening the movements of resistance, activism, and advocacy in health in the region. This framework identified elements of social movement action across three key time phases: the earliest phase (preconditions) as the urgent need for change begins to emerge and pressure for change rises; the central phase in which social movement action develops (key characteristics); and the concluding phase in which the impact of social movement action is seen (outcomes) (Grinspun et al., 2022). Generally, this comprehensive farmwork supports the effectiveness of social movements considering micro, meso, and macro levels. The framework elements are also intersected with many social movements, and it focuses on both similar and different recognized social and political issues and factors such as civil rights, democratic movements, and health-related movements. In light of this framework, it is demonstrated that resistance, activism, and advocacy movements should be recognized as local and regional priorities, contributing to realizing health equity and integrating the health rights-based approach into the social and health systems. Advancing the movement of resistance, activism, and advocacy in health is a necessary step in improving health for marginalized populations, and strategic dialogue between all stakeholders is the first step forward. Below highlighted the central social and political issues, priorities, and challenges in each country.

One of the primary barriers in achieving health equity in Palestine is the significant de-politicization within the health and humanitarian spheres, which are heavily dependent on external actors for funding. While many humanitarian agencies and government actors are more than willing to acknowledge poor Palestinian health and well-being outcomes (often coupled with bids for more funding), too often these outcomes are connected to issues secondary to occupation, blockade, and apartheid policies, such as poverty, food, and water insecurity, or stress. While it is true that too many Palestinians are impoverished, food and water insecure, or experiencing severe mental distress, it is insufficient to consider these social determinants of health as existing within a vacuum that does not ultimately consider the root causes of these issues. It is also vital that external actors work to support and build Palestinian institutions rather than creating parallel institutions that do not build capacity in Palestine and are often dependent on funding calls that prefer de-politicized framings that do not engage with the reality. Palestinian civil society has been clear about their needs and the role international actors can play to support them, including, first and foremost, ending the policies of endless impunity for the actions of the state of Israel that flagrantly violate international law and devastate Palestinian lives. International actors can also offer financial and political support for the re-emergence of Palestinian health committees, which re-centre Palestinians and their needs as the primary actors in Palestinian health.

In Iraq, civilians are still suffering the ramifications of decades of sanctions, invasion, and authoritarian leadership. The US-led invasion and occupation, justified as a mechanism of Iraqi liberation, has instead tied the fate of Iraqi life to the whims and donations of foreign powers, especially regarding IDPs. While the Iraqi people have undertaken efforts to overcome these obstacles, greater financial and political support for the plight of IDPs in Iraq and for the Iraqi refugees scattered throughout the Middle East is needed. All efforts should be taken to help those Iraqis who are willing and able to return to their homes do so. For those more permanently displaced, more generous employment, housing, and healthcare policies in host countries are needed to help populations integrate and become productive and thriving members of society. Within Iraq, the protection of IDPs should be a priority for the Iraqi government and humanitarian agencies. The country, still in the midst of attempting to rebuild its institutions, cannot afford to ignore the needs of over 1 million vulnerable people. The calls of Iraqi civil society and youth must be heard to ensure opportunities for growth, reconciliation, and justice.

Although the incidence of FGM in Egypt has decreased during the past 25 years, this success can be reversed by current humanitarian crises such as disease outbreaks, climate change, and displaced populations (i.e., refugees in Egypt). Such situations could threaten the SDG achievement of gender equality and eradication of FGM by 2030. Multisectoral collaboration at the national and local levels, in addition to partnership with relevant NGOs and international organisations, can help advocate for girls' and women rights, “hold the gains” and sustain the success. Community sensitization on human rights, including girls' rights and gender equality, is a must, highlighting that religion does not demand FGM. Training healthcare providers and educating girls and their families on the risks and realities of FGM is also essential. Girls may get closer to realising their rights to health, education, income, and equality as they begin to challenge harmful gender norms and power relations in their communities.

Lebanon is considered more liberal than many other countries in the Middle East, however, equality for LGBT people is yet a sensitive issue. Activists and NGOs are exploring different ways for this vulnerable group to be included in the community and to advocate for their rights including for healthcare. Culturally sensitive intervention strategies that are targeted to LGBT communities in Lebanon are urgently needed to mitigate sexual and mental health risks and address health needs. Training of healthcare providers on the needs and challenges that LGBT people face is essential to overcome stigma and discrimination and promote health equity. Social media, if used and managed at the national level, could be a powerful tool to change societal attitudes towards LGBT communities, and enhance community connectedness and social cohesion.

CONCLUSION

Promoting a health equity and health rights-based approach integrated in the social and health systems must be local and regional priorities in the Middle East. The health rights of marginalized populations in the Middle East, including Palestinians, LGBT+ communities in Lebanon, women and girls in Egypt affected by FGM, and Iraqi refugees and IDPs, have been severely impacted by decades of oppression, conflict, and displacement. These populations have faced various forms of discrimination, neglect, and violence that have hindered their access to quality healthcare and basic health rights. Despite these challenges, there have been efforts by local and international organizations, activists, and other movements to advocate for and protect the health rights of these populations. These efforts have included legal reforms, awareness campaigns, community organizing, and the establishment of support networks and healthcare services. However, much work remains to be done to ensure that these populations can fully realize their health rights and lead healthy and dignified lives.

International actors must prioritize the rights and well-being of these marginalized populations and support their efforts toward justice, equality, and sovereignty. Local and national health population' priorities and needs, and those of disadvantaged communities in particular, should be respected. Building on their experience and understanding of the community, civil society organizations and community associations must play a greater role in planning, decision-making, and intervention. Rethinking and advancing resistance, activism, and advocacy in health is a significant step in moving toward health equity in the Middle East. Strategic dialogue between all stakeholders is the first step forward. Building consolidated alliances that includes an observatory, knowledge and strategy centre, and communication platform are essential to track health equity trends, mobilize efforts and resources, generate evidence, and promote influence and awareness around health equity and health rights across countries and region. Only through collective action and continued advocacy can the health rights of these and other vulnerable populations be fully realized and upheld.

AUTHOR CONTRIBUTIONS

Mohammed Alkhaldi contributed to the initiation and ideation of work. All authors equally contributed to the formulation and review of the manuscript, and all approved the final manuscript.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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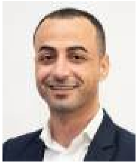

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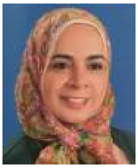

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RESEARCH ARTICLE

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Is social health insurance associated with smoking and alcohol consumption among Chinese older adults?

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Abstract

China launched a comprehensive health reform in 2009 to increase access to healthcare services and coverage rates. This study examined the associations of New Cooperative Medical Scheme (NCMS) and Urban Employment/Resident Basic Medical Insurance (UE/URBMI) with smoking and alcohol consumption among Chinese older adults. We extracted data from the 2018 Chinese Longitudinal Healthy Longevity Survey (CLHLS). Multivariable logistic regressions were conducted on the total sample ($n = 9797$) to examine smoking and drinking history. Negative binomial regression was performed on a subsample ($n = 1442$) to assess current daily cigarette usage. Gamma regression was employed on another subsample ($n = 1422$) to predict daily alcohol consumption. In the 2018 CLHLS sample, 15.69%, 30.38%, 14.51%, and 25.34% were current smokers, former smokers, current drinkers, and former drinkers, respectively. For current smokers, the mean daily cigarette consumption was 12.51 (SD = 8.99), and for current drinkers, the mean daily alcohol consumption was 2.57 liang (SD = 2.37). UE/URBMI coverage showed a statistically significant association with both smoking and drinking status prediction (all $p < 0.001$). However, there was no significant association between NCMS coverage and any of the outcomes. No significant associations were observed between major coverage of healthcare expenses and number of cigarettes smoked per day and daily alcohol consumption. The Chinese central government should incorporate health promotion benefits related to smoking and alcohol cessation programs.

KEYWORDS

alcohol consumption, China, health insurance, older adults, smoking

Key points

- This study examined the associations of New Cooperative Medical Scheme (NCMS) and Urban Employment/Resident Basic Medical Insurance (UE/URBMI) with smoking and alcohol consumption among Chinese older adults.
- In the 2018 CLHLS sample, 15.69% were current smokers and 14.51% were current drinkers, with average daily consumption of 12.51 cigarettes (SD = 8.99) and 2.57 alcohol units (SD = 2.37).
- A significant association was found between UE/URBMI coverage and smoking/drinking status ($p < 0.001$).
- No significant links were observed between NCMS coverage and smoking or drinking behaviors, nor with healthcare expense coverage and consumption levels.

INTRODUCTION

Health behaviors, including actions like smoking, diet, substance use, and exercise, have a significant impact on personal health and mortality (Short & Mollborn, 2015). These behaviors, whether intentional or unintentional, vary across different levels, lifespans, cohorts, settings, and time, influencing the well-being of individuals and others.

Notably, health-risk behaviors like cigarette smoking and alcohol consumption are linked to severe consequences. Cigarette smoking, for example, has been associated with the cause of preventable premature death (Centers for Disease Control and Prevention, 2010), while alcohol consumption may increase the risk of cardiovascular diseases, elevated blood pressure (Anderson et al., 1993), and liver diseases (Keil et al., 1997). These detrimental health outcomes emphasize the urgency of addressing these behaviors as high-priority public health challenges. In China, smoking and excessive alcohol consumption are major health issues, being the primary and eighth top contributors to disability-adjusted life years lost (Murray et al., 2020). These behaviors are more prevalent in men than women. In 2018, 50.5% of men and 2.1% of women reported smoking among Chinese aged 15 or above (Chinese Center for Disease Control and Prevention, 2020). The prevalence of current smoking at the time of the survey among adults aged 45–64 years was 30.2% and 23.1% among those aged 65 or above, indicating that over 163 million middle-aged and older adults in China smoked (Du et al., 2022). In addition, 61.7% of men and 20.3% of women were current drinkers in the adult population in 2015 (Zhao et al., 2020). A national survey conducted in 2008-2009 indicated that around 19.88% of older adults aged 65 or above consumed alcohol (Li et al., 2017). Another national survey in 2011–2012 showed that the general prevalence of heavy alcohol consumption among middle-aged and older adults in China was 7.23% (Ding et al., 2020).

However, China is experiencing a swift expansion of its aging population, among the fastest-growing proportion of older adults worldwide. Recent reports indicate that the number of Chinese adults aged 65 or above reached 209.78 million by the end of 2022, constituting 14.9% of the total population (National Bureau of Statistics of China, 2022, 2023). The estimate suggests the percentage of older adults aged 80 or above will increase from 26 million in 2019 to 115 million by 2050 (Fang et al., 2020).

Certainly, these health-risk behaviors will impact users' health differently, particularly among the elderly considering their vulnerability and physiological changes associated with aging. In China, smoking has been shown to affect the self-related health status of older men adversely. Interestingly, former smokers reported a higher prevalence of poor self-related health compared to current smokers (Li & Khan, 2022). The accelerated growth of the aging population raises concerns about the health behaviors and well-being of older adults in China. Earlier research exploring factors influencing health-risk behaviors in older adults revealed that individual-level characteristics such as age, gender, marital status, income, and educational attainment (Walker et al., 1988), as well as factors beyond the individual level such as living arrangements (Zhang & Wu, 2015), and retirement transition (Luo et al., 2023), strongly affect cigarette smoking and alcohol consumption among the elderly.

Additionally, research indicates that smoking increases the utilization of healthcare services (Li et al., 2021; Song et al., 2022). The rapid growth of the older adult population brings significant challenges to the healthcare system. To enhance national health and achieve universal healthcare, health insurance has undergone reforms since 1985. In 2009, the Chinese central government initiated a comprehensive health reform to improve access to healthcare services and extend health insurance coverage (Yu, 2015). As of 2015, three distinct health insurance schemes were implemented to target different populations: (1) Urban Employee Basic Medical Insurance (UEBMI) for formally employed urban individuals; (2) Urban Resident Basic Medical Insurance (URBMI) for urban non-employed individuals; and (3) New Rural Cooperative Medical Scheme (NCMS) for both employed and non-employed rural residents (Xu & Shelley, 2023).

Upon stepping into the era dominated by aging and epidemics, the research community increasingly has focused on the availability of healthcare services for older adults (Xu, 2020). However, there is an ongoing debate about the sustainability of health insurance, both in terms of its long-term financial viability and its impact on promoting or reducing self-protection related to behaviors such as alcohol consumption, smoking, and other health-risk behaviors (Aron-Dine et al., 2013; Breslau et al., 2018). However, contradictory results in existing literature prevent a consensus from being reached on the effect of health insurance on health-risk behaviors. Some researchers found that health insurance was associated with higher chances of smoking and alcohol consumption (Xue & Witvorapong, 2023; Li et al., 2022); others observed that while health insurance reduced alcohol consumption this association lessened when people were diagnosed with diabetes (Yu et al., 2022).

To date, robust empirical evidence on the effect of social health insurance on health behavior among older adults in China remains limited. Using the latest nationally representative data set following the 2009 health reform, our objective was to explore the relationship between social health insurance, serving as primary medical coverage (beyond enrollment indication) (Xue & Witvorapong, 2023), and health behaviors such as cigarette smoking and alcohol consumption. We accounted for mixed findings in the literature by examining current daily amounts of cigarette usage and alcohol consumption and past and current smoking and alcohol consumption status. The empirical findings from this study offer valuable insights for government policymaking, guiding health behaviors, and optimizing healthcare resource allocation. Furthermore, our identified effects of social health insurance on health-related habits, such as smoking and alcohol consumption, may inform innovative interventions targeting older adults, suggesting the potential need to increase benefits for smoking cessation and alcohol reduction in the next round of social health insurance reform. Our research hypothesis is that social insurance coverage was associated with smoking and alcohol consumption status among Chinese older adults.

MATERIALS AND METHODS

Study sample

We extracted secondary data from the 2018 wave of the Chinese Longitudinal Healthy Longevity Survey (CLHLS) (Zeng, 2012). CLHLS, a collaborative international database established by researchers from Duke University's Center for the Study of Aging and Human Development, collects longitudinal data coordinated by Peking University's Center for Healthy Aging and Development Studies at the National School of Development. Establishing the baseline survey in 1998, CLHLS currently conducted total eight surveys by randomly selecting approximately half of the counties and city districts in 23 Chinese provinces from 1998 to 2018. Through face-to-face home-based interviews, a total of 113,000 interviews were conducted across the eight waves. The collected data cover various aspects, including family structure, living arrangements, health, cognitive functioning, chronic diseases, social activities, diet, and smoking and alcohol consumption behaviors, among older adult respondents and their relatives. This information is valuable for studying public health subjects and for establishing policy recommendations regarding longevity and aging.

In this study, we utilized data from the latest publicly available 8th wave, involving interviews with 15,874 individuals aged 65 and above. After excluding 5872 participants with incomplete cases, 203 participants categorized as “other” in the major coverage of medical expenses variable, and two outliers in years of education, we obtained a total data set of 9797 participants for this study on smoking and drinking status. Subsequently, two subsamples were derived for different topics. (1) Among the 2569 of 15,874 participants reporting they were current smokers, we excluded 1127 ineligible participants (1102 with incomplete cases and 25 with “other” category in major coverage of medical expenses variables), retaining 1442 participants for the current cigarette usage study subsample. (2) Among the 2551 of 15,874 participants reporting they were current drinkers, we eliminated 1129 ineligible participants (1098 with incomplete cases, 30 with “other” category in major coverage of medical expenses variables, and one outlier in years of education), resulting in 1422 participants for the current alcohol consumption study subsample (see Supporting Information S1: Appendix Figures 1.1–1.3).

All participants gave written consent for the study. Since the data were fully deidentified and publicly available for this secondary analysis, this research did not fall within the category of human subjects research.

Outcome variables

The first study sample included 9797 study participants for examining smoking and alcohol consumption status. Each of the four consumption variables—(1) current smoking status, (2) past smoking status, (3) current drinking status, and (4) past drinking status—received a code of 1 for “yes” responses and 0 for “no” responses. In the subsample of 1442 participants for the current cigarette usage study, the selected outcome variable was the number of cigarettes smoked per day. In the following subsample of 1422 participants for the current alcohol consumption study, the chosen outcome variable was the average daily alcohol consumption (measured in the Chinese unit, “liang”).

Primary predictor: Major coverage of medical expenses

To assess the effect of social health insurance as the primary source of medical cost coverage, we selected the major coverage of healthcare expenses in this survey as our primary predictor across all models. This determination was made by posing a single-choice question: "*Who covers your medical expenses?*" After excluding the "others" option, the three retained choices are urban employee/resident medical insurance (UE/URBMI), cooperative medical scheme (NCMS), and self-payment (SP, coded 0). The exclusion of "others" may help assess the true effectiveness of social insurance coverage. Furthermore, the selection of major coverage of healthcare expenses may provide more information to determine if a participant was able to use the social insurance effectively, not just the coverage information (Lee, Chang, Kaplan, et al., 2020).

Covariates

A set of covariates was included across all models in this study: age (categorized as 65–80 group, coded 0/81–95 group, coded 1/above 95 group, coded 2), gender (female/male), years of education as a numerical variable, marital status (not married/married), living arrangement (alone/with household member(s)/in an institution), community (rural/urban), and geographical regions (central south/east/north/northeast/west). Self-reported health status was coded as an ordinal variable (very bad, coded 1/bad, coded 2/so-so, coded 3/good, coded 4/very good, coded 5), treated as continuous for model simplicity and interpretability (Xu & Shelley, 2023). The number of times suffering from chronic diseases requiring inpatient treatment in the past 2 years was categorized into three levels (0 times/1–2 times/above 2 times). Notably, household income in the last year was categorized differently based on sample size and study objectives. In the total sample and subsample of current alcohol consumption studies, the income variable had three levels (0 RMB/≤median of 30,000 RMB/ > 30,000 RMB). In the study subsample for current smokers' daily cigarette usage, the variable had a different set of three levels (0 RMB/≤median of 25,220 RMB/ > 25,220 RMB) (see Supporting Information S2: Appendix Table 1).

Statistical analysis

First, preliminary descriptive analysis was conducted on the total samples and subsamples to capture participants' biological, socioeconomic, and behavioral characteristics. Mean and standard deviation (SD) were calculated for continuous variables, while frequency and percentage were presented for categorical variables. In the first set of analyses examining smoking and alcohol consumption status, list-wise deletion was employed to obtain the final study sample with complete cases. To justify this approach, we included three samples: total study sample for examining smoking and alcohol consumption status ($n = 15,874$) and subsamples for additional analyses measuring the number of times smoked per day and the amount of alcohol consumed per day among current smokers and participants who used alcohol, respectively ($n = 2569$, $n = 2551$). Before constructing statistical models, we ensured that the included variables were free of multicollinearity using the variance inflation factor (VIF) scores for each model.

Following the examination for multicollinearity, we constructed several models aligned with the study's objectives. For the total sample, aiming to explore the association between social health insurance type and current/past smoking and alcohol consumption status, we conducted four multivariable logistic regressions predicting the likelihood of past and current smoking as well as past and current alcohol consumption among older adults. Odds ratios (ORs) and 95% confidence intervals (95% CI) were reported as the main results of the multivariable logistic regressions. We compared the characteristics of participants in the current and past smoking and alcohol consumption groups, respectively.

For current smokers, we explored the association between daily cigarette usage and health insurance as the primary medical expense coverage using negative binomial regression (Kenne Pagui et al., 2022), chosen for its flexibility in handling count outcome variables compared to Poisson regression. We reported incidence rate ratios (IRRs) and 95% CIs as the main results for the negative binomial regression. For current alcohol consumption status outcome, as it is positive continuous data and right-skewed, we employed Gamma regression to predict their daily alcohol consumption. All statistical tests were two-tailed with a significance level of 0.05 ($p < 0.05$). The multivariable logistic regression was conducted with the “glm” function from the base R stats package; the negative binomial regression was performed with the “MASS” package; gamma regression modeling was carried out with the “glm” function from the base R stats package. All analyses were performed in the R Statistical Computing Environment using R-4.2.1 software.

RESULTS

Sample characteristic

The comparable distribution of variables between the initial total survey samples ($n = 15{,}874$) and the included samples ($n = 9797$) in the smoking and alcohol consumption status study indicated the representativeness of the included samples (Supporting Information S2: Appendix Table 2). Within the included samples ($n = 9797$), 4034 (41.18%) were aged 65–80 and 5498 (56.12%) were female. The mean age was 84.17 years (SD = 11.70), with an average education level of 3.54 years (SD = 4.34) and a mean self-rated health rating of 3.44 (SD = 0.91) indicating above-average self-rated health status. Among older adults the most common characteristics were unmarried (55.25%), self-funded for medical expenses (40.76%), had a household income below 30,000 RMB (50.27%), reported no chronic diseases (74.17%), co-resided with household member(s) (81.17%), lived in an urban community (58.14%), and resided in east China (43.75%) (see Table 1).

Nearly all participants included in the study reported being non-current smokers (84.31%), with 6821 (69.62%) indicating no history of smoking. In comparison with non-current smokers, current smokers had significantly lower mean age (80.99 vs. 84.76), higher level of educational attainment (4.38 years vs. 3.38 years), and slightly higher self-reported health (3.54 vs. 3.42). Similar patterns were observed when comparing former smokers to their corresponding counterparts. Significant differences (all $p < 0.05$) were observed in gender, marital status, community, and chronic disease frequency between current smokers and non-current smokers. Furthermore, when comparing former smokers and non-former smokers, notable differences (all $p < 0.05$) were identified in gender, marital status, and living arrangement (Supporting Information S2: Appendix Tables 3.1–3.2).

The vast majority (85.49%) reported abstaining from current alcohol consumption, with most reporting no history of past drinking (74.66%). Individuals who consumed alcohol, in contrast to their counterparts, displayed statistically significant differences (all $p < 0.05$) with lower mean age (81.08 vs. 84.69), higher education level (4.59 years vs. 3.36 years), and higher self-reported health (3.66 vs. 3.40). Similar trends were noted for former alcohol consumption when compared to non-former alcohol consumption. Significant differences (all $p < 0.05$) in gender, marital status, and chronic disease frequency existed between current alcohol consumption and non-current alcohol consumption. For former alcohol consumption compared to non-former alcohol consumption, differences in gender, marital status, and living arrangements were significant (all $p < 0.05$) (Supporting Information S2: Appendix Tables 4.1–4.2).

TABLE 1 Descriptive statistics of total samples and subsamples by study objectives: Chinese Longitudinal Healthy Longevity Survey (CLHLS), 2018.

Characteristics	Code	Value	Smoking and alcohol consumption status (total sample, $n = 9797$) Frequency (%)	Current daily amount of cigarette usage (subsample, $n = 1442$) Frequency (%)	Current daily alcohol consumption (subsample, $n = 1422$) Frequency (%)
Age group—no. (%)					
	0	<65	51 (0.52)	13 (0.90)	11 (0.77)
	1	65–80	4034 (41.18)	777 (53.88)	747 (52.53)
	2	81–95	3665 (37.41)	482 (33.43)	468 (32.91)
	3	≥95	2047 (20.89)	170 (11.79)	196 (13.78)
Mean age—(SD)		[53,117]	84.17 (11.70)		
		[60,112]		80.55 (11.01)	
		[63,110]			81.06 (11.46)
Gender—no. (%)					
	0	Female	5498 (56.12)	221 (15.33)	318 (22.36)
	1	Male	4299 (43.88)	1221 (84.67)	1104 (77.64)
Mean years of education—(SD)		[0, 29]	3.54 (4.34)	4.50 (4.16)	4.59 (4.43)
Marital status—no. (%)					
	0	Not married	5413 (55.25)	560 (38.83)	566 (39.8)
	1	Married	4384 (44.75)	882 (61.17)	856 (60.2)
Major coverage of medical expenses—no. (%)					
	0	Self-payment	3993 (40.76)	579 (40.15)	574 (40.37)
	1	NCMS	3256 (33.23)	536 (37.17)	491 (34.53)
	2	UE/URBMI	2548 (26.01)	327(22.68)	357 (25.11)
Household income (in RMB)—no. (%)					
	0	No income	99 (1.01)	12 (0.83)	13 (0.91)
	1	≤ ¥30000	4925 (50.27)		733 (51.55)
		≤ ¥25220		715 (49.58)	
	2	> ¥30000	4773 (48.72)		676 (47.54)
		> ¥25220		715 (49.58)	
Mean self-report health—(SD)		[1, 5]	3.44 (0.91)	3.54 (0.89)	3.66 (0.87)

(Continues)

TABLE 1 (Continued)

Characteristics	Code	Value	Smoking and alcohol consumption status (total sample, $n = 9797$) Frequency (%)	Current daily amount of cigarette usage (subsample, $n = 1442$) Frequency (%)	Current daily alcohol consumption (subsample, $n = 1422$) Frequency (%)
Number of times suffering from chronic diseases—no. (%)					
	0	None	7266 (74.17)	1120 (77.67)	1132 (79.61)
	1	1–2	2084 (21.27)	285 (19.76)	249 (17.51)
	2	Above 2	447 (4.56)	37 (2.57)	41 (2.88)
Co-residence status-living arrangement—no. (%)					
	0	Alone	1528 (15.60)	208 (14.42)	208 (14.63)
	1	With household member(s)	7952 (81.17)	1212 (84.05)	1184 (83.26)
	2	In an institution	317 (3.24)	22 (1.53)	30 (2.11)
Community—no. (%)					
	0	Rural	4101 (41.86)	644 (44.66)	620 (43.6)
	1	Urban	5696 (58.14)	798 (55.34)	802 (56.4)
Province—no. (%)					
	0	Central south	3074 (31.38)	431 (29.89)	380 (26.72)
	1	East	4286 (43.75)	621 (43.07)	663 (46.62)
	2	North	629 (6.42)	75 (5.20)	109 (7.67)
	3	Northeast	447 (4.56)	72 (4.99)	54 (3.80)
	4	West	1361 (13.89)	243 (16.85)	216 (15.19)
Current smoker—no. (%)					
	0	No	8260 (84.31)		
	1	Yes	1537 (15.69)		
Former smoker—no. (%)					
	0	No	6821 (69.62)		
	1	Yes	2976 (30.38)		
Current alcohol consumption—no. (%)					
	0	No	8375 (85.49)		

TABLE 1 (Continued)

Characteristics	Code	Value	Smoking and alcohol consumption status (total sample, $n = 9797$) Frequency (%)	Current daily amount of cigarette usage (subsample, $n = 1442$) Frequency (%)	Current daily alcohol consumption (subsample, $n = 1422$) Frequency (%)
	1	Yes	1422 (14.51)		
Former alcohol consumption—no. (%)					
	0	No	7314 (74.66)		
	1	Yes	2483 (25.34)		
Mean number of cigarettes smoked daily—(SD)					
		[1, 60]		12.51 (8.99)	
Mean current daily alcohol consumption—(SD)					
		[0.03, 20]			2.57 (2.37)

Additionally, variance inflation factor (VIF) results for the four models predicting present/past smoking and alcohol consumption status were all below 2, indicating no multicollinearity issues in the constructed models (Supporting Information S2: Appendix Tables 5.1–5.4).

Further information regarding subsample characteristics of number of cigarettes smoked per day and daily consumption of alcohol can be found in Table 1 and Supporting Information S2: Appendix Tables 6.1–6.2. Like previous models, we also performed an examination of multicollinearity for the subsequent statistical models. No multicollinearity was present in the variables of these two models (Supporting Information S2: Appendix Tables 7.1–7.2).

Association between social insurance coverage and smoking/alcohol consumption status

Results from multivariable logistic regressions examining the smoking status of older adults in the 2018 wave are presented in Table 2.

When other independent variables were held constant, older adults primarily using UE/URBMI for medical expenses were less likely to be current smokers (OR = 0.70, 95% CI: 0.59–0.84, $p < 0.001$) than their counterparts who relied on self-payment. In predicting former smokers, when holding other independent variables constant, males also had higher odds of being former smokers than females (OR = 17.22, 95% CI: 15.18–19.54, $p < 0.001$). Participants under UE/URBMI were 34% less likely than those who relied on self-payment for healthcare expenses to be former smokers (OR = 0.66, 95% CI: 0.57–0.77, $p < 0.001$). We did not find an association between NCMS coverage and smoking status (see Supporting Information S1: Appendix Figure 2).

Results of the investigation into the alcohol consumption status of older adults are presented in Table 3.

TABLE 2 Results of multivariable logistic regressions examining associations with smoking status among older adults ($n = 9797$): Chinese Longitudinal Healthy Longevity Survey (CLHLS), 2018.

	Likelihood of being current smoker status estimation			**Likelihood of being former smoker status estimation**		
	b	**SE**	**Odds ratio (95% CI)**	***b***	**SE**	**Odds ratio (95% CI)**
Constant	−2.57***	0.51	0.08 (0.03,0.21)	−2.23***	0.48	0.11 (0.04,0.27)
Age group						
65–80	−0.46	0.38	0.63 (0.30,1.32)	−0.49	0.36	0.61 (0.30,1.25)
81–95	−0.92*	0.38	0.40 (0.19,0.84)	−0.67	0.37	0.51 (0.25,1.05)
≥95	−1.04**	0.39	0.35 (0.17,0.75)	−0.94*	0.37	0.39 (0.19,0.81)
Gender						
(Male=1)	2.27***	0.08	9.68 (8.30,11.29)	2.85***	0.06	17.22 (15.18,19.54)
Years of education	−0.02*	0.01	0.98 (0.96,1.00)	−0.02*	0.01	0.98 (0.97,1.00)
Marital status						
(Married=1)	−0.05	0.08	0.96 (0.82,1.12)	−0.06	0.07	0.94 (0.82,1.08)
Living arrangement						
With household member(s)	−0.02	0.10	0.98 (0.81,1.18)	0.20*	0.09	1.22 (1.03,1.44)
In an institution	−0.31	0.23	0.73 (0.47,1.15)	−0.07	0.18	0.93 (0.66,1.32)
Province						
East	0.08	0.07	1.08 (0.94,1.25)	0.27***	0.06	1.31 (1.16,1.48)
North	−0.07	0.14	0.93 (0.70,1.24)	0.54***	0.12	1.72 (1.36,2.16)
Northeast	0.34*	0.15	1.40 (1.04,1.89)	0.16	0.14	1.17 (0.90,1.53)
West	0.47***	0.09	1.59 (1.33,1.92)	0.63***	0.09	1.88 (1.59,2.22)
Household income (in RMB)						
≤¥30000	0.13	0.32	1.13 (0.61,2.11)	0.09	0.28	1.10 (0.63,1.90)
>¥30000	−0.14	0.32	0.87 (0.47,1.63)	0.01	0.28	1.01 (0.58,1.76)
Major coverage of medical expenses						
NCMS	−0.01	0.07	0.99 (0.86,1.13)	−0.15*	0.06	0.86 (0.76,0.98)
UE/URBMI	−0.35***	0.09	0.70 (0.59,0.84)	−0.41***	0.08	0.66 (0.57,0.77)
Community						
(Urban=1)	−0.03	0.07	0.97 (0.85,1.10)	0.002	0.06	1.00 (0.89,1.13)
Self-report health	0.11**	0.03	1.12 (1.05,1.20)	0.04	0.03	1.04 (0.98,1.10)
Number of times suffering from chronic diseases						
1–2	−0.17*	0.08	0.85 (0.73,0.98)	0.32***	0.07	1.37 (1.21,1.56)
Above 2	−0.66***	0.18	0.52 (0.36,0.73)	0.04	0.13	1.04 (0.81,1.35)

TABLE 2 (Continued)

	Likelihood of being current smoker status estimation			Likelihood of being former smoker status estimation		
	b	SE	Odds ratio (95% CI)	*b*	SE	Odds ratio (95% CI)
Model summary						
McFadden R^2	0.17			0.27		
Cox & Snell R^2	0.14			0.28		
Nagelkerke R^2	0.23			0.40		
Likelihood ratio test						
No. of observations	9797			9797		
χ^2	1429.9***			3233.4***		
df	20			20		

Note: Age and self-reported health are continuous variables used in the multivariable logistic regression models.

Reference groups for categorical variables are defined as follows: age group is “less than 65 years” (=0), gender is “female” (=0), marital status is “not married” (=0), living arrangement is “alone” (=0), province is “central south” (=0), household income is “no income” (=0), major coverage of medical expenses is “self-payment” (=0), living location is “rural” (=0), number of times suffering from chronic diseases is “none” (=0), and current smoker is “no” (=0).

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Participants with UE/URBMI were only 75% (OR = 0.75, 95% CI: 0.63–0.89, $p < 0.01$) as likely as those who self-paid for medical expenses to report current alcohol consumption and only 69% (OR = 0.69, 95% CI: 0.60–0.80, $p < 0.001$) as likely as those who self-paid for medical expenses to report former alcohol consumption status. Like smoking status, NCMS was not associated with alcohol consumption status (see Supporting Information S1: Appendix Figure 3).

Associations of social health insurance with current daily amount of cigarette use and daily alcohol consumption

Tables 4 and 5 present the results of estimating the number of cigarettes per day for current smokers and their daily alcohol consumption, respectively.

No statistically significant association was found between the major coverage of medical expenses and the number of cigarettes smoked per day. In the same vein, the type of social insurance serving as the primary coverage of healthcare expenses was not statistically associated with the daily alcohol consumption for older adults who reported current alcohol consumption status.

DISCUSSION

This study examined the associations of different types of social insurance, NCMS and UE/URBMI, with smoking and alcohol consumption behaviors among Chinese older adults. We used information on the major coverage for medical expenses to examine which financial sources participants relied on to cover their healthcare costs. This approach offered valuable insights into the effective utilization of social insurance coverage, going beyond only

TABLE 3 Results of multivariable logistic regressions examining associations with alcohol consumption status among older adults ($n = 9797$): Chinese Longitudinal Healthy Longevity Survey (CLHLS), 2018.

	Likelihood of reporting current alcohol consumption status estimation			**Likelihood of reporting former alcohol consumption status estimation**		
	b	**SE**	**Odds ratio (95% CI)**	***b***	**SE**	**Odds ratio (95% CI)**
Constant	−3.16***	0.51	0.04 (0.02,0.12)	−2.07***	0.45	0.13 (0.05,0.31)
Age group						
65–80	−0.38	0.37	0.68 (0.33,1.41)	−0.23	0.35	0.79 (0.40,1.57)
81–95	−0.78*	0.37	0.46 (0.22,0.95)	−0.51	0.35	0.60 (0.30,1.20)
≥95	−0.79*	0.38	0.46 (0.22,0.96)	−0.49	0.35	0.61 (0.31,1.23)
Gender						
(Male=1)	1.69***	0.07	5.44 (4.71,6.29)	1.99***	0.06	7.30 (6.49,8.20)
Years of education	−0.01	0.01	0.99 (0.98,1.01)	−0.01	0.01	0.99 (0.98,1.01)
Marital status						
(Married=1)	0.13	0.08	1.14 (0.97,1.33)	−0.06	0.07	0.95 (0.83,1.08)
Living arrangement						
With household member(s)	−0.13	0.10	0.88 (0.73,1.06)	0.09	0.08	1.09 (0.93,1.28)
In an institution	−0.23	0.22	0.79 (0.52,1.21)	−0.18	0.17	0.83 (0.59,1.17)
Province						
East	0.29***	0.07	1.33 (1.15,1.54)	0.28***	0.06	1.32 (1.17,1.49)
North	0.44***	0.13	1.55 (1.20,2.00)	0.25*	0.11	1.29 (1.03,1.61)
Northeast	−0.02	0.17	0.98 (0.71,1.36)	−0.22	0.14	0.81 (0.61,1.06)
West	0.36***	0.10	1.44 (1.18,1.74)	0.51***	0.08	1.67 (1.43,1.96)
Household income (in RMB)						
≤¥30000	0.05	0.32	1.05 (0.56,1.95)	−0.09	0.26	0.91 (0.55,1.52)
>¥30000	−0.01	0.32	0.99 (0.53,1.85)	−0.05	0.26	0.95 (0.57,1.60)
Major coverage of medical expenses						
NCMS	−0.07	0.07	0.93 (0.81,1.07)	−0.08	0.06	0.93 (0.82,1.04)
UE/URBMI	−0.29**	0.09	0.75 (0.63,0.89)	−0.37***	0.08	0.69 (0.60,0.80)
Community						
(Urban=1)	−0.08	0.07	0.92 (0.81,1.05)	−0.01	0.06	0.99 (0.88,1.10)
Self-report health	0.29***	0.04	1.34 (1.25,1.43)	0.06*	0.03	1.06 (1.00,1.12)
Number of times suffering from chronic diseases						
1–2	−0.24**	0.08	0.79 (0.67,0.92)	0.15*	0.06	1.16 (1.03,1.32)
Above 2	−0.38*	0.17	0.68 (0.49,0.96)	0.14	0.12	1.15 (0.90,1.46)

TABLE 3 (Continued)

	Likelihood of reporting current alcohol consumption status estimation			Likelihood of reporting former alcohol consumption status estimation		
	b	SE	Odds ratio (95% CI)	*b*	SE	Odds ratio (95% CI)
Model summary						
McFadden R^2	0.12			0.15		
Cox & Snell R^2	0.10			0.15		
Nagelkerke R^2	0.17			0.23		
Likelihood ratio test						
No. of observations	9797			9797		
χ^2	981.07***			1638.9***		
df	20			20		

Note: Age and self-reported health are continuous variables used in the multivariable logistic regression models.

Reference groups for categorical variables are defined as follows: age group is “less than 65 years” (=0), gender is “female” (=0), marital status is “not married” (=0), living arrangement is “alone” (=0), province is “central south” (=0), household income is “no income” (=0), major coverage of medical expenses is “self-payment” (=0), living location is “rural” (=0), number of times suffering from chronic diseases is “none” (=0), and current smokes is “no” (=0).

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

coverage information. This type of information has been used in other research such as the study by Lee, Chang, Kaplan, et al. (2020). In this research, we observed that participants who relied on UE/URBMI had lower odds of reporting current smoking and alcohol consumption status and former smoking and alcohol consumption status, compared with those who solely relied on self-payment. However, major coverage for medical expenses was not associated with the number of cigarettes smoked per day and the amount of daily alcohol consumption among those who were current smokers and drinkers, respectively.

In this research, UE/URBMI may be associated with lower odds of reporting smoking and alcohol consumption status in general. In a previous study, Dong et al. (2018) argued that (Dong et al., 2018), although the URBMI has been established since the early 21st century, this implementation did not change any behaviors related to smoking and alcohol consumption. However, we should note that participants with UE/URBMI coverage, such as migrant workers, reported better health condition compared to those with NCMS (Fu et al., 2021). The disparity between our observations and those by Dong et al. (2018) may be explained in three ways (Dong et al., 2018). First, Dong et al. (2018) focused only on the effectiveness of URBMI, but the present research examined the combination of UE/URBMI on smoking and alcohol consumption due to the design of the CLHLS questionnaire (Dong et al., 2018). Second, we extracted information from the 2018 CLHLS data, which made it possible to capture the long-term effectiveness of UE/URBMI, given that Dong et al. (2018) used the data from the 2006 to 2011 Chinese Health and Nutrition Survey (Dong et al., 2018). Their study may not capture the long-term effectiveness of the social insurance scheme. Third, as previously mentioned, one advantage of this research was that we used the measurement regarding the major coverage of healthcare expenses, which was more effective in determining whether the participant was able to use the social insurance effectively as compared to the measurement that included only coverage information (Lee, Chang, Liu, et al., 2020).

As smoking and alcohol consumption are primary public health challenges in China (Cai et al., 2019; Im et al., 2019; Lee et al., 2021; Lee, Chang, Liu, et al., 2020), it is critical to

TABLE 4 Results of negative binomial regression examining factors associated with the number of cigarettes smoked per day among current smokers (*n* = 1442): Chinese Longitudinal Healthy Longevity Survey (CLHLS), 2018.

	b	SE	Incidence rate ratio (IRR)	(95% CI)
Constant	1.97***	0.29	7.20	[4.07,12.99]
Age group				
65–80	0.09	0.18	1.09	[0.75,1.54]
81–95	−0.30	0.19	0.74	[0.50,1.05]
≥95	−0.33	0.19	0.72	[0.49,1.04]
Gender				
(Male=1)	0.31***	0.06	1.36	[1.22,1.52]
Years of education	−0.01	0.01	0.99	[0.98,1.00]
Marital status				
(Married=1)	−0.05	0.05	0.95	[0.86,1.04]
Living arrangement				
With household member(s)	0.13*	0.06	1.14	[1.02,1.28]
In an institution	−0.02	0.15	0.98	[0.73,1.33]
Province				
East	−0.13**	0.04	0.88	[0.81,0.96]
North	−0.21*	0.09	0.81	[0.69,0.97]
Northeast	−0.17*	0.09	0.84	[0.71,1.00]
West	−0.40***	0.05	0.67	[0.60,0.75]
Household income (in RMB)				
≤¥25220	0.39	0.20	1.47	[0.97,2.18]
>¥25220	0.34	0.21	1.40	[0.93,2.08]
Major coverage of medical expenses				
NCMS	−0.003	0.04	1.00	[0.92,1.08]
UE/URBMI	0.06	0.05	1.06	[0.96,1.18]
Community				
(Urban=1)	−0.03	0.04	0.97	[0.90,1.04]
Self-report health	0.03	0.02	1.03	[0.99,1.07]
Number of times suffering from chronic diseases				
1–2	−0.06	0.04	0.94	[0.86,1.02]
Above 2	0.08	0.11	1.08	[0.87,1.35]

Note: Reference groups for categorical variables are defined as follows: age group is “less than 65 years” (=0), gender is “female” (=0), marital status is “not married” (=0), living arrangement is “alone” (=0), province is “central south” (=0), household income is “no income” (=0), major coverage of medical expenses is “self-payment” (=0), living location is “rural” (=0), number of times suffering from chronic diseases is “none” (=0), and current smoker is “no” (=0).

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

TABLE 5 Results of Gamma regression examining factors associated with daily alcohol consumption among older adults who used alcohol ($n = 1422$): Chinese Longitudinal Healthy Longevity Survey (CLHLS), 2018.

	b	**Exp(*b*) (95% CI)**	**SE**	***t* Value**	**Pr(>|*t*|)**
Constant	0.12	1.13 (0.55,2.45)	0.38	0.32	0.75
Age group					
65–80	0.07	1.07 (0.61,1.73)	0.26	0.25	0.80
81–95	–0.16	0.85 (0.48,1.39)	0.26	–0.62	0.54
>=95	–0.10	0.90 (0.51,1.50)	0.27	–0.37	0.71
Gender					
(Male=1)	0.32	1.38 (1.22,1.56)	0.06	5.33	**<0.001*****
Years of education	–0.01	0.99 (0.97,1.00)	0.01	–2.08	**0.04***
Marital status					
(Married=1)	0.10	1.11 (0.97,1.26)	0.06	1.56	0.12
Living arrangement					
With household member(s)	–0.02	0.98 (0.85,1.14)	0.07	–0.22	0.83
In an institution	0.002	1.00 (0.72,1.42)	0.17	0.01	0.99
Province					
East	0.09	1.10 (0.98,1.22)	0.06	1.68	0.09
North	–0.27	0.76 (0.63,0.93)	0.10	–2.78	**0.01****
Northeast	–0.21	0.81 (0.63,1.05)	0.13	–1.67	0.09
West	–0.41	0.66 (0.57,0.77)	0.07	–5.63	**<0.001*****
Household income (in RMB)					
<=¥30000	0.55	1.73 (1.04,2.69)	0.24	2.30	**0.02***
>¥30000	0.55	1.73 (1.03,2.70)	0.24	2.25	**0.02***
Major coverage of medical expenses					
NCMS	0.07	1.07 (0.96,1.18)	0.05	1.25	0.21
UE/URBMI	0.02	1.02 (0.89,1.16)	0.07	0.26	0.79
Community					
(Urban=1)	–0.05	0.95 (0.86,1.05)	0.05	–1.06	0.29
Self-report health	0.02	1.02 (0.97,1.08)	0.03	0.86	0.39
Number of times suffering from chronic diseases					
1-2	0.04	1.04 (0.92,1.17)	0.06	0.59	0.55
Above 2	–0.07	0.93 (0.72,1.23)	0.14	–0.50	0.62
Model summary					
AIC	5024.602				

(Continues)

TABLE 5 (Continued)

	b	Exp(*b*) (95% CI)	SE	*t* Value	Pr(>|*t*|)
Null deviance	791.40				
Residual deviance	675.63				

Note: Reference groups for categorical variables are defined as follows: age group is “less than 65 years” (=0), gender is “female” (=0), marital status is “not married” (=0), living arrangement is “alone” (=0), province is “central south” (=0), household income is “no income” (=0), major coverage of medical expenses is “self-payment” (=0), living location is “rural” (=0), number of times suffering from chronic diseases is “none” (=0), and current drinker is “no” (=0).

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

provide more support, such as financial benefits and health promotional strategies, to help older adults quit smoking and alcohol consumption through social insurance schemes. While previous research suggested that the Chinese central government should persist in delivering health promotion strategies and education through URBMI to reduce the incidence of participation in risky behaviors (Chen & Yan, 2012), such efforts need to be comprehensive, targeting not only a specific type of social insurance. For example, in our study, we did not observe any statistically significant differences between older adults who relied on NCMS as their major coverage for healthcare expenses and those who used their own financial resources to cover medical bills. This might be a public health challenge, given that rural residents had higher odds of reporting smoking and alcohol consumption status as compared to their urban counterparts (Lee et al., 2021; Lee, Chang, Liu, et al., 2020). Therefore, increasing benefits related to smoking and alcohol cessation programs/strategies could be one direction to enhance the effectiveness of social insurance schemes in China.

Increasing benefits is a potential approach, yet encouraging individuals to rely more on social insurance schemes for smoking and alcohol cessation could pose a significant challenge. In this research, we noticed that approximately 40% of the individuals still relied on self-payment for medical bills, which was consistent with previous research (Lee et al., 2022). Individuals relying on self-payment might be more disinclined to use smoking and alcohol cessation programs, possibly due to concerns about increased healthcare expenses or a lack of motivation to use such services. This tendency was particularly noticeable concerning the number of cigarettes smoked per day and daily alcohol consumption that no association was observed between social insurance coverage and these outcomes. Strengthening the effectiveness and benefits of social insurance schemes associated with smoking and alcohol consumption cessation programs may be a direction to consider further.

This study also has several limitations. Using the 2018 CLHLS we adopted a cross-sectional study design, so we were not able to establish causality in this research. However, this decision was necessary for two reasons. First, because the CLHLS investigators redefined the measurement regarding major coverage of healthcare expenses between the 2014 and 2018 waves, we were able to apply only the 2018 data to examine the topic of interest. The CLHLS investigators combined URBMI and UEBMI as one category, preventing the separate examination of each scheme. A more effective design would involve combining URBMI and NCMS while keeping UEBMI as a separate scheme, aligning more closely with the current social insurance implementation in China (Jakovljevic et al., 2023). Second, China launched a new series of reforms starting in 2015, including improving accessibility of healthcare services, urban public hospital reform, and other initiatives (Jakovljevic et al., 2023). The 2018 survey could capture the progress of additional reforms following the largest and comprehensive 2009 reform. Finally, this research relied on a secondary data set with a large questionnaire for which recall or self-reported bias may occur. Nevertheless, it is important to acknowledge that this limitation is common in survey-based research and not unique to this study.

CONCLUSION

In spite of these limitations, our study revealed that UR/UEBMI enrollees had lower odds of reporting smoking and alcohol consumption, including both current and former status, in comparison to individuals relying on self-payment for healthcare expenses. However, major coverage of healthcare services was not associated with the current smoking and alcohol consumption status among Chinese older adults. NCMS was not effective across all smoking and alcohol consumption-related measurements. Considering the significant public health challenges related to smoking and alcohol consumption in China, policymakers should prioritize enhancing the benefits of smoking and alcohol cessation programs within social insurance schemes, in which case the benefits may motivate more older adults to quit smoking and alcohol consumption. This strategic approach aims to reinforce preventive measures in the long term, ultimately reducing the burden of preventable diseases and associated mortality linked to smoking and alcohol consumption among the Chinese older adult population.

AUTHOR CONTRIBUTIONS

The first draft of the manuscript was drafted by Cai Xu and Yen-Han Lee and revised by Mack Shelley. All authors approved the final version.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The secondary data utilized in this study were sourced from the publicly available data set of the Chinese Longitudinal Healthy Longevity Survey (CLHLS).

ETHICS STATEMENT

This research relied on a publicly available secondary data set. Therefore, this research effort did not fall into the category of human subjects research.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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RESEARCH ARTICLE

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Exploring critical factors in referral systems at different health-care levels

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Abstract

Background: A consistent referral system and patient patronage are the primary connections between the three tiers in the healthcare delivery system. Patients were scheduled to visit primary care clinics for the first time. Subsequently, patients are moved to more distinguished healthcare facilities to receive additional care.

Objectives: This study aims to investigate the reasons behind patients' transfer from primary and secondary care to tertiary care, as well as the critical factors that influence these referrals.

Methods: This study employs a mixed-methods approach to explore factors determining referral service provision across primary, secondary, and tertiary healthcare levels. Along with conducting semi-structured interviews with healthcare professionals, we systematically examined a wealth of retrospective data on 1331 referred patients from 130 health facilities, including patient records, demographics, referral status, and clinical presentation. All statistical analysis was processed in R, and Corel Draw 12 was also used for graphical illustration.

Results: Healthcare facilities referred most emergencies to several departments, including the cardiac care unit, medical, urology, intensive care unit/emergency, obstetrics and gynaecology, children's, orthopaedic, and psychiatry. The percentage of all cases referred is displayed ward-by-ward; the intensive care unit/emergency wards have a high referral ratio of 65.51%, while the

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obstetrics and gynaecology wards have an 18.40% referral ratio.

Conclusion: There is a need for increased government investments to strengthen the capacity, human resources, and availability of equipment in primary, secondary, and tertiary public health facilities to deliver quality services in order to reduce the patient referral ratio.

KEYWORDS

health inequalities, health system, primary care, referral patients, secondary care

Key Points

- Formalizing and institutionalizing the referral system and retraining all health-care professionals.
- Reduce the epidemic's negative effects on social services, health systems, and the economy.
- Physicians must diligently perform systematic treatment for referral cases.

INTRODUCTION

Primary, secondary, and tertiary cares are the three levels of treatment for patients under the international health-care system (Ojifinni & Ibisomi, 2022; Vieira-Meyer et al., 2022). Each of these components performs in coordination to ensure the provision of the most comprehensive services possible pertaining to patient treatment (Wisdom et al., 2012). To serve as a first point of contact for patients, primary health-care centers were established (Islam et al., 2023). In the event of an emergency, some patients are admitted to the hospital immediately, while others are recommended to the hospital by a physician, nurse, or another member of the medical staff to get more effective treatment (Heydari et al., 2022). It is more common for patients to refer themselves to secondary and tertiary care health facilities than it is for medical experts to make recommendations to these health facilities (Azagba et al., 2022). The referral system is one method that may be used to maximize the effective use of hospitals in accordance with many other tertiary health-care services (Foster et al., 2022). However, it is essential for all patients to first see a primary care physician, who will assess the need for a referral (Homburg et al., 2022; Struyf et al., 2022; Wu et al., 2022). The primary care clinics will provide medical treatment to those who demonstrate responsible self-care practices, (Hong et al., 2021) while the referral system will promptly direct individuals unable to get care to the closest appropriate health-care facility. Incentives offered by the corporate hospitals and privately run hospitals and mismanagement at government hospitals also influence the referral pattern and eventual choice of the patients to choose their health-care provider (Rastogi et al., 2023).

Three main levels of care structure the organization of the health-care system in Pakistan: primary, secondary, and tertiary. Primary care health facilities included the basic health unit (BHU), government rural dispensaries, rural dispensaries (RDs), mother and child houses, rural health centers (RHCs), and tehsil headquarter hospitals (THQ). These facilities provide essential and preventive health-care services to local communities. Tertiary care and district headquarters hospital (DHQ) health facilities are higher-level secondary health-care facilities that offer more specialized and advanced medical services. These secondary and tertiary care facilities serve as referral centers that receive patients from the primary care level when their needs exceed the capabilities of the initial point of contact. The design of this tiered system of health-care delivery ensures that patients receive an appropriate level of care according to the complexity of their medical conditions. To further illustrate the level of care and service infrastructure of international health facilities shown in Figure 1, the patient flowchart from a first-level referral facility to a secondary-level facility in Pakistan is shown in Figure 2 (Hassan et al., 2024; Hassan, Ameeq, et al., 2023; Hassan, Tahir, et al., 2023; Hussain et al., 2006; Shahbaz et al., 2022; Siddiqi et al., 2001; World Health Organization).

FIGURE 1 International patients' levels of care.

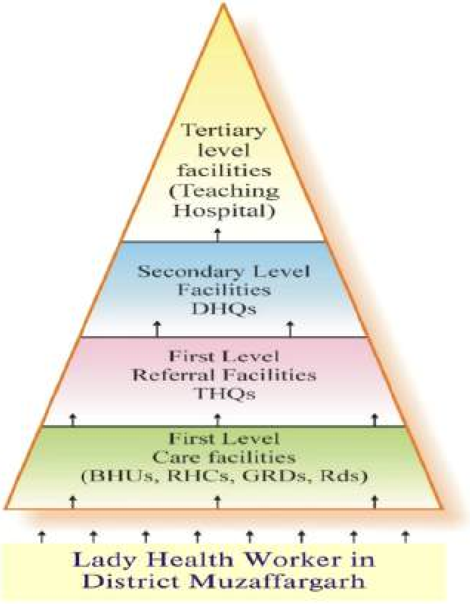

FIGURE 2 Patiens level of care flow in Pakistan. BHU, basic health unit; DHQ, district headquarters hospital; GRD, government rural dispensaries; Rds, rural dispensaries; RHC, rural health centers.

In the United States, United Kingdom, China, and India, the prevalence of overweight or obese pregnant women aged 12–38 was 11%–40%, 33%, 16%, and 8%, respectively (Chen et al., 2018). Every year, over 4.5 million children succumb to acute respiratory infections, mostly in underdeveloped nations. Pneumonia, unrelated to measles, is responsible for 70% of these fatalities. The illnesses most often mentioned include cardiovascular disorders, diabetes, respiratory diseases, and cancer. Referrals may be established based on the intricacy of the patient's illness, the need for more tests, or the necessity for specialized treatments.

For smooth functioning, the referral system requires collaboration between the primary and secondary health-care facilities. Human resources and equipment must be available at both the levels. Unfortunately, primary to secondary health care neglect refers to patients with various diseases, including noncommunicable conditions, such as obesity, hypertension, and diabetes. This lapse leads to delays in the diagnosis and treatment of these diseases (Caggiano et al., 2017). The referral system may also be insufficient in areas with insufficient resources and infrastructure to detect infectious diseases like tuberculosis (TB) and hepatitis (Hitchings et al., 2022).

With more than 5000 RHCs and BHUs supported by higher-level facilities, Pakistan's health-care system is an intricate structure of primary, secondary, and tertiary care facilities (Siddiqi et al., 2001). However, primary health-care efforts have not contributed to the anticipated enhancements in health status, especially among rural population areas, partially due to an inefficient referral system. By directing patients to other, similarly situated or even higher-level facilities with more resources, Pakistan's referral system guarantees that even when primary care physicians are unable to provide optimal treatment, patients still have the best chance of recovery (Seyed-Nezhad et al., 2021). However, the referral system in Pakistan faces several challenges, including dissatisfaction with the quality of care, the nonavailability of physicians, and long travel distances to reach health-care facilities. These issues often lead patients to bypass primary and secondary care facilities and directly seek treatment at tertiary care hospitals, overburdening these facilities and affecting their ability to provide quality care (Kakakhel et al., 2023).

The critical factors influencing patient referrals across health-care levels in South Punjab, Pakistan warrant this study. By identifying these factors, this study aimed to contribute to the strengthening of the health-care system, ultimately improving patient care and health outcomes. The findings will serve as a proposal for a referral system that aims to reduce unnecessary hospital admissions and enhance timely access to health care. This is crucial for the successful implementation of a referral system in Pakistan. It focused on understanding patient flow and referral patterns between primary, secondary, and tertiary health-care facilities. It identifies the most influential referral diseases and challenges that patients face during the referral process.

MATERIALS AND METHODS

Study design

Secondary data was gathered from the Statistical Officer in the Chief Executive Office of the District Health Authority Muzaffargarh (covering rural and urban areas of four subdistricts: Subdistrict-A, Subdistrict-B, Subdistrict-C, and Subdistrict-D). Patient-documented files on which all detailed notes were written by a consultant/charge-nurse of the relevant department. Data was also collected from the Statistical Officer of DHQ Hospital Muzaffargarh. In this research, we did not include patients whose dates were missing on record file. To maintain data integrity, we excluded three (30%) out of 10 patient files from the analysis due to missing dates. The analysis made up for this by censoring patients who were not the outcome on the last day of follow-up (LAMA cases), particularly in the pediatrics, gynecology, and emergency wards. All of the cases that were referred to other hospitals from the Coronary Care Unit (CCU), Medical, Surgical, ICU/

Emergency, Gyni/Obs, Pediatrics, TB/Chest, Ortho, and Psychiatry department were included. A total of 1716 male, female, and child patients were referred from DHQ Hospital Muzaffargarh, out of 1331 patient files examined.

Study settings

Muzaffargarh district had a population of approximately 4.3 (Census-2017, 2017) million people, with an urban-to-rural ratio of 83:17. It had five tehsils (subdistricts), namely Muzaffargarh, Kot Addu, Ali Por, Jatoi, and Chowq Sarwar Shaheed. There were seven categories of health facilities operating in the district, with 130 public-sector health-care facilities operational. In the primary health-care facility 39 BHUs, THQs, and RHCs were observed 24/7 functional. The district's total hospital bed capacity was 689, with isolation beds, high-dependency units, intensive care units (ICUs), emergency beds, blood banks, and functional ventilators. In the district of Muzaffargarh, the total number of OPD, COD, and indoor patients during the last 4 years (2019–2022) was 10776136, 1,141,741, and 657,095, respectively. In our study, among 130 health-care facilities, DHQ hospital referred 1716 cases to tertiary care hospitals, excluding 579 deaths. The bed occupancy rate remained high from January 2022 to December 2022, except in July 2022.

The research methodology overview is shown in Figure 3. In Punjab, over 5000 BHUs and 650 RHCs are part of the primary health-care system. Most health-care facilities remain inoperable, under-equipped, and under-staffed. These provincially funded health-care facilities are linked to over 700 hospitals, including DHQs and THQs (Caggiano et al., 2017). District Muzaffargarh is a pyramid-shaped district in Pakistan's Punjab province, sandwiched between two rivers (more than 300 km in length). It has a scattered population, a low literacy rate, poor socioeconomic, and sanitary conditions, 22 river-in UCs, poor health infrastructure, and desert areas designated as "security compromise areas" (World Health Organization).

In the qualitative phase, interviews were done with the hospital's logistic officer, assistants, statistical officer, and the in-charge of the 1122 rescue ambulance about the availability and nonavailability of all equipment, and details of logistics were obtained by those who transferred the patient from primary to secondary care as detailed in Figure 3. This article duration study started from January 2022 and concluded in February 2023; data collection concluded in December 2022. All statistical analysis was processed in R and SPSS-26, and Corel DRAW 12 was also used for graphical illustration.

RESULTS

Demographics of referred patients

The demographics of the referred patients in this study, including gender, age, place of residence, and socioeconomic status, are detailed in Table 1. The analysis of gender distribution indicated that 39.06% of the participants were identified as male, whereas 60.93% were identified as female. This disparity in gender proportions was found to be statistically significant ($p = 0.000$). The age distribution exhibited diverse percentages across distinct age groups, spanning from 7.36% to 34.25%. Notably, there were significant disparities observed in relation to age ($p = 0.011$). With regard to the geographic location of residence, it was observed that 38.69% of individuals hailed from rural areas, while the remaining 61.30% resided in urban regions. This discrepancy in patient distribution was found to be statistically significant ($p = 0.010$). The examination of socioeconomic status revealed that 35.91% of individuals belonged to the middle-income category, whereas 64.08% had lower incomes. These findings

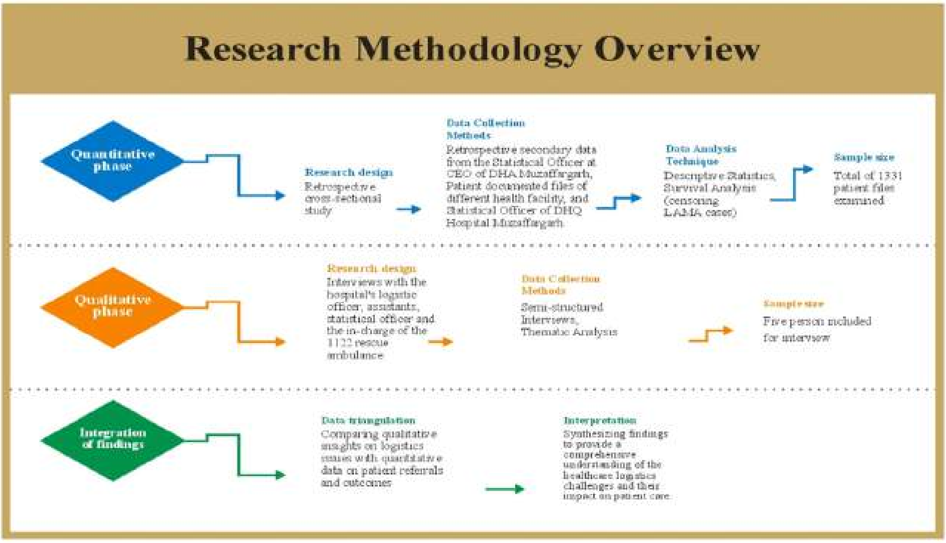

FIGURE 3 Research methodology overview of referral patents.

highlight significant disparities in income distribution ($p = 0.022$ and $p = 0.020$, respectively). The understanding of demographic insights plays a crucial role in comprehending the patient population being studied and its implications for health-care delivery and targeted interventions.

Disease-wise referral patterns

In (Table 2) and (Figure 4), there were a lot of patients flow from ICU/emergency, obstetrics and gynecology, and medical and surgical wards to tertiary care for disease-specific referrals. Road traffic accidents (Li & Zhao, 2022), cerebral vascular accidents (CVA) (Ledford et al., 2022), prematurity in cave (Mouler et al., 2022), myocardial infarction (MI) (Hammad et al., 2022), acute gastrointestinal (GI) bleeding (Xia et al., 2022), placenta previa with rupture uterus (Jauniaux et al., 2022), and chronic obstructive pulmonary disease (Thompson et al., 2022) were the high-influence referral diseases, according to the results.

Information collected during interviews with the hospital's logistic officer, assistants, statistical officer, and the in-charge of the 1122 rescue ambulance, inappropriate referrals, poorly organized referral letters, slow responses from hospitals, ineffective hospital management, and a dearth of necessary equipment and supplies, such as ventilators, laparoscopes, bronchoscopes, magnetic resonance imagings (MRIs), neurosurgeries, chemotherapy, continuous positive airway pressure (CPAP) machines, nasopharyngeal masks, and limited hospital beds, are all factors to consider.

Thematic analysis

Operational efficiency

> Smooth coordination among departments is crucial for efficient hospital logistics. We have implemented streamlined processes to ensure timely procurement and distribution of supplies.

TABLE 1 Demographic of referral patients.

Characteristics	Value (%), total = 1331
Gender	–
Male	520 (39.06)
Female	811 (60.93)
Age	–
Less than 1–12	104 (7.81)
12–24	98 (7.36)
24–36	257 (19.30)
36–48	456 (34.25)
48–60	278 (20.88)
60–72 and above	138 (10.36)
Area	–
Rural	515 (38.69)
Urban	816 (61.30)
Subdistrict-A (Muzaffargarh)	709 (53.26)
Subdistrict-B (Kot Addu)	200 (15.02)
Subdistrict-C (Ali Por)	285 (21.41)
Subdistrict-D (Jattoi)	137 (10.29)
SES	–
Patients with middle-income	478 (35.91)
Patients with poor income	853 (64.08)
Road traffic accident	159 (11.94)
Cerebrum vascular accident	103 (7.73)
Prematurity in cave	32 (2.40)
Myocardial infarction	69 (5.18)
Acute gastrointestinal bleeding	36 (2.70)
Placenta previa + rupture uterus	96 (7.21)
Chronic obstructive pulmonary disease	28 (2.10)
Severity with COVID-19 vaccination	21 (1.27)
Severity without COVID-19 vaccination	28 (2.10)
CVD	19 (1.42)

Abbreviations: CVD, cardiovascular disease; SES, socioeconomic status.

> Maintaining an optimized inventory management system has been key to minimizing waste and meeting the dynamic needs of our healthcare facility. However, we still face challenges in aligning the procurement processes across different units, which can sometimes lead to delays and inefficiencies.
>
> Logistic Officer

TABLE 2 Disease-wise referred cases from DHQ hospital to tertiary care.

Disease name	N (%)	Disease name	N (%)	Disease name	N (%)
Acute gastritis	11 (0.83)	Major degree placenta previa	19 (1.42)	Wheat pills intake	34 (2.55)
Hernia	10 (0.82)	Surgery opinion	6 (0.45)	Ectopic pregnancy	10 (0.75)
Chronic kidney disease	44 (3.30)	Head injury	27 (2.02)	Acute respiratory infections	8 (0.60)
Fracture	8 (0.60)	Eclampsia	52 (3.90)	Oncologist opinion	2 (0.15)
Vascular surgery encompasses	7 (0.52)	Liver disease	2 (0.15)	Bone marrow	2 (0.15)
Severe anemia	60 (4.50)	Ventilator	3 (0.22)	Kidney is nonfunctional refer to NHM	15 (1.12)
Wellness syndrome	2 (0.15)	Cerebrum vascular accident	103 (7.73)	Snake bite	3 (0.22)
Acute limb ischemia	1 (0.07)	Burn	15 (1.12)	Eye trauma	8 (0.60)
Ventilator care	2 (0.15)	Ante partum hemorrhage	28 (2.10)	Hypertension	10 (0.75)
Road traffic accident	159 (11.94)	Epilepsy	13 (0.97)	Fire arm	25 (1.87)
Neurosurgeons opinion	15 (1.12)	Placenta previa + rupture uterus	96 (7.21)	Birth sepsis	18 (2.10)
Renal failure	6 (0.45)	Need ICU	7 (0.52)	Chronic obstructive pulmonary disease (Muneeb Hassan et al., 2023)	28 (2.10)
Twin pregnancy	3 (0.22)	Chronic lung disease	22 (1.65)	Acute abdomen	13 (0.97)
Blunt trauma	1 (0.07)	Stevens-Johnson syndrome	10 (0.75)	Endoscopy	12 (0.90)
Pyrexia of unknown origin	6 (0.45)	Diabetes mellitus	13 (0.97)	Acute diarrhea	32 (2.40)
Deep vein thrombosis	3 (0.22)	Chronic renal failure	8 (0.60)	Angioplasty	13 (0.97)
Non-ST-elevation myocardial infarction	2 (0.15)	Shortness of breath SOB	8 (0.60)	Suspected dengue	1 (0.07)
Wheat pills intake	11 (0.83)	Metastatic thyroid	3 (0.22)	Ischemic heart disease	16 (1.20)
Acute gastrointestinal bleeding	36 (2.70)	Prematurity in cave	32 (2.40)	Cardiac disease	40 (3.00)
Meningitis	32 (2.40)	Myocardial infarction	69 (5.18)	Human immunodeficiency virus	2 (0.15)
Respiratory tract infections	7 (0.52)	Sever pneumonia	21 (1.57)	Purified protein derivative	3 (0.22)
Magnetic resonance imaging	6 (0.45)	Birth asphyxia	2 (0.15)	Chest pain	3 (0.22)

TABLE 2 (Continued)

Disease name	*N* (%)	Disease name	*N* (%)	Disease name	*N* (%)
Medico-legal cas	0 (0)	Postpartum hemorrhage	8 (0.60)	Toka machine injury	1 (0.07)
Multidisciplinary care	23 (1.72)	Addict	8 (0.60)	Bed not available	2 (0.15)

Abbreviations: DHQ, district headquarters hospital; ICU, intensive care unit.

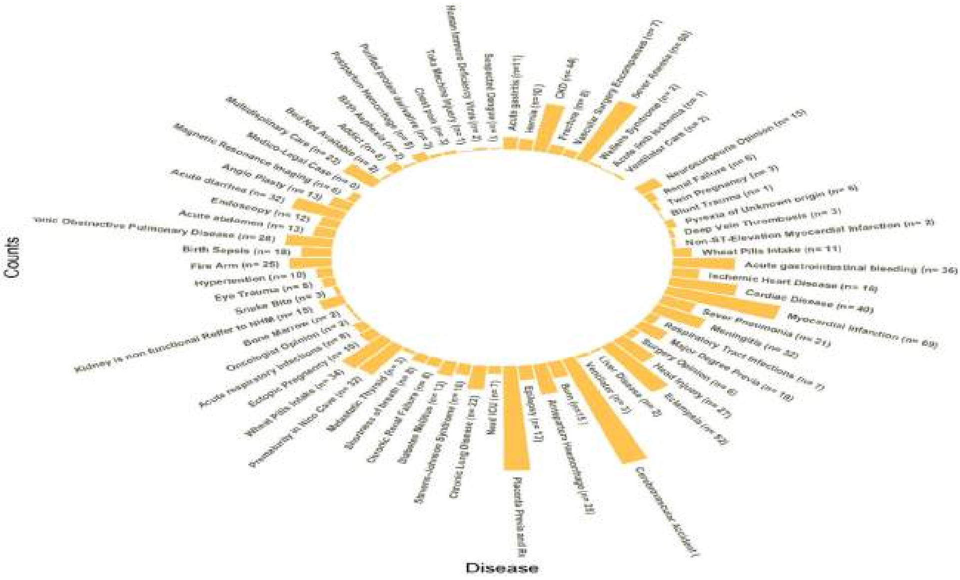

FIGURE 4 Disease-wise referred patient's status in DHQ hospital Muzaffargarh (January 2022 to December 16, 2022). DHQ, district headquarters hospital.

> As assistants, we play a vital role in supporting the logistical operations of the hospital. Our attention to detail and proactive approach help us address any bottlenecks in the system.
> Occasionally, we encounter communication gaps between the logistics team and the clinical departments, which can hinder our ability to respond promptly to emerging needs.
> Assistants

Data-driven decision making

> Data analysis plays a vital role in identifying trends and improving healthcare services. We closely monitor key performance indicators to make informed decisions and optimize resource allocation.
> The data analysis reveals clear patterns in the referral rates across different hospital wards and departments. This quantitative insight helps us understand the key drivers behind the high utilization of tertiary care services.
> Statistical Officer

Emergency response

> Quick and effective emergency response is the cornerstone of ambulance services. We are constantly working to improve our response times and ensure the availability of well-equipped vehicles and trained personnel.
> Coordinating with the hospital's emergency department is crucial for seamless patient handovers and continuity of care. We maintain open communication channels to enhance the overall emergency care system.
> Occasionally, we encounter challenges in accessing certain areas due to traffic congestion or infrastructure limitations, which can impact our ability to reach patients in a timely manner.
> In-charge of 1122 Rescue Ambulances

DISCUSSION

In Pakistan, private medical care is easily accessible nationwide. Private services have a much superior reputation and are more extensively used compared to public services, mostly due to the perception of their higher quality. The primary deficiencies include insufficient oversight by health-care practitioners and deliberate avoidance by patients. Some of these problems may be attributed to the inadequate planning and training of the facility providers and their respective teams. The validity of these assumptions is further demonstrated by the very low rates of service utilization, as well as the deplorable state of pertinent records and problematic diagnoses considered at all levels of care. The purpose of the research presented here is to draw attention to commonly encountered problems in the referral system used by the public sector. It is important to point out a number of important limitations of this study before going into a discussion of the results (Caggiano et al., 2017). Private medical care is offered in every region of Pakistan, and this includes not just the country's cities and semicities but also its more outlying and rural settlements.

The results of the study provide important insights into the factors influencing referral service provision at the primary-to-secondary health-care levels. The total number of OPD, COD, and indoor patients during the last 4 years indicates a high burden of disease in the region, which may contribute to the high number of referrals to tertiary care hospitals. The study found that health facilities referred 1716 cases to tertiary care hospitals, excluding 579 deaths. The consistently high bed occupancy rates observed throughout the study period point to a notable scarcity of beds within secondary health-care facilities, potentially contributing to the necessity for referrals to tertiary care hospitals. The analysis of incoming calls, spanning a spectrum of specialty wards encompassing CCU, Medical, Urology, ICU/Emergency, Obstetrics and Gynecology, Pediatrics, Orthopedics, and Psychiatry, was meticulously conducted on a ward-specific basis. There is a clear need to improve the capabilities of these specialized units in both primary and secondary health-care facilities, as an interesting trend emerged showing that the most referrals were from the ICU/emergency and obstetrics and gynecology departments.

This research effectively identified a diverse range of high-impact referral cases, extending from road traffic accidents to cerebral vascular events (CVAs), neonatal prematurity, MIs, GI hemorrhages, incidents of placenta previa coupled with ruptured uteruses, and instances of chronic obstructive pulmonary disease. These insightful findings carry significant implications for health-care provider training within the region, highlighting the critical need for equipping them with the requisite knowledge and expertize to effectively manage such conditions at both primary and secondary health-care levels.

In related research of the referral patterns of emergency obstetrics and gynecological patients at a tertiary hospital in northwest Ethiopia, it was found that only 28% of cases were submitted with a standard referral letter, 70% of which were referred directly from basic health-care units to a tertiary hospital, and only 5% of referred cases had a complete time of referral. Among those surveyed in Nigeria, 67.7% were happy with the treatment they got after being referred; however, only 53.2% were satisfied with the referral process itself (Guddu & Demissie, 2022). Based on the results of this survey, 57.1% of patients at Deberebirhan Referral Hospital would recommend the facility to others. Patient satisfaction was found to be 74%, which is lower than the 84%, 94%, 2%, 99.6%, and 68% reported in studies performed in Trinidad and Tobago, Nigeria, Kuwait, and Bangladesh (Mezemir, 2014).

Implementing an effective referral system is notoriously challenging and complex. Some are the result of incompetent management, while others are caused by a lack of resources and infrastructure necessary to deliver adequate treatment. Recent findings by other researchers confirmed the existence of the problem and identified some of the factors that contribute to it.

In the qualitative phase, we emphasized streamlined procurement and distribution processes for equipment, but we noted challenges across health facilities. There is a deficiency of necessary equipment and supplies, such as ventilators, laparoscopes, bronchoscopes, MRIs, neurosurgery, chemotherapy, CPAP machines, nasopharyngeal masks, and hospital beds. Rescue ambulance service officers have worried about the importance of quick emergency responses and efforts to improve response times, especially in rural areas. These findings underscore the need to address operational inefficiencies and ensure effective emergency response to improve patient outcomes.

The approach adopted by the research is problematic due to its limited scope in the public sector and its inability to include the significant role of the private medical care sector in Pakistan's health-care system. The lack of comprehensive research limits the identification of the underlying factors responsible for the region's elevated illness burden, which significantly contributes to the excessive utilization of tertiary care facilities. The research does not address the actual implementation elements of a referral system by offering specific solutions to the identified concerns.

Within this framework, it is necessary to provide further training for all health-care practitioners and establish a formal and institutionalized referral system. Any enhanced system must recognize that referral is a bidirectional communication mechanism. Initiating communication should be the responsibility of the referring physician at the primary care level, and it should be concluded with appropriate input from the referee, who is usually a consultant physician at a hospital. Furthermore, it is essential to simultaneously implement standardized protocols, accurate record-keeping, enough transportation options, and prioritized care for the referred patient. In countries like India, where multiple health-care systems are officially operational, it becomes more difficult to choose the appropriate health-care system for ultimate referral. This may not be the problem with countries having only allopathic systems of health care, but since the acceptance of CAM therapies is increasing gradually, this factor needs timely consideration.

CONCLUSION

According to our results, most patients with road traffic accidents, CVAs, prematurity in caves, MI, GI bleeding, placenta previa with ruptured uterus, and chronic obstructive pulmonary diseases were referred. The highest referral ratio observed in the ICU/emergency and obstetrics and gynecology wards with a 65.51% and 18.40%. The nonavailability of advanced technological equipment, human resources, and emergency-handling situations (criteria and training) of referral were ignored by the higher authorities for all hospital staff. Due to the high number of referrals and LAMA cases in emergency, medical, obstetrics and gynecology, children's, and TB/chest wards, the government should remove obstacles that patients face during treatment. The government should priorities removing these obstacles by improving resource allocation, staff training, and upgrading technological equipment. Future research should focus on evaluating the effectiveness of these interventions in reducing referral rates and improving patient outcomes.

AUTHOR CONTRIBUTIONS

Farrukh Jamal's research process involved the conceptualization of the idea, formulation of the theoretical framework, implementation of coding, creation of graphical representations, execution of computational analyses, and the final endorsement of the version intended for publication. Abdullah Ali H. Ahmadini involved the conceptualization of the idea, formulation of the theoretical framework, implementation of coding, creation of graphical representations, execution of computational analyses. Muhammad M. Hassan tasks involved in this paper include editing, proofreading, interpreting data, writing, and granting final approval for publication. Waqas Sami tasks involved in this paper include conceptualization, editing, proofreading, interpreting data, writing, and granting final approval for publication. Muhammad Ameeq's research process involved the conceptualization of the idea, formulation of the theoretical framework, implementation of coding, creation of graphical representations, execution of computational analyses, and the final endorsement of the version intended for publication. Areeba Naeem tasks involved in this paper include editing, proofreading, interpreting data, writing, and granting final approval for publication. All authors contributed to interpreting data, drafting the manuscript, and critically revising the manuscript for intellectual content; all authors approved of the published version.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available on request from the third author, Muhammad M. Hassan. The data are not publicly available due to restrictions on their containing information that could compromise the privacy of research participants. The corresponding author can provide access to the data, models, and code that support the findings of this study.

ETHICS STATEMENT

The department issued a letter of ethical approval on November 15, 2022 with reference No. 1265-71/DHQ by Statistical Officer in-charge of ethical committee in DHQ Hospital Muzaffargarh, Punjab, Pakistan.

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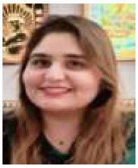

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RESEARCH ARTICLE

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Analysis of the financial situation of the maximum budgets of the Health-Promoting Entities in Colombia

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Abstract

Using a financial-actuarial approach, a formal methodological proposal is presented, using to estimate the loss ratio of the maximum budgets, an ex-ante financing mechanism for the health promoting entities (HPEs) of the contributory, and subsidized schemes of the General System of Social Security in Health in Colombia. Using public information from the financial statements of the HPEs, available on the website of the National Health Superintendency, the loss ratios for the years 2020 and 2021 were calculated. The results showed values above 150% for more than 40% of the HPEs analyzed. This generates a financial sustainability alert for the health sector regarding this specific mechanism. To ensure the efficiency of spending and guarantee the fundamental right to health of all inhabitants of the Colombian territory, it is proposed to invest more in the assessment of health technologies, use the cost-effectiveness threshold already estimated for Colombia, establish clinical guidelines for health technologies not included in the Capitation Payment Unit, and update the health benefit plan in a systematic, participatory, and clear manner for all strategic actors.

KEYWORDS

Colombia, financial statements, Health-Promoting Entities, loss ratio, maximum budgets

Key points

- The Colombian health system, seen as a whole, had an increase in its maximum budgets claims ratio between 2020 and 2021, going from 115.62% to 119.92%, which is mainly related to the increase in costs—after discounting the release of reserves—which increased by 88.43% during the analysis period, while revenues increased by 81.67% for the same period.

- Correct usage of information can generate evidence-based solutions to the current issues of healthcare expenditure growth in the country.
- The design of strategies, the construction of statistical-actuarial methodologies, and the application strategy of future sources of financing for non-Capitation Payment Unit health services and technologies should be studied in-depth to achieve financial sustainability in the Colombian health system.

INTRODUCTION

The General System of Social Security in Health (GSSSH) in Colombia is based on structural pluralism described by Londoño and Frenk (1997), where the emergence of monopoly in the public sector and atomization in the private sector are avoided. Likewise, according to these authors, it avoids the extremes of authoritarian government procedures and the absence of legitimate and transparent rules of the game to compensate for market failures. In this type of organization, modulation should be the main objective of the governing body of the health system, which in the case of Colombia is the Ministry of Health and Social Protection (MHSP), which should be responsible for providing the necessary guidelines to obtain a strategic direction for the system (Londoño & Frenk, 1997).

In Colombia's GSSSH, health services and technologies (HSTs)[1] are financed through different mechanisms. The Capitation Payment Unit (CPU) is considered the most significant collective health protection mechanism in the country (more than 80% of the total expenditure of the GSSSH). Its monetary value (risk premium) is assigned year after year to the health insurers (Health-Promoting Entities [HPEs]), after the Ministry performs the corresponding statistical-actuarial calculations, taking as risk categories the region of residence, sex, and age of each affiliate person (Ministerio de Salud y Protección Social, 2023b). Nonetheless, certain HSTs are financed outside of the CPU. The primary source of funding for these HSTs are the maximum budgets (MB), an individual protection mechanism that is also paid ex-ante to the HPEs (Ministerio de Salud y Protección Social, 2021, 2022).

The MB originated from Article 240 of Law 1955 of 2019 and began functioning in March 2020 (Congreso de la República de Colombia, 2019). The MHSP created the MB to resolve the increasingly complex issues arising with the *Recobros*. The *Recobros* was a mechanism that paid ex-post for the HSTs not financed by the CPU. These issues included the poor quality of the information system, especially in the subsidized scheme, the uncontrolled increase in spending, and the accumulation of debts without a comprehensive audit, among other aspects with high financial impact (Torregroza, 2018).

The government aimed to replace *Recobros* with MB to ensure the provision of HSTs not financed by the CPU through contracting and risk management models adopted by the HPEs (Administradora de los Recursos del Sistema General de Seguridad Social en Salud, 2022a). Nevertheless, this approach has not been sufficient to manage healthcare spending, and the same financial issue that arose with *Recobros* persists (Administradora de los Recursos del Sistema General de Seguridad Social en Salud, 2022b).

In Colombia, historically, spending on the MB financing mechanism has been increasing, which contradicts the government's intentions of controlling spending on HST not charged to the CPU. According to the GSSSH Resources Administrator (ADRES), the total monetary amount in MB, adding both schemes, reached $4.2 trillion Colombian pesos (COP) in 2020. By 2021, it had risen to $5.4 trillion COP, including adjustments of 0.6 trillion COP from the previous fiscal year. As of October 31, 2022, it had surpassed 2.3 trillion COP, with adjustments of 0.5 trillion COP from previous fiscal years (Administradora de los Recursos del Sistema General de Seguridad Social en Salud, 2022b). Additionally, it is expected that by 2023, expenditures, such as those for adjustments from previous periods on MB, will once again exceed COP 0.5 trillion (El Colombiano, 2023).

The government of Colombia for the term 2022–2026, through the MHSP, has been advocating for a structural reform of the current health system in the Congress of the Republic since early 2023 (Zuleta et al., 2023). However, the articles of their proposal do not have a deep technical analysis of the sources of financing. On the contrary, the reform project demonstrates a lack of understanding of the information sources regarding the national health system, which could otherwise facilitate a better characterization of the opportunities for improving the health of the Colombian population.

Recently, Melo-Becerra et al. (2023) conducted a comprehensive review of the financial sustainability of the health system, studying the effect of various risks such as changes in demographic and morbidity patterns, the structure of the labor market, and the fiscal deficit. Their main conclusion refers to the substantial future increase in public spending needed to finance the health system, which would require the allocation of additional resources equivalent to 1.9% of gross domestic product by 2030. This highlights the importance of constantly monitoring the financial management of insurers to mitigate the consequences of a possible systemic risk.

The aim of this study is to propose a financial-actuarial calculation method for the loss ratio associated with the MB of each HPE for the years 2020 and 2021.[2] This approach enables us to analyze one of the aspects of this multifactorial issue and contributes to the financial understanding of the sector. As far as we are aware in the available literature, this subject has never been specifically studied.

The document comprises five sections, with the introduction being the first section. The second section presents the proposed methodology, which is based on the public information provided by the inspection, surveillance, and control body of the GSSSH. The third section presents the results by health insurer and as a health system. Finally, the discussion and conclusions are outlined.

METHODOLOGY AND DATA

In the international literature concerning the financial performance of health insurers, one of the most widely used metrics is the loss ratio (Natsis, 2019). This financial indicator allows for an assessment of how effectively the various risks within the insurance industry are managed and priced. Loss ratios facilitate an examination of whether there is any tension between claims and premiums collected, potentially leading to financial stress and operational challenges (Abraham & Karaca-Mandic, 2011; Haberkorn, 2010; Harrington, 2013). Additionally, this measure can provide crucial insights into the health insurer's ability to respond to claims in an effective, timely, and agile manner (Brockett et al., 2021, 2022; Bugg et al., 1998).

In line with the definition of the incurred loss ratio proposed in actuarial sciences (Babcock, 2006; Klugman et al., 2019; Werner & Modlin, 2016) and incorporating the mobility factor of the HPEs in the GSSSH—Article 2.1.1.3 of Decree 780 of 2016—(Ministerio de Salud y Protección Social, 2016), the equation for year *h* and HPE *j* is defined as follows:

TABLE 1 Financial subaccounts for costs and income for HPEs under IFRS Groups 1 and 2.

Costs			
Financial item	Cost of technical reserves—Settled pending payment—Maximum budget	Cost of technical reserves—Reported but not settled—Maximum budget	Cost of technical reserves—Incurred but not reported—Maximum budget
N° of the financial subaccount	610306	610307	610308
Income			
Financial item	Maximum budget	Moderating fees for services and technologies financed with maximum budget	Co-payments for services and technologies financed from maximum budget
N° of the financial subaccount	410227	410232	410233

Note: Upon reviewing the behavior of the technical reserve release accounts related to MB (which are part of non-operating income), it was observed that these accounts exhibit movements in all periods under study. It leads to the conclusion that these subaccounts are used every time the technical reserve must be adjusted due to an excess in the estimates compared to the actual values. Although these are financial subaccounts that should be used when releasing reserves from previous periods, they have been used in the current release, which should be reflected as a lower cost and not as income. Therefore, it is necessary to analyze the behavior of the loss ratio with the effect of the release of technical reserves for HPE with IFRS Groups 1 and 2. Considering this, the value of subaccounts 410228 ("Release of reserves—Pending and reported obligations—Maximum budget") and 410229 ("Release of reserves—Incurred but not reported obligations—Maximum budget") must be subtracted from the total cost obtained from Table 1.

$$\text{MB\_LR}_{h,j} = \left(\frac{\begin{array}{c}\text{MB costs from affiliates CS}_{h,j} + \text{MB costs from affiliates SS}_{h,j}\\ - \text{Release MB reservations}_{h,j}\end{array}}{\text{MB incomes from affiliates CS}_{h,j} + \text{MB incomes from affiliates SS}_{h,j}} \right) \times 100\%, \tag{1}$$

where CS corresponds to the Contributory scheme, and SS to the Subsidized scheme. The following financial subaccounts are proposed to be considered for the calculation of this index, depending on whether the HPE is governed by International Financial Reporting Standards (IFRS) Group 1 or 2, or by Public Accounting Regime (PAR) 7. Table 1 displays the costs and income subaccounts for entities belonging to IFRS Groups 1 and 2, while Table 2 shows those corresponding to PAR 7.

The microdata is extracted from the website of the National Superintendence of Health,[3] specifically from the technical annex *FT001—Financial information catalog for supervisory purposes*, for the years 2020 and 2021 (Superintendencia Nacional de Salud, 2023). The data sets and programming codes used, generated, and analyzed during this research are available in https://github.com/Jonavier/Indice_Siniestralidad_presupuestos_maximos.

RESULTS

For HPEs in IFRS 1 and IFRS 2 groups, almost 95% of the costs are associated with the subaccounts "Cost of technical reserves - Settled pending payment - Maximum budget" (with an annual average of 79.14%) and "Cost of technical reserves - Reported but not settled - Maximum budget" (with an annual average of 15.56%), which have been increasing

TABLE 2 Financial subaccounts for costs and income for HPEs PAR 7.

Costs		
Financial item	Technical reserve for health services and technologies reported but not settled, financed with maximum budget	Technical reserve for health services and technologies incurred but not reported, financed with maximum budget
N° of the financial subaccount	537206	537207
Income		
Financial item	Maximum budget for health services and technologies not financed by CPU	
N° of the financial subaccount	431125	

during the analysis period. In monetary terms, the two subaccounts with the highest growth rates between 2020 and 2021 are "Cost of technical reserves - Reported but not settled - Maximum budget" and "Cost of technical reserves - Settled pending payment - Maximum budget," which have increased by 224.83% and 83.52%, respectively. The subaccount "Cost of technical reserves - Incurred but not reported - Maximum budget," with an average annual participation of 5.30%, is the only one that has decreased, going from $292.48 billion COP in 2020 to $157.51 billion COP in 2021.

On the other hand, for HPEs in the PAR 7 group, nearly 80% of the costs were concentrated in the subaccount "Technical reserve for health services and technologies reported but not settled, financed with maximum budget" (55.35 billion COP in 2021). It should be noted that in 2020, none of the HPEs in this category presented information related to MB in their financial statements.

Regarding revenues related to MB, for the HPEs of IFRS 1 and 2 groups, more than 99% corresponded to the subaccount "Maximum budget," while for entities in the PAR 7 group, these were associated with the subaccount "Maximum budget for health services and technologies not financed by CPU," which is a predictable behavior given the logic of this financial item. Concerning the release of reserves, according to the financial catalogs, the only entities that can release technical reserves as nonoperating income are those in the IFRS 1 and IFRS 2 groups, with the subaccount "Release of reserves - Incurred but not reported obligations - Maximum budget" having the highest participation in the total releases (with an annual average of 95.33%). These releases represent, on an annual average basis, 0.6% of costs.

The Colombian GSSSH, seen as a whole, had an increase in its MB claims ratio between 2020 and 2021, going from 115.62% to 119.92%, which is mainly related to the increase in costs—after discounting the release of reserves—which increased by 88.43% during the analysis period, while revenues increased by 81.67% for the same period. According to the type of accounting performed, considering the nature of the HPEs, it is observed that the loss ratio of PAR 7 is higher than the rest for 2021 and almost double the ratio for HPEs in the IFRS 1 and IFRS 2 groups. Additionally, there is a decrease of 1.62 percentage points (p.p.) for the IFRS 1 category, while for IFRS 2, there is an increase of 8.69 p.p. (see Figure 1).

Table 3 displays the $MB\_LR_{h,j}$ for each HPE in the study years 2020 and 2021. The table shows that, on average, 48.14% of the insurance companies analyzed have a loss ratio of 130% or higher. Furthermore, the table indicates that the five HPEs with the largest variations in their loss ratio between 2020 and 2021 are "CCF de Sucre-Comfasucre," "Comparta," "CCF Cajacopi Atlántico," "Asociación Mutual Empresa Solidaria de Salud de Nariño - EMSSANAR," and "Fundación Salud Mía."

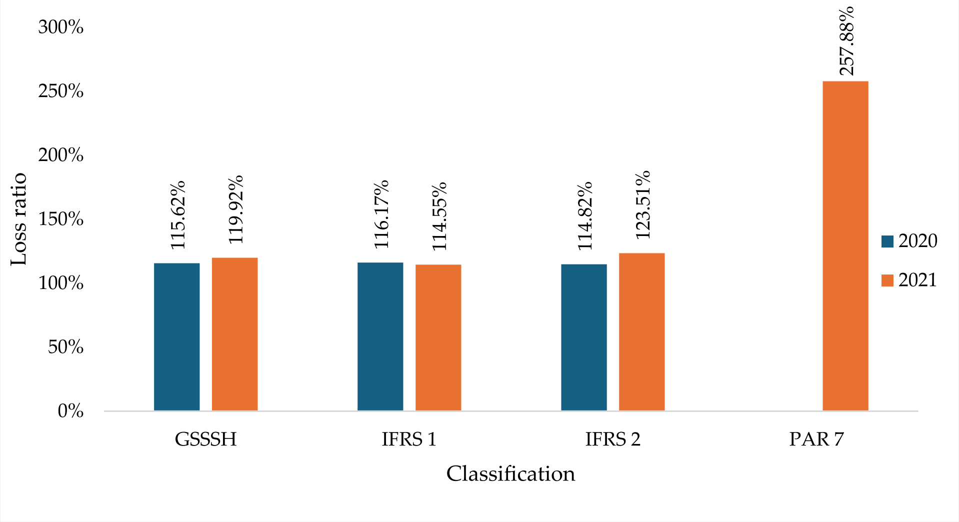

FIGURE 1 MB loss ratio by IFRS and PAR, 2020–2021. GSSSH, general social security health system; IFRS, international financial reporting standards; PAR, public accounting regime.

The results obtained for the MB loss ratios exhibit even more pronounced trends than those found in the study conducted on these ratios for the CPU (Espinosa, Rodríguez, et al., 2023). This work, also approached from a financial-actuarial perspective, reveals that nearly half of the HPEs in Colombia (representing 11.6 million members) had claims metrics exceeding 100% for the year 2021, indicating financial insufficiency for the operation of health insurance. Likewise, HPEs in the PAR 7 group are among the worst performers (many of them indigenous).

DISCUSSION

According to the results of the loss ratios for the different HPEs, there is a concerning financial situation in the health insurance industry, particularly regarding financial sustainability. A significant percentage of the HSTs financed through MB consists of high-cost drugs and treatments for orphan diseases. Given this context, coupled with budgetary constraints (health spending as a percentage of gross domestic product in Colombia is lower than the average of the Organization for Economic Co-operation and Development (Organization for Economic Co-operation, 2024)), the government must design, develop, and implement mechanisms to control spending in the health system. The following are some ideas that could be applied within the Colombian GSSSH. The intelligent use of information systems could provide solutions to the current problems of health expenditure growth. In the database called *MIPRES* (which is not publicly accessible), where all the HSTs financed with MB are registered, it contains the following type of information: unique patient identifier, what type of HST it was (health procedure, medical devices, drug, enteral nutritional support products, or complementary services), HPE of the patient, health service provider, date of health service provision, municipality, department, price of the HST, place of residence of the patient, the International Classification of Diseases 10th Revision (ICD-10) code of the health condition for which the HST is requested, among others (Ministerio de Salud y Protección Social, 2023a). The same detailed information is available for HSTs financed

TABLE 3 MB loss ratios (%) by HPEs (including mobility), 2020–2021.

		Year		Descriptive statistics	
Classification	**HPE**	**2020**	**2021**	**Average over time**	**Standard deviation**
IFRS 1	Aliansalud	100%	N.I.	100%	N.A.
	Compensar	131.19%	101.57%	116.38%	20.95%
	Coomeva	90.26%	155.66%	122.96%	46.25%
	Sanitas	119.61%	129.1%	124.35%	6.71%
	Sura	116.79%	98.93%	107.86%	12.63%
	CCF del Huila—Comfamiliar Huila	119.53%	143.96%	131.75%	17.28%
	Asociación Mutual Ser Empresa Solidaria de Salud—Mutual Ser	148.73%	107.86%	128.30%	28.90%
IFRS 2	Comfenalco Valle	96.32%	126.18%	111.25%	21.11%
	Famisanar	102.7%	129.43%	116.07%	18.9%
	Fundación Salud Mía	103.55%	184.44%	143.99%	57.2%
	Salud total	120.96%	146.47%	133.72%	18.04%
	Servicio Occidental de Salud—S.O.S.	101.67%	100%	100.83%	1.18%
	Asociación Mutual Empresa Solidaria de Salud de Nariño—EMSSANAR	91.8%	192.91%	142.35%	71.5%
	Asociación Mutual la Esperanza—ASMET Salud	190.26%	110.96%	150.61%	56.07%
	CCF Cajacopi Atlántico	135.88%	242.81%	189.35%	75.61%
	CCF de Cartagena—Comfamiliar Cartagena	176.06%[a]	N.I.	176.06%	N.A.
	CCF de Sucre—Comfasucre	436.97%	125.28%	281.13%	220.4%
	CCF del Chocó—Comfachocó	N.I.	404.99%	404.99%	N.A.
	CCF del Oriente Colombiano—Comfaoriente	104.67%	119.64%	112.15%	10.58%
	Comparta	247.74%	392.84%[b]	320.29%	102.6%
	Ecoopsos	159.41%	137.52%	148.46%	15.48%
	Cooperativa de Salud y Desarrollo Integral Zona Sur Oriental de Cartagena—COOSALUD	100%	113.91%	106.95%	9.83%
	Medimás	102.46%	105.07%	103.77%	1.85%
	Nueva EPS	N.I.	113.32%	113.32%	N.A.
PAR 7	Asociación Indígena del Cauca—AIC (Indígena)	N.I.	300.82%	300.82%	N.A.
	Asociación Indígena del Cesar y La Guajira Dusakawi (Indígena)	N.I.	157.84%	157.84%	N.A.

(Continues)

TABLE 3 (Continued)

Classification	HPE	Year 2020	Year 2021	Descriptive statistics: Average over time	Descriptive statistics: Standard deviation
	Pijaos Salud (Indígena)	N.I.	210.80%	210.80%	N.A.

Note: No information (N.I.)—either because the HPE's information report is inconsistent or because it is in liquidation—; not applicable (N.A.).

[a]Information as of September 2021.

[b]Information as of March 2021.

with the CPU, in the database called *Suficiencia*, which is used to develop statistical calculations on the value of the CPU for the different risk categories.

Both micro-databases have multiple validation grids, which have been refined over the last two decades, according to the technical requirements of the sector and thanks to the team of the Directorate for the Regulation of Benefits, Costs, and Tariffs of Health Insurance of the MHSP (Ministerio de Salud y Protección Social, 2023b). Recently, Espinosa, Bejarano, et al. (2023) developed an algorithm, using advanced methods of nonstationary time series analysis, to detect and explore unexpected growth in the use and costs of health technologies financed with MB. This type of study should be considered by the regulatory body to manage health spending actively and intelligently.

The continuous adjustments made by the governing body of the health system for values from previous periods indicate that the analytical-actuarial modeling of MB calculation could significantly improve. Therefore, the MHSP needs to develop robust methodologies to make health spending more efficient and fiscally sustainable, particularly for MB, to consistently improve the health outcomes of the Colombian population. We believe that to guarantee and promote the fundamental right to health, it is essential that decisions on the design, construction, and updating of health benefit plans include at least the following elements:

- Increasing health technology assessments, which include effectiveness and safety studies, budget impact analysis, economic evaluations such as cost-effectiveness or cost-utility, and also other aspects such as implementation, ethical, and legal considerations. On this topic, few countries in the world have estimated the cost-effectiveness threshold with their microdata, including England, Sweden, the Netherlands, Australia, and Spain (Edney et al., 2022). Vallejo-Torres et al. (2016) show the importance of having this instrument and the various uses it can have for health systems (e.g., pricing of new HSTs, reimbursement, and financing policies, etc.). Colombia is one of the first developing countries to have a cost-effectiveness threshold estimated with real-world evidence (Espinosa et al., 2022), however, the government has not yet used it for the design of public health policy. We believe that the MHSP should make use of this important technical tool as soon as possible, which would add value to informed decision making.
- Developing clinical guidelines that avoid over-utilization and waste of monetary resources through inappropriate use of HSTs (of greater importance in a context of significant budgetary constraints). The main utility of these guidelines is to improve the quality of health care received by patients, promoting HSTs with proven therapeutic value and avoiding ineffective interventions (Busse et al., 2019; Guerra-Farfan et al., 2023). In addition, they can also improve the consistency of care, provide knowledge to patients, design disease performance evaluations, and direct the optimization of resources to interventions with high health benefits (Busse et al., 2019; Pereira et al., 2022).

- Conducting technological obsolescence studies (especially in the HSTs funded by the CPU). At the international level, there is still no standardized and accepted approach for the process of reassessment of health technologies, however, different experiences and structured evaluations have already been systematized that show the pros and cons of this approach in the process of disinvestment in health benefit plans (Esmail et al., 2018; Leggett et al., 2012; Pant et al., 2019; Soril et al., 2021). According to different studies related to the subject, for a pertinent development of technological obsolescence studies, it will be necessary to have excellent quality administrative records, such as electronic medical records of patients. This will make it possible to identify and prioritize the optimal use of the HSTs of interest throughout their life cycle (MacKean et al., 2013; Shi et al., 2023; Soril et al., 2017).
- Using of clear and transparent criteria in the institutional architecture regarding which HSTs should pay with the CPU mechanism. The design and updating of health benefit plans should be a systematic, deliberative, participatory, clear, and reproducible process that provides clear rules to the different stakeholders such as patients, HPEs, health service providers, pharmaceutical industries, logistic operators, academic sector, among others (American Academy of Actuaries, 2021; George et al., 2015; McEvoy et al., 2019; Rifkin, 2014).

Having stated all the above, it is vital to review and strengthen the mechanisms for financial risk management in the GSSSH, establishing through strategic planning the priorities for resource allocation and including a participatory process with the different actors, to promote intersectoral actions that influence all the factors that affect the determinants of the population's health status.[4] Likewise, as many people have already expressed in different media, this type of public policies should be accompanied by an institutional solidity on the part of the inspection, surveillance, and control entity of the GSSSH (National Superintendence of Health), an entity that currently contemplates significant opportunities for improvement in multiple aspects.

The values obtained from the estimated loss ratios should be read with caution. This is because their interpretation should be framed within the aspects defined by Robinson (1997), such as the fact that this metric is not the only valid approximation of the financial performance of a health insurance entity and that this measure alone does not express the performance in terms of quality or timeliness of health services. A comprehensive analysis of the current situation of any HPE for the MB component implies reviewing different aspects, not only the economic performance, without ignoring that it is one of the most important. We hope that the methodological proposal presented here can be used by the governing bodies of the Colombian health system, which would allow financial monitoring of the MB mechanism by each HPE and affiliation scheme.

Lastly, as a line of future research, we consider it relevant to study the causal effect of investment in HTSs (financed with MB) on the health outcomes of the served population. Modern methods of causal inference offer a potential methodological solution to this issue. However, in Colombia, as in many countries worldwide, there is a lack of national information systems capable of linking total health expenditure per individual with their corresponding health outcomes.

CONCLUSIONS

The financial-actuarial methodology proposed in this study allowed for the observation of financial difficulty through MB loss ratios for a high percentage of HPEs in the country, despite the limitations that this type of metric may have (Robinson, 1997). HPEs such as

"CCF Cajacopi Atlántico," "CCF de Sucre – Comfasucre," "CCF del Chocó – Comfachocó," "Comparta," "Asociación Indígena del Cauca – AIC (Indígena)" and "Pijaos Salud (Indígena)" had MB loss ratios of over 200% for at least 1 year.

Since MB is a mechanism that does not recognize administrative or operating expenses (contrary to what happened with the CPU), the monetary value received is expected to be fully disbursed by paying HSTs; therefore, the loss ratios should be equal to 100% by mathematical construction. However, for all the HPEs studied, the average between 2020 and 2021 of this metric significantly exceeded this value. Similarly, most of the standard deviations exceeded 10%, with 6 HPEs exceeding 50%.

The results of this research expose the importance of making decisions as soon as possible regarding the quantitative methodology for calculating the MB. The design of strategies, the construction of statistical-actuarial methodologies, and the application strategy of future sources of financing for non-CPU HSTs should be studied in-depth to achieve financial sustainability in the Colombian health system. Given the multiplicity of important decision makers, this becomes a constant public policy challenge, so it will be essential for the MHSP to have a high quality technical-scientific team that is up to the challenge.

In this document, we provide some methodological routes that could contribute to the efficiency of this health expenditure in Colombia, seeking to maximize the social welfare of the population, in the context of budgetary constraints. Regardless of the country's income level, the reality is that there will always be finite resources (opportunity costs), which must be managed strategically and intelligently in any health system. Therefore, we expect public health policymakers to act on evidence-based criteria.

AUTHOR CONTRIBUTIONS

Oscar Espinosa: Conceptualization; methodology; software; validation; formal analysis; investigation; resources; data curation; writing—original draft preparation; visualization; supervision; project administration. **Jhonathan Rodríguez**: Methodology; software; validation; formal analysis; investigation; resources; data curation; writing—original draft preparation; writing—review and editing; visualization. **Daniel Pinzón**: Methodology; validation; formal analysis; investigation; writing—review and editing. **Martha-Liliana Arias**: Validation; formal analysis; investigation; resources; writing—review and editing. **Emiliano A. Valdez**: Validation; formal analysis; investigation; writing—review and editing; visualization. All authors have read and agreed to the published version of the manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data sets and programming codes used, generated, and analyzed during the current study are available in https://github.com/Jonavier/Indice_Siniestralidad_presupuestos_maximos.

ETHICS STATEMENT

Ethical statements are not applicable as this work solely focuses on policies; no human or animal subjects were involved.

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ENDNOTES

[1] An HST is understood, according to the international definition, as: "(…) an intervention developed to prevent, diagnose or treat medical conditions; promote health; provide rehabilitation; or organize healthcare delivery. The intervention can be a test, device, medicine, vaccine, procedure, program, or system" (O'Rourke et al., 2020).

[2] The authors endeavored to include data for the year 2022; nevertheless, as of November 26, 2023, publicly available information only extended to September 2022. Upon analyzing this data, inconsistencies were identified both in the amounts and in accurately attributing the HPEs. Consequently, the decision has been made not to utilize the information from this year. It's noteworthy that by mid-2022, the information exhibited an approximate 4-month lag. However, this lag increased from that point onward.

[3] This information was extracted on November 1, 2023.

[4] On the other hand, based on a qualitative study, Osorio et al. (2021) affirm that even though the MB, compared to the *Recobros*, improved to a certain extent the cash flow of the HPEs, it is necessary to strengthen the opportunity in which these resources reach the health service providers, logistics operators and pharmaceutical industries. This could improve the financial performance of the various strategic agents involved in the healthcare delivery chain.

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COMMENTARY

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Problematizing empowerment in global health: Disrupting universalisms and challenging power inequities

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Abstract

This commentary is a call for problematizing the concept of "empowerment" as it is often used in global health. The authors urge that scholars and policymakers use the concept as it is defined in specific contexts, particularly within communities in low to middle-income countries. The authors also interrogate universalized assumptions about the use of "empowerment" as a political concept, as well as the use of social categories such as "women". Finally, the authors challenge and complicate the notion that empowerment is a concept which can be delivered from donors in high-income countries to so-called disempowered recipients in low-income contexts.

KEYWORDS

colonialism, empowerment, global health

Key points

- Global health is often defined and operated through northern institutions and researchers in HICs and is embedded in systems of power and a history of colonization.
- Conceptualizations of empowerment in global health are often popularized and depoliticized, and are rife with assumptions regarding the meaning of the term, as well as the aimed recipients. However, empowerment as a concept is often rooted in social movement approaches to dismantling structural forms of power.
- Decolonizing empowerment and categories can include challenging universalized assumptions regarding social categories, including the category of woman, but also

intersectional and complex considerations of the ways in which diverse expressions and experiences of sexuality and gender are often invisibilized in global health interventions, often amplifying health disparities for specific groups.

INTRODUCTION

Women's empowerment and gender equality are important topics in the field of global health that can galvanize focus and resources toward health inequities. However, global health is rife with power imbalances between the global north and the global south, with funding, implementation, and "expertise" almost exclusively traveling from the former to the latter. Given this context, broad references to concepts such as women's empowerment and gender equality, without recognizing these power imbalances and their histories, and without centering the realities and perspectives of those in low- and middle-income countries (LMICs) at the forefront of the work, can lead to paternalistic, insufficient, inaccurate, and neocolonial interventions.

Informed by efforts such as the United Nations' Sustainable Development Goals and the notion of "leaving no one behind," including specific aims to achieve gender equality and the empowerment of all women and girls, global health donors often fund and define projects using a concept of empowerment, assuming the concept is universal, and its meaning translatable across sociopolitical landscapes, national borders, cultural norms, and economic realities. All too often, these conceptualizations of empowerment instilled within global health projects avoid challenges to power inequities within global health, between the donor and recipient, or in sociopolitical landscapes. They instead operate in an often-depoliticized context, wherein empowerment is defined for recipients, not necessarily by recipients, assuming donors can simply define and deliver empowerment to existing contexts using well-funded and well-intended health interventions, rather than create the conditions within those contexts for individuals and communities to create empowerment by and for themselves. The mere act of having communities in LMICs apply for funds to develop and implement empowerment interventions in alignment with a donor's specifications could be conceptualized as a disempowering process whereby those in power control both who gets the resources and how they are used—a classic example of those in high-income countries' (HICs) exerting power over those in LMICs.

Despite the often-depoliticized conceptualization of empowerment, however, the concept is not without its own sociopolitical history, and is embedded in various forms of power. This commentary is a call for problematizing empowerment, to develop and use the concept as it is defined from the ground up by communities in LMICs, to interrogate universalized assumptions (such as those defined by the UN) about what empowerment might look like in different contexts, to challenge assumptions about a universal conception of women and other social categories, as well as the ability of donors to provide empowerment.

EMPOWERMENT AND NEO-COLONIALITY IN GLOBAL HEALTH

Empowerment is embedded in a history of colonization. Empowerment discourses can travel through projects, policies, and economic logics that further the colonial "dichotomies and hierarchized binaries, where one is not only separate/different but also above/better than the other" (Arnfred, 2004, p. 8). The irony lies in the fact that the global north is made up of countries who were former colonial powers, which implemented socially, politically, and economically devastating policies and laws in countries that make up the global south that have created a reliance on global health interventions in the first place. For example, British colonial penal codes that criminalize perceived sexual behaviors of individuals and punish same-sex behavior with imprisonment and sometimes death are still in effect in many countries that were formerly colonized, creating environments in which populations who are criminalized by such legislation experience negative health outcomes and barriers to health. Furthermore, northern institutions such as the World Bank and the International Monetary Fund (IMF) have implemented neoliberal economic policies further stunting economic growth, autonomy, and self-sufficiency of formerly colonized countries and oftentimes devastating public infrastructure, including food and health systems. Creating and sustaining dependence on HICs powers for life-saving resources (which would likely not be needed if colonization had not occurred in the first place) is yet another form of controlling the global south and deciding what they get, how they get it, and when they get it—all disguised as goodwill and charity. As opposed to viewing these colonial structures and systems as benevolent benefactors, it would be completely reasonable that communities in the global south view rebelling, organizing, and or challenging these colonial structures and systems as a very tangible means of empowerment.

EMPOWERMENT'S FEMINIST SOCIAL JUSTICE ORIGINS

Empowerment is a social justice concept, largely based on grassroots movements in response to various abuses of power. The term originates from feminist consciousness-raising and collective based action in the 1980s and 1990s, which was used in many contexts to challenge and change power relations (Batliwala, 1993; Batliwala, 2007a; Cornwall, 2016a). The term empowerment became popularized through women's empowerment initiatives carried out by organizations, activists, and researchers in LMICs following the 1995 Fourth World Conference on Women in Beijing (Manuh & Anyidoho, 2015), which manifested through corresponding global policies including the Millennium Development Goals (MDGs) and the critically important Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) (Batliwala, 2007a; Bawa, 2016a).

The concept of empowerment is given its meaning through the radical confrontation of structural "gender inequalities" (Cornwall, 2016b). This social justice-oriented meaning of the term, implied that empowerment was about "…recognizing inequalities in power, asserting the right to have rights and acting to press for and bring about structural change in favour of equality" (ibid, p. 243).

As a concept rooted in grassroots social justice movements, empowerment was about the power within, the power to, and the power with, in response to a power over—namely structural and political forms of power. The term is rooted in not only empowering individuals within themselves (power within), but empowering communities (power with), to challenge structural and political powers and create social change (power to) (Batliwala, 2007b).

THE NEOLIBERAL DILUTION OF EMPOWERMENT

The development of the popularized use of the term empowerment grew at the same time as 1990s neoliberal market logics that dominated international development efforts, evident in the devastating implementation of 1980s IMF structural adjustment programs and the World Banks' implementation of "market friendly development" strategies in the 1990s (Escobar, 2011, p. 57) that targeted LMICs and former colonies.

In global health, the concept of empowerment is often used to describe an action, the gifting of power to a so-called disempowered population, and may be rooted in a neoliberal conception of individualized self-empowerment, or financial empowerment through market inclusion, which does not seek to challenge structural or political forms of power. Scholars in the field of gender and development have argued that empowerment as a term has been depoliticized within the development industry and taken up as an “elastic” term since the 1990s, which has since become devoid of meaning (Cornwall, 2016b). With this diluted form of “empowerment,” forms of power are left unchallenged, colonial histories are unspoken, and the devastation of neoliberal structural adjustment policies are swept under the rug.

DECOLONIZING EMPOWERMENT AND CATEGORIES

In thinking through the use of empowerment in global health, it's critical to consider the ways actors in LMICs generate their own definition of empowerment through ongoing processes often in response to opposition (Naples & Desai, 2002). Naples and Desai (2002) highlight that activists in the south often perceived to “receive” empowerment from the north are often the generators of the concept and its practicalities in any given context as expert political actors in that context (Naples & Desai, 2002). Anthropologists have often accounted for the agency of individuals and organizations to often resist, interpret, and subsequently transform, translate, and modify processes and discourses often perceived to be top-down (Lendvai & Stubbs, 2009; Tsing, 2005).

Empowerment discourses in global health often rely on social categories that are assumed to be universal and or without complexity. For example, commonly, global health actors often employ the discourse of the empowerment of “women,” without any other context. This notion of a monolithic category of woman who is assumed to be a victim in need of saving (Mohanty, 1984), often drives global health interventions, while reifying gender dichotomies and universalizing the cis-heteronormative family and marriage as a part of a moralizing discourse (Corrêa & Jolly, 2008). Similarly, colonization universalized the concept of a cis-heteronormative family and marriage, rendering invisible and criminal other ways of being and knowing, constructing supposedly "non-normative" forms of gender and sexuality. It was Gayatri Spivak who famously challenged the colonial notion of “…saving of the brown woman from the brown man” in postcolonial critiques of gender and imperialism (Spivak, 2010). To add to this concept, it's important to be critical of any the notion of saving of the brown cis-heteronormative woman from the cis-heteronormative brown man.

Postcolonial and African scholars have long argued that gender and sex conceptualizations derived from the north do not always neatly fit onto southern and African contexts, and that the concept of a universalized woman should be challenged (Bawa, 2016b; Oyewumi, 2012). While colonization invisibilized and criminalized supposedly "non-normative" behavior and kinship, efforts to make this group now visible often depend on the use of northern categories such as lesbian, gay, bisexual, and queer relying again on limited conceptions of categorizing sexual behavior as an identity. Queer anthropologists have highlighted that emic or local understandings around same-sex sexual behavior, for instance, can have multiple meanings in different contexts, as opposed to northern categories which rely on fixed identities and logics (Wekker, 2018).

Intersectional frameworks are useful for contextualizing global health interventions intending to address power through empowerment. Intersectional thinking, feminist partnership, and participatory research are all routes to creating greater global health access, and impact for minoritized groups, including persons of diverse sexual orientations and gender expressions and identities and sex characteristics (SOGIESC) who are also assigned female at birth (AFAB). This group may include persons who may also identify as lesbian, bisexual, queer, transgender, male, gender non-conforming, non-binary, or identify as a cis-gender woman. Intersectionality is a concept that stems from black feminist, global south feminist, and indigenous thinking (Yuval-Davis, 2016) and coined by US-based legal scholar Kimberlé Crenshaw in 1989 (Crenshaw, 1989; Kapilashrami & Hankivsky, 2018). Lisa Bowleg (2012, 2021) and others (Etherington, 2015; Guan et al., 2021; Heard et al., 2020; Sekoni et al., 2022; Tolhurst et al., 2012) have highlighted the importance of intersectionality as a framework for public health promotion, (Etherington, 2015; Guan et al., 2021; Heard et al., 2020) interventions and research. Furthermore, scholars have argued for the use of the concept especially in the field of global health (Bowleg, 2021; Heard et al., 2020), in order to help consider "individual factors such as biology, socioeconomic status, sex, gender and race" and how they interact "across multiple levels of society." (Kapilashrami & Hankivsky, 2018). This framing assists in determining "… how health is shaped across population groups and geographical contexts" (Kapilashrami & Hankivsky, 2018) The Black feminist roots of intersectionality serve as an important guide in the use of the concept in global health, as it was created to illuminate and challenge interlocking systems of privilege and oppression, not merely to identify multiple intersecting social identities (Aguayo-Romero, 2021). Intersectional framings help us to understand that gender, sexuality, ethnicity/race, class/socioeconomic status, age, ability, citizenship, religion, and so forth, are all complex social categories that intersect to create different relationships with power and different health outcomes.

One example of the usefulness of intersectional approach in global health is that it can highlight the multiple sociological factors that create negative health outcomes for specific populations, including persons of diverse SOGIESC who are also AFAB. For example, intersectional approaches to global health interventions with the goal of empowerment can highlight the health and human rights disparities experienced by this population in LMICs, especially those within specific countries that have inherited colonial legal systems which criminalize their desires and or perceived transgressions.

The complexity and intersectional nature of what it means to be a woman or AFAB in any given context is often ignored in global health. This includes the exclusion of persons who are of diverse SOGIESC and AFAB from HIV and sexual and reproductive health and rights (SRHR) interventions in global health, which often travel with funding and empowerment initiatives. Often, this group is rendered invisible or seen as "epidemiologically" unfathomable in HIV interventions aimed toward "key populations," including gay and bisexual men and other men who have sex with men (GBMSM), sex workers, and injection drug users, and are simultaneously ignored in gender-based violence (GBV) and SRHR interventions aimed toward those who are perceived to be heterosexual cis-gender women and their husbands (Dworkin, 2005).

As research has shown, those who are of diverse SOGIESC and AFAB (often refered to as sexual minority women [SMW], women who have sex with women [WSW], or LBQ women and transgender men in the research), are at risk of negative sexual health outcomes. This risk is often caused by a lack of information, engaging in behaviors that can transmit HIV and other sexually transmitted infections (STIs), substance abuse, sexual violence and assault, and low uptake of sexual health services, including HIV/STIs (Dworkin, 2005; Haase et al., 2023; Logie et al., 2018; Miller et al., 2013; Muranda et al., 2014). In fact, this group experiences similar risk factors for HIV/STIs as heterosexual cis-gender women, but due to socioecological and intersectional factors including criminalization of their behaviors and identities, lack access to appropriate and adequate health care (Muranda et al., 2014) As research has shown (Abubakari et al., 2021; Daly et al., 2016; Logie et al., 2018; Miller et al., 2013; Muller & Hughes, 2016; Muranda et al., 2014; Sandfort et al., 2013; Tat et al., 2015; Wilson et al., 2019), this population in SSA faces a double invisibilization in both HIV policy and programming, as well as heterosexual SRHR services and interventions, despite experiencing intersectional vulnerabilities which heightened their exposure to GBV and other risks for HIV/STIs. However, research shows that this group in SSA should be included in national efforts to address HIV levels in key populations, as they are at risk of negative SRH outcomes, including HIV/STIs (Zaidi et al., 2016) Therefore, we need more research on this double invisibilization, to prevent risks and provide access to appropriate care and treatment for persons of diverse SOGIESC and AFAB in SSA, and in effect, create the funding and means for empowerment that is defined by this group on their own terms (Lendvai & Stubbs, 2009; Naples & Desai, 2002; Tsing, 2005).

CHALLENGING POWER IN GLOBAL HEALTH

To challenge and question power inequities in global health, there is a necessity to challenge the assumptions behind the definitions, meanings, and origins of concepts such as empowerment in global health practice which are often dictated by decision makers in the global north. This includes engaging with an analysis of power that involves a commitment to localized or emic meanings of the term, including localized social justice approaches and strategies, as well as localized nuances and complexities regarding various social categories and meanings. Such questioning of the use of and framing of empowerment and other assumptions, provides a means to leave behind tired colonial scripts, providing small steps toward disrupting power and ultimately, health inequities in the field of global health.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

ETHICS STATEMENT

Not applicable.

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COMMENTARY

Abortion access, public opinion, direct democracy, and state political institutions in the United States

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Abstract

Although numerous states have enacted policies banning or limiting abortion since the Dobbs decision in 2022, public opinion in most states remains solidly in favor of abortion access. However, whether public opinion is reflected in the public policy of individual states depends on how political institutions mediate between opinion and policy. Activists on both sides of the abortion issue, therefore, have attempted to locate policymaking regarding abortion access in state institutional systems most congenial to their desired outcomes. In states with direct democracy, even where legislatures and governorships are dominated by conservative Republicans, activists have been successful in harnessing public opinion to protect abortion rights by winning public referenda. In response, Republicans have attempted to curtail the power of these referenda, shifting power back to legislatures more likely to be held by actors opposed to abortion rights. This venue shopping for policymaking advantage ultimately raises vital, difficult, and often uncomfortable questions about how political institutions and citizens negotiate the boundaries of democratic legitimacy in policymaking.

KEYWORDS

abortion, direct democracy, political institutions, US state politics

Key Points

- Since US federal courts overturned *Roe vs. Wade* and allowed states to ban abortion, public opinion in both Democratic- and Republican-controlled states has been in favor of abortion rights.
- However, this favorable public opinion is generally only reflected in the state abortion policy in competitive or

Republican-controlled US states when political institutions include direct democracy provisions.

- Despite supporters of abortion rights succeeding in protecting abortion access through voter initiatives, opponents are attempting to curtail or change those processes to keep abortion policymaking as the province of bodies more likely to be against abortion.

INTRODUCTION

The American public has generally been supportive of abortion rights, and since the US Supreme Court's 2022 decision in *Dobbs vs. Jackson Women*'s *Health Clinic* eliminated the federal constitutional right to abortion established by *Roe vs*. Wade, opinion has shifted further in favor of maintaining abortion access. Using one common metric for opinion on abortion, Gallup noted in June 2023 that support remained at all-time highs, with 61% disapproving the decision to overturn *Roe*. From the same poll, majorities identified as “pro-choice,” opposed laws banning abortion after a fetal heartbeat was detectable and backed access to the abortion drug mifepristone with a prescription (Saad, 2023). Strikingly, other polling suggested majorities in 43 states broadly support abortion rights with pluralities in several others (PRRI, 2023). Despite broad public support for reproductive rights, however, 14 states currently have instituted total abortion bans, with seven more passing laws more restrictive than the *Roe* framework (Forouzan & Guarnieri, 2024; KFF, 2024).

One reason for this disconnect between public opinion and public policy is that the pathway between the two is mediated by political institutions, the coordination mechanisms that define how decision-making power is distributed among organizations in a political system (Thelen, 1999). These institutions have two important effects. First, their structural design constrains policymaking pathways. Second, institutional structures are malleable, so actors who find themselves at a disadvantage will attempt to maximize the policymaking role of the structures controlled by interests sympathetic to their points of view (O'Mahen & Petersen, 2020). Faced with the rollback of abortion rights after the fall of Roe, abortion rights supporters have partially adapted to the growing hostility of federal courts to reproductive rights by leveraging direct democracy, which provides a relatively direct path for public opinion supporting abortion to be translated into public policy. In contrast, after initial defeats at the ballot box, abortion opponents in Republican-controlled states have sought to limit or modify the features of direct democracy to redirect abortion policymaking in venues more amendable to their preferences.

POLITICAL INSTITUTIONS AND REPRESENTATIVE DEMOCRACY

In representative democracies, the most direct mediator between public opinion and abortion policy is the legislative process. In American states, for example, legislatures and governors are selected by a state's citizens in competitive elections, and then pass laws. However, electoral systems may struggle to faithfully translate public opinion accurately into electoral results (Powell, 2000; Riker, 1987), even assuming the broad eligibility to vote and meaningful contestation (Dahl, 1972). Additionally, both the policy preferences of legislatures and which policies are prioritized for passage are disproportionately shaped by well-organized interest groups, which may not be aligned with the opinions or well-being of voters or the broader public (Schattschneider, 1960). For example, as described in several case studies conducted by political scientist Leah Stokes, electric utilities and fossil fuel companies managed to convince several state legislatures to roll back laws supporting renewable energy despite broad public support for clean energy (Stokes, 2020). In the realm of health policy, ideologically conservative interest groups have managed to delay or outright block Medicaid expansion in numerous Republican-controlled states despite massive financial incentives to expand, as well as favorable public opinion (Hertel-Fernandez et al., 2016; O'Mahen & Petersen, 2021).

The legislative process itself is constrained by state constitutions, which often differ greatly from their federal counterpart. Many state constitutions provide for the election of officeholders that are appointed at the federal level, like judges or the attorney general. Unlike the bicameral US Congress, Nebraska has a single-chamber legislature. Others protect rights that are not addressed in the federal constitution, like the right to privacy or the right to farm. Constitutions determine the structure of the policymaking process, determine what policies are permissible to change and which ones are part of the “rules of the game.” For example, the Texas constitution forbids the legislature from passing an income tax unless it is passed by two-third of each house of the legislature and approved in a state-wide referendum (Ramsey, 2019). Numerous states require supermajorities in the legislature to pass tax increases—most famously, California, which requires a two-third vote of both houses of the legislature to increase taxes or fees, but only a majority to reduce them (Baldassare et al., 2018). Provisions regarding abortion in a state constitution, therefore, would serve to insulate abortion policy from the effects of changes in both public opinion and of elected officials.

However, not all political institutions serve to insulate policy from voters. Direct democracy, forms of which are available in 26 states, allows voters to make policy through state-wide popular vote in two ways (Ballotpedia, n.d.). The referendum process lets voters directly vote to overturn a policy passed through the legislative process, while the initiative lets groups of voters develop their own policy proposals and place them on the ballot either to be passed as a statute or as a provision of the state constitution. For each method, voters must gather enough valid signatures to place the question on the ballot. In many states, the legislature can also decide to submit proposals directly to the voters.

THE ROLE OF DIRECT DEMOCRACY IN ABORTION POLICYMAKING POST-DOBBS

Most of the initial action after the Dobbs decision was the result of the legislative process—13 states, for example, had passed trigger laws on the books that would ban abortion in the wake of any Supreme Court decision overturning Roe (KFF, 2024). However, as the initial dust settled, both opponents and proponents of abortion rights made initial attempts to use direct democracy where they thought public opinion was favorable to their side. In 2022, three states–Vermont, California, and Michigan–featured ballot questions enshrining abortion rights into the state constitutions. Two other states that voted heavily Republican in federal elections–Kansas and Kentucky—in contrast, had initiatives that eliminated any constitutional right to an abortion (Nash & Gaurnieri, 2022).

In California and Vermont, these constitutional provisions would merely serve to reinforce the status quo of statutory protections for abortion access already in place. However, in other states, the move to direct democracy was an attempt to shift the decision-making process for abortion policy out of the realm of a hostile actor into the area of a friendlier one. In Kansas, where the state courts had blocked restrictions on abortion, Republicans in the legislature put the measure on the ballot with the assumption the state's heavily Republican electorate would vote to remove constitutional protections. The vote would then clear the way for the legislature to enact a ban (Cohen, 2022). In Michigan, in contrast, advocates for abortion access faced the potential implementation of a law banning abortion that pre-dated *Roe*—which would be supported by a Republican-controlled legislature. Supporters saw direct democracy as a way to preserve abortion access by outflanking a hostile legislature (Wells, 2022).

In line with surveys showing public opinion broadly supporting abortion rights, the results of the referenda were decisively one-sided, with abortion rights supporters prevailing in all five cases. The most striking result was in solidly Republican Kansas where the side backing abortion rights won by 19 points (Balmert & Bennett, 2023). After the initial round of elections, abortion rights supporters recognized their advantage in public opinion would consistently translate into victories through institutions of direct democracy. Logically, they doubled down on the strategy, and in states permitting initiatives or referenda, local organizers started gathering signatures to place abortion questions on the ballot. In 2023, voters in Ohio—a state that has had a unified Republican government since 2011 and voted for Donald Trump twice by significant margins—easily approved Issue 1, which enshrined the right to an abortion up to fetal viability, by more than 13 points. As of this writing, activist groups favoring abortion rights are finalizing placing initiatives enshrining constitutional protections to abortion access in nine more states. Six of those states currently have banned or restricted the procedure beyond the limits allowable under the Roe standard, notably Florida, Missouri, Arkansas, Arizona, and South Dakota. Two more have legislatures referring constitutional amendments enshrining abortion rights to voters (Felix et al., 2024).

In contrast, Republicans opposed to abortion are steering away from direct democracy provisions, with efforts recently only ongoing in four states (Pennsylvania, Iowa, Colorado, and Nebraska), two of which were initiated in state legislatures. Instead, they are attempting to increase distance between the public and the policymaking process by curtailing the reach of direct democracy. Their first method is simply to undo the initiative. Many states treat laws passed by citizens at the ballot box as regular laws that legislatures and governors can repeal or modify through the regular legislative process (Singer & Nelson, 2019). Constitutional amendments are more difficult to repeal, but may be ignored or narrowed under certain circumstances. As studies of California's numerous voter-approved referenda has suggested, elected officials' ability to modify or vacate referenda can vary greatly based on the ease of compliance, possible legal or electoral consequences (Gerber et al., 2001). The full impact of these efforts on abortion will only become clear with time. For example, some Republicans in Ohio have discussed defending laws currently limiting abortion from legal challenges stemming from the passage of constitutional protections for abortion, though they have shut down legislation that would strip courts of the ability to enforce those protections (Trau, 2023). More broadly, faced with repeated losses in citizens referenda on abortion, Medicaid expansion, minimum wage increases, and marijuana legalization (O'Mahen & Petersen, 2020, 2023; Singer & Nelson, 2019), conservatives are now attempting to limit voters' ability to pass citizen-initiated laws. Eight conservative or swing states have attempted some sort of curtailment in the last 2 years (Joseph, 2023).

The first method is to simply make it more difficult to pass referenda. Before voters approving constitutional protections for abortion in 2023, Ohio legislators placed a proposal on the ballot that would have raised its threshold for passage to 60%. The measure (awkwardly also titled “Issue 1”) failed decisively—despite being held on a special August election date the state created on short notice in hopes low turnout would pass the measure. Florida considered raising its bar for passage to two-thirds from its current 60%. However, there are costs to abortion opponents who employ this strategy. Raising the winning percentage helps block questions they oppose, but it also makes it easier to block referenda they support (Joseph, 2023).

Considering this problem, conservative abortion opponents have employed three strategies. First, they may constrain areas subject to direct democracy in a way advantageous to their political beliefs. In debates over reviving the state's initiative law, Mississippi lawmakers have voted to remove abortion from the list of policies subject to direct democracy (Fernanado, 2024). The state already had excluded the subject of its "Right-to-work" law—which weakens power of labor unions—from repeal in its former initiative process (Ballotpedia, n.d.).

Second, Legislators opposed to abortion have attempted to alter the criteria for signature gathering and passage to channel direct democracy processes toward policy outcomes they favor. For example, Ohio's proposed alterations to referenda would have changed signature-gathering requirements in a way favoring subjects supported by conservatives. Under current law, canvassers must collect signatures equivalent to 5% of the voter turnout in the last general election in 44 of 88 of the state's counties. The new proposal would have required 5% in all counties. Requiring higher levels of signatures in small rural counties would tilt the playing field toward ballot initiatives backed by conservative Republicans: 44 rural counties delivered more than 70% of their votes to the Republican presidential candidate in 2020, while 22 voted 80% or better for the Republican gubernatorial candidate in 2022. Arizona legislators have asked voters to make similar changes to initiative process in the 2024 election. Missouri has considered making referenda votes pass in a concurrent majority—that is in a majority of its state House districts, as well as having a state-wide majority. This process would benefit ballot proposals backed by Republicans, as they control a supermajority of the state house districts (Dereuck, 2024). Arkansas and Idaho's legislatures have also considered similar provisions (Fernanado, 2024; Nichanian, 2023).

CONCLUSION

As the interaction of referenda preserving abortion rights and state laws banning abortion demonstrates, public opinion broadly favoring abortion rights is helpful but insufficient on its own to guarantee legal access to abortion. It is the structural design of a state's political institutions that ultimately determine whether and how underlying attitudes of the citizenry are translated into public policy. The complex tangle of American institutions at both the federal and state levels has allowed both sides of the abortion debate to attempt to contest the issue on ground that is most beneficial to their side. Although this perspective has focused on the institutional features of state legislatures and direct democracy provisions, the analysis demonstrating how activists seek favorable venues to make policy changes extends to other parts of the US political system. For example, opponents have attempted to limit access to abortion through the federal courts by filing suit in jurisdictions dominated by conservative judicial appointees appointed by Republican presidents and known to be hostile to abortion (Lithwick & Stern, 2023).

Finally, while it may be tempting for abortion rights proponents to conclude that more democratic institutions provide better policy outcomes, it's important to remember that more democratic institutions in themselves are not necessarily more protective of rights. In *Roe*, seven federal judges with lifetime appointments overturned numerous state laws limiting abortion access—all of which were enacted by popularly elected legislatures and governors. For five decades after *Roe*, appointed federal judges continued to mostly thwart the will of numerous elected state legislatures passing legislation imposing restrictions on abortion before fetal viability.

Direct democracy itself can also be profoundly antidemocratic by curtailing fundamental rights and protections of vulnerable minorities. Over past years, numerous state referenda limited the rights of LGBTQ+ Americans to marry (Obergefell vs. Hodges 576 US, 2015). In

1992, Colorado voters overwhelmingly passed an initiative that made it illegal to protect members of LGBTQ+ community against discrimination in access to health care, housing, employment, and public accommodation (Romer vs. Evans 517 US, 1996). All of these democratically enacted discriminatory statutes and constitutional provisions were ultimately overturned by unelected federal judges with lifetime appointments. Political institutions are merely pathways for policymaking. The decisions of citizens, representatives, and other officials collectively determine how the preferences of the people are reflected and rights are protected, or whether they will be at all.

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CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest.

ETHICS STATEMENT

This work complies with Wiley's Best Practice Guidelines on Research Integrity and Publishing Ethics, last updated in 2014.

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COMMENTARY

WMHP WORLD MEDICAL & HEALTH POLICY WILEY

NHS dentistry in Britain: A long overdue check-up

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Abstract

There has been longstanding international fascination with the British National Health Service since it was established in 1948. The British population itself has offered enduring support for the principles and institutions of public provision. However, coverage of the NHS has typically been uneven in academic and policy debates. There is limited understanding of some darker corners of NHS provision resulting in a partial picture of public service provision. Public dentistry has been a Cinderella service in broader debates about the NHS and a check-up is overdue. We offer a long-term view of dentistry that assesses the current state of dental health policy, including its gradual decay. We examine the purpose of dentistry and the challenge of injecting fundamental National Health Service values (weighted capitation and a focus on need) into services and which necessitates redistribution and tackling shibboleths of NHS provision. Alongside political values and public attitudes, we examine the interests of professional stakeholders and how the combination of values, attitudes, and interests does not currently cohere into a sustainable policy. We explore how dentistry might recover purpose and respond to need. Discussion is prescient considering an acknowledged crisis in British dental care, including widespread public and media coverage, and with 2024 being a general election year with NHS provision a familiar battleground.

KEYWORDS

health care reform, politics, public health insurance

Key Points

- Dentistry remains an overlooked and neglected corner in academic understanding and analysis of contemporary British healthcare and the NHS.
- Our succinct analysis of dentistry assesses the current state of dental health policy. It examines the purpose of dentistry and the challenge of injecting fundamental NHS values into services.
- It asks how dentistry might recover purpose and respond to need.

AN OVERDUE CHECK-UP OF NHS DENTISTRY AND THE DENTAL WORKFORCE

Since its establishment in 1948, there has been enduring international interest in the organization and delivery of the British National Health Service. Across decades, commentators have addressed what they see as the good (Beeson, 1974; Leatherman & Berwick, 2000), the bad (Light, 1998), and the very different (Enthoven, 2013) in British publicly funded healthcare delivery and reform. On their part, British authors have regularly updated overseas readers on the twists and turns of domestic health policy (Day & Klein, 1991; Potter & Porter, 1989).

However, coverage of NHS activity has typically been uneven. Richards' (1971) paper situated developments in British dentistry alongside elements of the US experience, but such interest is unusual, and dentistry has been a Cinderella service in broader debates about the NHS.

A dental follow-up is thus long overdue and so, our *Comment* assesses the past 50 years in this neglected corner of NHS activity and policy. Our reflection gives voice to previously unspoken compromises facing policymakers but which are increasingly being aired around public dentistry. This is timely considering the Dental Recovery Plan (Department of Health & Social Care, 2024) and 2024 being a general election year with NHS provision a battleground.

UNDERSTANDING BRITISH HEALTH POLICY—A LONG-TERM VIEW OF DENTISTRY

Although dentistry was brought into a national scheme after 1948, foundational NHS principles—centrally-funded and free at the point of delivery, universal, equitable, comprehensive, and high quality (Delamothe, 2008)—never fully fit the experience of British dentistry.

The new NHS did not own and operate dental facilities or employ dentists. Dentists remained independent “professional tradespeople” (Taylor-Gooby et al., 2000), did not receive subsidies for buildings and, unlike General Practitioners, could not be compelled to take on NHS patients. Dentists choose whether to generate income from private patients, NHS provision, or a combination of the two. Such a service mix may be offered within the same facility and even the same session, unlike healthcare which has separate private facilities, and private wards within public hospitals (Hancock et al., 1999).

The government was never a single-payer for dental services. Soon after the establishment of the NHS, demand for dentures soared and charges were introduced in 1951 and 1952 (alongside those for prescriptions and spectacles), with exemptions for priority classes and children. In 1969, General Dental Services cost about 5% of the total NHS budget, and one-fifth of these NHS dental costs were met by charges (Richards, 1971).

National professional standards and regulation of the dental workforce (Gulabivala, 2018) had no equivalent framework for service access. Dentistry was never truly equitable, and despite commitments to a uniform and national system, freedom to practice saw a regional imbalance in the distribution of dentists that disadvantaged the north of England (Richards, 1971 p. 142). Areas of high social deprivation had relatively few dentists with no controls and few incentives on geographic location. Rather than workforce planning, policy relied on incentives—per capita, activity, fee-for-item, and mixes therein (Grytten, 2005). NHS dentistry adopted a fee-for-item reimbursement (Taylor-Gooby et al., 2000) and there were no limits on what private dentists could charge, thereby exacerbating the inverse care law (Tudor Hart, 1971).

Following the introduction of dental charges in 1951, there was relative policy stability up to 1990. With better dental health in the population, dentistry moved into a “drill and fill” phase, focused on more conservative, restorative treatments. Money followed activity in granularized fee-for-service reimbursement covering 400 different procedures. Cost containment was a problem and policy sought to address “overperformance” with a 7% fee cut in 1992/3 (Williams et al., 2023), creating animosity among dentists, a shift to private activity, and providing patients with little choice but to remain registered with their dentist (Taylor-Gooby et al., 2000; Tickle, 2012). At the start of the 1990s, 90% of dentists generated three-quarters of their income from NHS activity; this fell to only 60% of dentists generating three-quarters of their income from NHS activity by the end of the 1990s (Williams et al., 2023). Dentists who moved to the private sector justified it in terms of ensuring a quality service, spending more time with patients, having patients who value prevention, as well as financial benefits. Those who remained within the NHS identified their reasons as related to securing a reliable income, insufficient private demand, and access to an NHS pension (Taylor-Gooby et al., 2000).

A 2006 Contract reform introduced a “cost and volume arrangement” (Units of Dental Activity; UDA) to replace the granular fee-for-service arrangement. UDAs are financial values given to a course of treatment, based on historical levels, effectively capping the budget. Providers deliver a set number of UDAs and must stay within quotas (Tickle, 2012). Under the old NHS contract, dentists were paid for each item of treatment provided whereas with UDAs they are paid per course of treatment, irrespective of how many items such a course requires.

This “activity” approach incentivized volume over need and quality, and encouraged cream skimming (selecting healthier patients with less dental need), with a dramatic fall in the number of more complex procedures (Almutairi et al., 2022; Williams et al., 2023). Some dental work was delivered at a loss. There were also familiar criticisms of the system being bureaucratic and target-driven (Merry, 2024). Over 1000 dentists (out of 23,000 in 2012) did not sign up to the new arrangements and by 2012 there was a decrease in NHS use, particularly amongst patient groups with previously good access to dental care, and again consumers migrated to the private sector (Whittaker & Birch, 2012, p. 2515).

Unlike many other NHS professionals, dentists have a choice of where and how to work. In standard markets, reducing or removing price barriers improves supply and broadens access. However, in dentistry, it also depends on providers being able and willing to deliver services at rates reimbursed under the public system (Whittaker & Birch, 2012). Supply will only follow NHS funding if dentists do not compensate for reduced earnings opportunities in “over supplied [areas] by expanding privately funded service in those locations” (p. 2515).

The policy is strongly supply-driven, with changes in the balance of NHS and private activity reflecting the interests and preferences of dentists rather than a push for consumer choice amongst the public (Hancock et al., 1999). Supply is often geographically determined not least in the form of graduates from dental schools. Until 2001, by comparison the distribution of GPs was determined by the Medical Practices Committee who would sanction new practices only in areas that were under-served by GPs (Gooderham, 2021; Peckham & Exworthy, 2003, pp. 92–95). There are 12 dental schools in England, four in Scotland, one in Wales, and one in Northern Ireland. English dental schools are mainly concentrated in large cities such as London (3), Birmingham, and Manchester. NHS England (2022) reporting to the Review Body on Doctors' and Dentists' Remuneration: Fifty-First Report (2023) suggested geographical spread rather than the number of dentists is the problem.

CURRENT DENTAL POLICY DECAY

Covid-19 stretched dental services and generated a backlog with 13 million fewer treatments in 2021/2 than prepandemic (British Dental Journal, 2022). Devolution has added further complexity, and shaped four unique "national" NHS services with clear policy divergence, for example, Scottish NHS dental examinations are free of charge and the country has lower banding charges (Chestnutt, 2013; Greer, 2016).

Focusing on dental policy in England, there are around 11,000 dental provider practices and of that number, about three-quarters have contracts to provide NHS services. This public provision may be either a minor or major element of their overall practice income (and role) (Baird & Chikwira, 2023). Between 2010/11 to 2021/2, total funding for dentistry fell 8% in real terms (2021/22 prices) (Garratt, 2023).

The evidence base on the dental workforce is fairly poor. The headcount of registered dentists has increased but the actual FTE is unclear (General Dental Council, 2024). The NHS Long Term Workforce Plan (2023, p. 79) proposes dentists spend a greater proportion of their time delivering NHS activity; however, an increasing number of dentists per population doing NHS work does not address how much private activity they do, and what their NHS commitment is (including their FTE and role). We know little about the development of private practice, which is troubling given a growing proportion of young dentists are considering entering private practice. For patients, unlike other NHS services, there is no metric on waiting times and responsiveness of dentistry. There is little evidence on national dental needs, including who is seen and not seen.

Most recently, the NHS recouped £0.5b in dental charges (Garratt, 2023) and between 2014/15 to 2019/20 income from patient charges increased by 8% (Williams et al., 2023). In 2021/22, charges amounted for 20% of total NHS dentistry revenue. The lack of research post-2010 on the impact of dental charges in fiscal austerity is surprising. Dale et al. (2021, p. 2) conclude that there is "a likely relationship between increased NHS dental charges and reduced access to NHS dentistry; a relationship which is likely to affect poorer individuals and those with worse oral health disproportionately".

From 2010, so-called "blended contracts" (Steele Report, 2009) were piloted, involving payments for patients registered by the practice, rewards for quality, but also for activity. These have since ended and while there have been tweaks to the UDA (six bands of treatment now have different numbers of UDAs) (Baird & Chikwira, 2023), fundamental reform has not been forthcoming.

Dentists are deeply unhappy with the current contract which is said to reward those who meet government targets for treatments whereas dentists' priorities are patients and prevention. There is an echo of half a decade of policy drift: "Many dentists believe that some change in their remuneration system is desirable; however, what is not clear is what change should be made" (Richards, 1971, p. 151). Moves from NHS to private activity are about both job satisfaction and the nature of the contract (including targets) (Waitzman, 2019) and any reform must address both of these concerns.

The last decade has seen an increase in the number of patients experiencing difficulty accessing NHS dentists and a further drift to private activity (Health and Social Care Committee, 2023). In May 2022, the British Dental Association reported that 3000 dentists had stopped providing NHS dental services since the start of the pandemic (cited in the Health and Social Care Committee, 2023). A British Dental Association (2023) suggested that 50.3% of dentists in England have reduced their NHS commitments since the start of the pandemic. More worryingly, nearly three-quarters (74%) stated they intend to reduce, or further reduce their NHS work in the future (Williams et al., 2023). The pandemic accentuated the crisis of access; a 2022 survey found 90% of practices across the UK were not accepting new adult patients (cited in Health and Social Care Committee, 2023).

What does this mean for patients? There is evidence of a significant rise in the proportion of people who tried to get dental appointments within the last 2 years but were unsuccessful (NHS GP Patient Survey, 2022). Parts of the UK are "dental deserts," that is, geographical areas where no dentists are taking on new patients. Again, there is a familiar ring in an earlier analysis of Steele: "Access to care is a problem, but not a universal problem, as it tends to be concentrated in particular areas of the country" (Steele Report, 2009, p. 2). There is close to a threefold variation in areas with the least/most NHS dentists per population.

Access to NHS services and waiting times correlate strongly to patient satisfaction. Indeed, satisfaction (1998–2019) for publicly funded dental care *rose* following the 2008 economic downturn which coincided with increased use of publicly funded services (Almutairi et al., 2022). Recently, however, patient satisfaction with NHS dentistry dropped to a record low, driven by challenges in access (Morris et al., 2023).

The crisis is one of access but also widened geographic inequalities in oral health that impact particularly on older and deprived populations. Between April 2022 and May 2023, 30,000 children and 70,000 adults were admitted to A&E with tooth decay (Khan, 2024). The public portrayal of dentistry in the (new and social) media includes increasing mentions of travel abroad for dental treatments at affordable prices, and even those with more urgent needs resorting to DIY dentistry.

In short, it does seem that dentistry has moved *even further* from "foundational" NHS principles outlined earlier: centrally funded and free at the point of delivery, universal, equitable, comprehensive, and high-quality services.

RECOVERING PURPOSE AND RESPONDING TO NEED

Reports from Parliament and respected advocacy bodies detail the extent of the crisis (Health and Social Care Committee, 2023; Williams et al., 2023). The Dental Recovery Plan (DH&SC, 2024) was launched by the then Conservative government to help address the crisis. It includes, for example, an extra fee for dentists on top of the standard payment for seeing a patient who has not visited a dentist for 2 years. There will be an increased fee for patients needing complex work, and 240 dentists will be offered one-off payments of up to £20,000 for working in under-served areas for up to 3 years. Measures also include outreach dental teams visiting schools and nurseries, expansion of water fluoridation to support prevention, and mobile dental services in rural and coastal areas with poor dental coverage.

The Health and Social Care Committee (2023, para 13) suggested there is a need for "compelling incentives" to attract new and existing dentists to undertake NHS work. Responses from professional bodies suggest the proposed measures are unlikely to reverse longstanding system decay. The NHS Long Term Workforce Plan (2023) has also argued for increased dental training and recruitment, and potential lock-in (e.g., loan forgiveness) for those who train and remain in the NHS. However, there are many unanswered questions about the political and practical feasibility of such measures. Recruitment of dentists in competitive global markets is difficult which has not been helped by the UKs withdrawal from the European Union in 2016 and an end to cross-border mobility of EU dentists wishing to work in the United Kingdom.

What values should underpin any additional supply of dentists and dental services, for example, to ensure universalism and comprehensiveness? Back in 1971, Richards asked, “Should the state attempt to provide a complete service to some sections of the population or should it provide an incomplete service to all the population?” (p. 149). Such a question remains very current (Williams et al., 2023). If the NHS's role is to meet needs then such a goal must be matched by a need-based resource allocation and political will (Williams et al., 2023). However, “Historically, reimbursement had followed activity rather than patients' needs by virtue of the payment system” (Gulabivala, 2018, p. 10). The Health and Social Care Committee (2023) argues for a weighted capitation-based system to give financial incentives for seeing new patients and those with greater dental needs. A greater focus on need, for example, could entail a basic core for those unable to afford private treatment. Yet any redistribution of resources from those who currently have good access (irrespective of means) is likely to be unpopular. If the NHS's role is to reduce need then far more of a preventative focus is required, which again requires reprioritisation. Arguably, however, the current focus of dental provision is more about demand rather than need, and changing this is “a political decision with associated political risks” (see Tickle, 2012 p. 110 for an excellent overview). The nature of need has changed and patients with the lowest need are more likely to attend regularly, an example of the inverse care law (Tudor Hart, 1971).

Should the focus be on maintaining dental supply? As Tickle (2012, p. 113) notes, dentists (as with other practitioners) respond to contractual incentives and the business incentive may be stronger than professional values (also Le Grand, 1997). Tickle suggests “NHS dentistry is therefore, on a potential collision course between providing an expensive service for which there is strong public and professional support but dwindling need” (p. 113). There are professional assumptions about its role and an overvaluing of individual restorative practices to maintain high professional autonomy (Taylor-Gooby et al., 2000, pp. 380, 394) with current treatment dominated by high-tech, interventionist, and specialized methods not tackling underlying causes and inequalities (Appleby, 2016).

The overarching objectives for dentistry, the organization and delivery of its services, and how to share costs, remain contentious. There are calls for a dental service that is universal, comprehensive, and free of charge (Puntis, 2022). However, “Before the pandemic, out-of-pocket expenditure on dental practice was in the region of £4b (Nuffield Trust, 2024, p. 9). Few political parties would campaign to bring this cost into the public purse, even if greater charges were introduced as part and parcel of any change. At present, the NHS is funded to provide a basic service for half the population, expanding that will be expensive, and redistribution politically contentious.

Another option is a more limited offer. The Labour Party campaigned in 2019 to offer free checkup, scale, and polish with an anticipated cost of £450 million a year. This is a considerable distance from bringing all those paying privately back to a universal and comprehensive NHS (and abolishing charges). A more limited offer would go hand in hand with greater means-testing.

There are thus difficult decisions about who gets what, and at what cost, with the need for much greater spending, or a more limited NHS offer combined with means-testing the likely outcome (William et al., 2023, p. 3). The political sensitivities of NHS provision ensure discussion of public and private dentistry is not straightforward. The result is a steady decline in NHS dentistry and a policy marked by drift and lack of strategic overhaul (Williams et al., 2023, p. 48). The *de facto* policy is being made by dentists' drift to the private sector, something successive governments have been unwilling to prevent or address (Nuffield Trust, 2024). A full and frank discussion of how to improve NHS dentistry could be less a policy of drift, and more one of a health service being cut adrift from espoused values.

Injecting fundamental NHS values into the service (weighted capitation and a focus on need) is necessary but requires redistribution and tackling shibboleths of NHS provision. Policy-makers, professionals, and patients need some measure of consensus on what access means and implications for means-testing, comprehensiveness, universalism, and equity. The story of dentistry's decline and decay has been largely without public debate until 2024. There is also perhaps an implicit narrative in the challenges facing wider primary health care and concern it could take a similar trajectory. International watchers will undoubtedly benefit from more regular "check-ups" of NHS services, including dentistry, to better understand the health of UK public services.

There are increasingly explicit implications from this case-study of dentistry's decline and decay for the rest of the NHS. First, there is a need for a renewed debate about how NHS values (equity, etc.) are operationalized in different sectors and services, not just dentistry. Second, this links to the need for a modernized version of universalism of key public services. How can universalism operate in a society of burgeoning choice? Third, dentistry has been at the forefront of many policy changes (especially relating to its organisation and finance) and so might offer insights into how other services might also respond. General practice is perhaps more akin to this - the challenges of access and waiting times in general practice are redolent of those in dentistry. Fourth, this case-study provides lessons for comparative health policy analysis, both within the UK and internationally. As health is a devolved competency, there are lessons to be drawn from Scotland, Wales and Northern Ireland. Equally, there are lessons for other jurisdictions (perhaps with similar national health systems) as they also grapple with questions of access to care and universalism.

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ETHICS STATEMENT

The article is based on a review of existing academic and policy literature and does not involve primary collection. The piece was not subject to formal institutional ethics review.

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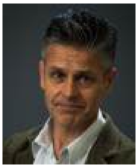

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COMMENTARY

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Mapping out a direction: India's G20 presidency propels global promotion of traditional medicine

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Abstract

Traditional and complementary medicine has always aided the global population in managing various ailments and its role has been acknowledged by World Health Organization. The G20 is the leading global platform for economic collaboration, influencing international policies across sectors such as agriculture, culture, the digital economy, education, employment, finance, and health to guide resilient global strategies. This study highlights conversations within the health working group of the Sherpa track, focusing in particular on traditional medicines and their diverse intersecting aspects. The information was collected from publications by G20 Indian presidency including G20 communications, think tanks (T20), press releases, speeches, and policy briefs. Throughout four health working group meetings, two side events organized by the Ministry of Ayush, and three joint health-finance task force meetings, key topics discussed included digital health, Universal Health Coverage, Medical Value Travel through wellness tourism, a One-Health approach, primary healthcare, Yoga, biodiversity, access and benefit sharing of natural resources, and scientific evidence—all of which were connected to traditional medicines. Unlike past G20 presidencies, the Indian G20 presidency recognize the importance of traditional medicines, marking renewed cooperation in this area. The “Gujrat Declaration 2023” must act as a guiding beacon for crafting robust policies concerning traditional medicines on a global scale. The Ministry of Ayush has excelled in advancing traditional medicine systems across all its sectors through well-organized and intellectually enriching discussions. Upcoming G20 presidencies should build on the discussions about traditional medicine initiated by the Indian presidency and elevate them to new heights. Considering traditional medicine's unique logic, principals, validity, and largescale patient dependency, efforts should be made to form a dedicated subworking group within the health working group to delve deeper into the subject.

KEYWORDS

G20, India, policy, traditional medicines

Key Points

- Traditional and complementary medicine are acknowledged by the World Health Organization and the forum provided by the G20 is encouraging cooperation and shaping global policies.
- India's G20 Presidency encouraged the pursuit of digital health, universal health coverage, medical value tourism, one-health, primary healthcare, Yoga, and biodiversity with a key emphasis on scientific validation of traditional medicines.
- The “Gujrat Declaration 2023” will be a guiding beacon for crafting resilient policies as the outcomes of India's G20 presidency recognize traditional medicine as a promising new area for significant cooperation.

INTRODUCTION

India hosted the G20 Leaders' Summit for the first time in 2023 after assuming the G20 Presidency from Indonesia on December 1, 2022 (G20, 2023a). The G20 is an intergovernmental gathering consisting of 19 countries, two regional bodies, nine invited countries, and numerous invited international organizations. The G20 was founded in 1999 with the aim of creating a space for discussion among the world's finance ministers and central bank governors regarding global financial and economic issues. Subsequently, after the global financial crisis in 2007 and 2009, it was designated as the leading platform involving heads of state and governments to deliberate over international economic issues. Considering that G20 nations represent approximately two-thirds of the global population, more than 75% of global trade, and 85% of the total global GDP, the G20 is seen as a premier global platform. Within the forum, engagement groups are assigned considerable importance by global leaders, with their outcomes likely shaping future policy agendas in their respective countries (G20, 2023b). The G20 nations, invited nations, international organizations, and working stream of G20 Indian presidency are represented in Figure 1.

Globally, traditional and complementary medicine has long played a crucial role in promoting health within communities and households. Such medicine has influenced conventional medical knowledge and practices. Presently, approximately 40% of pharmaceuticals trace their origins back to natural sources, with key medications such as aspirin coming from tree bark of *Salix alba*, artemisinin from *Artemisia annua*, and treatments for childhood cancer stemming from traditional medicine (WHO, 2023a).

Invited International Organizations	United Nations (UN) [https://www.un.org/en/]
	International Monetary Fund (IMF) [https://www.imf.org/en/Home]
	World Bank (WB) [https://www.worldbank.org/en/home]
	World Trade Organization (WTO) [https://www.wto.org/]
	International Labour Organization (ILO) [https://www.ilo.org/]
	Financial Stability Board (FSB) [https://www.fsb.org/]
	World Health Organization (WHO) [https://www.who.int/]
	Organisation for Economic Co-operation and Development (OECD) [https://www.oecd.org/]
Chairs of Regional Organizations	African Union (AU) [https://au.int/]
	African Union Development Agency-New Partnership For Africa's Development (AU-NEPAD) [https://www.nepad.org/]
	Association on Southeast Asian Nations (ASEAN) [https://asean.org/]
Guest International Organizations	International Solar Alliance (ISA) [https://isolaralliance.org/]
	Coalition for Disaster Resilient Infrastructure (CDRI) [https://www.cdri.world/]
	Asian Development Bank (ABD) [https://www.adb.org/]

FIGURE 1 Overview of nations, invited nations, international organizations, and working stream of G20 Indian presidency.

At present, 170 Member States have provided reports to the WHO regarding their utilization of traditional medicine, seeking evidence and data to guide the development of policies, standards, and regulations that ensure its safe, affordable, and fair application (WHO, 2023b). In India, traditional systems of medicine include Ayurveda, Unani, Siddha, Homeopathy, Sowa Rigpa; to promote breathing and wellness, Yoga and naturopathy are widely respected.

India's healthcare system allows the population the freedom to choose conventional and traditional medicine systems based on their preferences and needs. In India, the traditional systems of medicine are governed by the Government of India's Ministry of Ayush, 2024. The Ministry of Ayush was established on November 9, 2014, and tasked with reviving the deep-rooted wisdom of India's ancient medical systems and to promote the optimal growth and dissemination of Ayush healthcare systems. Previously, since 1995, the Department of Indian System of Medicine and Homeopathy, had the responsibility of advancing these systems (Ministry of Ayush).

Compared to the current Indian G20 presidency, previous G20 summits have not focused on promoting traditional medicines and well-being. This was the case despite the impressive heritage of such medicines, scientifically validated herbal products, and increasing global demand for herbs and related formulations.

Inspired from the ancient Sanskrit scripture of the *Maha Upanishad*, the theme of India's G20 Presidency, "*Vasudhaiva Kutumbakam*" ("One Earth - One Family - One Future") underscores the value of all forms of life, be they human, plant, animal, or microorganism - and their interconnectedness within the Earth and the broader cosmos. The G20 summit highlighted the integration of Ayurvedic principles into global health policies, focusing on holistic well-being and emphasizing traditional medicine within the health working group.

The present paper calls attention to international discussions on integrated and holistic healthcare methods, commending them for promoting well-being, not just at an individual scale but also at community level and globally (Singh, 2023).

CONNECTING THE DOTS: INDIA'S G20, HEALTH AND TRADITIONAL MEDICINES

During German Presidency in 2017, a health working group was formed with the objective of facilitating dialog among G20 leaders on matters related to critical global health issues (OECD, 2023). The aim of this effort was to encourage the creation of resilient, inclusive societies devoted to ensuring improved health outcomes for current as well as future generations. Among other things, the health working group addresses diverse topics, such as health system readiness for emergencies, digital health, universal health coverage, a "one health" strategy, sustainable financing, and adherence to international health regulations. Besides strengthening global health infrastructure, the "one-health" approach, prevention, preparedness and response to health emergencies, antimicrobial resistance, digital health, cooperation within the pharmaceutical sector, and traditional medicines were recognized as part of substantive deliberations in G20 (G20, 2023c; OECD, 2023). Under the Indian G20 presidency, health working group meetings were organized throughout India and, during the first health working group meeting in Thiruvananthapuram, Kerala, representatives from the group discussed the prospects and obstacles for advancing "medical value travel" in India, particularly emphasizing the central of traditional medicine to medical value travel (PIB, 2023). As part of the "Heal in India" initiative, a program led by the Government of India to boost medical tourism within the country, the Ministry of Health and Family Welfare and the Ministry of Ayush have collaborated with the Center for Development of Advanced Computing and the Services Export Promotion Council to develop a unified "Heal in India" portal to promote medical value travel. India has also emerged as a popular global choice for practicing yoga and pursuing wellness, especially by emphasizing traditional therapies offered through AYUSH. According to Global Wellness Tourism estimates, India held the seventh position in 2017, with 56 million trips in wellness tourism and total earnings amounting to USD 16.3 billion (Ministry of Tourism, 2022).

Ayushman Bharat, a key program of the Indian government, was introduced in accordance with the National Health Policy 2017 to realize the goal of Universal Health Coverage. Aligned with the Sustainable Development Goals, this initiative is dedicated to ensuring that no one is excluded from essential healthcare services. Ayushman Bharat seeks to transition from a fragmented and specialized healthcare delivery approach to a unified, demand-driven healthcare service. This initiative aims to introduce innovative measures to comprehensively improve the healthcare system, encompassing preventive, promotional, and outpatient care across primary, secondary, and tertiary levels. Ayushman Bharat adopts two interconnected approaches that is, Health and Wellness Centers and Pradhan Mantri Jan Arogya Yojana (PM-JAY). PM-JAY is the world's largest health insurance scheme, designed to provide a health coverage of Rs. 5 lakhs annually per family for hospitalization needs in secondary and tertiary care facilities, benefiting over 12 crore economically disadvantaged and vulnerable families (National Health Authority, 2020). As universal health coverage is a core agenda of the working health group, it is pertinent to note that Indian Government has launched the National Ayush Mission (NAM) as its 12th plan, highlighting the significance of Ayush to the delivery of universal health coverage. To mainstream Ayush services with public health services, Ayush facilities are colocated at primary health centers, district hospitals, and community health centers through National Health Mission and NAM (Bugalia, 2020). In addition, the Ministry of Ayush is pursuing a wide range of objectives including advocating for digital health through its Ayush Grid Project, which aims to establish a comprehensive information technology infrastructure for the entire Ayush sector (FITM, 2023). With this, it is pertinent to note that in the health working group meetings led by the Indian presidency of the G20, special emphasis was made on associated aspects of traditional medicines in context to medical value travel, universal health coverage, promotion of primary healthcare, incorporation of Yoga in lifestyle, and digital health. The health working group meetings with special emphasis on traditional medicines (G20, 2023d) is noted in Table 1.

INDIA'S G20 LEADERSHIP IN PROMOTING TRADITIONAL MEDICINES WORLDWIDE

India has seized the chance to highlight its rich history of traditional medicine and its potential to improve health and wellbeing throughout the world during its G20 chairmanship in 2023. With indigenous knowledge, biodiversity, traditional, complementary and integrative medicine (TCIM) at core of the discussion in the meetings, the New Delhi Leaders' Declaration specifically acknowledged evidence-based traditional and complementary medicine in health, and took note of international efforts in this direction, including WHO's global and collaborating centres, and clinical trial registries (G20, 2023e). Also, to ensure health and wellness, the declaration recognizes the importance of an easily accessible, reasonably priced, nutritious and healthy diet (G20, 2023f).

The G20 Health Ministers recognize the promise of evidence-based Traditional and Complementary Medicine (T&CM) practices within public health systems, emphasizing the importance of rigorous scientific validation to ensure their safety and efficacy, as outlined in the WHO Traditional Medicine Strategy 2014–23, which has been extended until 2025. They appreciate endeavors by certain member states to integrate evidence-based T&CM into health services where suitable, as well as initiatives aimed at regulating T&CM practices in alignment with national laws and regulations. It also emphasized that the general public will benefit from the integration of evidence-based TCIM with conventional national healthcare systems. Also, to ensure health and wellness, the declaration recognizes the importance of an easily accessible, reasonably priced, nutritious and healthy diet (G20, 2023f; WHO, 2013c).

The G20 Health Ministers acknowledged the possible contribution of evidence-based T&CM to healthcare ecosystem and noted the WHO's initiatives in this realm, which encompass global and collaborating centers as well as clinical trial registries. On August 18–19, 2023, Gandhinagar, India, the G20 delegations unanimously agreed the outcome document comprising the entire text, except paragraph 22, which related to the Chair's Summary. Also, they showed their commitment to continued action-specific discussions in global health upcoming G20 presidencies, including 2024 which is in Brazil (G20, 2023f; G20, 2024g).

THE GUJRAT DECLARATION, 2023

Gandhinagar, Gujarat, India hosted the First WHO Traditional Medicine Global Summit on August 17 and 18, 2023 which was co-hosted by WHO and the Ministry of Ayush, Government of India. The summit was attended by Dr. Tedros Adhanom Ghebreyesus, Director General of the WHO; Shri Sarbananda Sonowal, Union minister of Ayush; and other representatives of state and national Governments. To encourage political dedication and evidence-based action on traditional medicine, which is a first line of treatment for millions of people globally to address their well-being and health requirements, a summit was held concurrently with the G20 health ministerial meeting. All stakeholders involved, including practitioners, patients, communities, national policymakers, international organizations, academics, the commercial sector, and civil society organizations, held a forum to exchange cutting-edge research, data, and ideas about how traditional medicine can improve health and promote sustainable development.

TABLE 1 Health working group meetings with focus on traditional medicines.

Meetings	Date	Mode/place	Broad focus area in context to traditional medicine	Attendees/countries participated
First joint health-finance task force meeting	December 20, 2022	Virtual	Extension of mandate of task force by the Bali Leaders' Declaration 2022 for continued collaborations among the Health and Finance Ministries for prevention, preparedness, and response of pandemic.	Co-chaired by Italy and Indonesia. Attendees: Finance and Health representatives from G20 nations, invited Countries and international organizations.
First health working group meeting	January 18–20, 2023	Offline/Thiruvananthapuram, Kerala, India	Discussions on MVT, and global connect through MVT, need for integrated healthcare for achieving holistic wellbeing, to achieve UHC through efficiency; quality; equity;, sustainability; accountability, and resilience depending on evidence-based traditional medicines. Morning yoga session was held on second day which was attended by the delegates.	Delegates from Australia, Argentina, Brazil, China Canada, France, Germany, Indonesia, Italy, Japan, Mexico, Russia, Republic of Korea, South Africa, Saudi Arabia, Turkiye, The United Kingdom, USA and European Union. Special invitee countries that is, Bangladesh, Mauritius, Egypt, Nigeria, Spain, Singapore, Sultanate of Oman, United Arab Emirates, and Netherlands.
Second joint finance and health task force meeting	March 20, 2023	Virtual	Strengthening global cooperation and discussions on health emergencies.	Meeting held under Indian G20 Presidency and attended by delegated of G20, invited nations and organizations.
Second health working group meeting	April 17–19, 2023	Offline/Goa, India	Focussing on India's attempts in promoting health and wellness tourism, building ecosystem in Digital Health, UHC. Followed by delegates visit to Ayushman Bharat Health and Wellness Center in Corlim, Goa.	Exceeding 180 delegates from 19 G20 nations, 10 invited states, & 22 International Organizations.
Third health working group meeting	June 4–6, 2023	Offline/Hyderabad, Telangana, India	Need for integrating and strengthening One Health-based surveillance systems, One Health approach, AMR, building resilient healthcare systems, with focus on primary healthcare. Acknowledgment of convergence among G20 and G7 priorities, also launching of MCM Delivery Partnership at Japan's G7 Presidency that maps with G20's proposal of	The G20 member countries, special invited countries, international organizations, partners and forums such as WHO, WEF, World Bank, etc., and officers from the Union Government.

TABLE 1 (Continued)

Meetings	Date	Mode/place	Broad focus area in context to traditional medicine	Attendees/countries participated
			end-to-end MCM ecosystem. Highlighting role of Ayurveda and Yoga in the world for physical as well as for mental well-being.	
Third health working group meeting (side event)	June 4–6, 2023	Offline/Hyderabad, Telangana, India	Well-being, integration of traditional medicines, Ministry of Ayush displayed exhibition showcasing evidence or research-based AYUSH formulations/drugs such as AYUSH-82, AYUSH-64, UNIM004 + UNIM 005, Kabasura Kudineer. Also homeopathic Nanocurcumin formulation, developed by Research Councils under the Ministry of AYUSH. Releasing of G20 Primer on Traditional Medicine" prepared by Forum on Indian Traditional Medicine (FITM), RIS and Ministry of AYUSH.	Delegates from G20 countries, guest countries, and International Organizations.
Third joint health-finance task force meeting	June 22, 2023	Virtual	Continued collaborations between Health and Finance Ministries on Prevention, Preparedness & Response to pandemics.	Delegated of Finance and Health Ministry, invited members from invited countries, and international organizations.
Fourth health working group meeting	August 17, 2023	Offline/Gandhinagar, Gujarat, India	Focus to strengthen healthcare delivery, strengthening health systems for healthier future, improve access, Digital Health solutions and innovation, building better cooperation in pharmaceutical sector and Health Emergencies Prevention Preparedness and Response (HEPPR).	G20 Health Deputies, Delegates from 19 G20 nations, 10 invited states, & 22 international organizations.
Side event on AYUSH	August 17, 2023	Offline/Gandhinagar, Gujarat, India	'WHO Traditional Medicine Global Summit', having theme "Towards Health and Wellbeing for All", emphasizing role of TCIM in management of crucial health challenges and attaining progress in sustainable development, global health and knowledge	Event inauguration by Dr. Mansukh Mandaviya (Union Minister, Health and Family Welfare), in the presence of Shri Sarbananda Sonowal (the Union Minister of AYUSH), Shri Bhupendrabhai Patel (Chief Minister of Gujarat), and Dr. Tedros

(Continues)

TABLE 1 (Continued)

Meetings	Date	Mode/place	Broad focus area in context to traditional medicine	Attendees/countries participated
			sharing of traditional medicine ranging from the need, innovation, impact of data sharing on the use of traditional systems of medicine worldwide. Dr. Tedros (Director General, WHO) emphasized attempts of India to strengthen UHC under Ayushman Bharat and adoption of telemedicine in India.	Adhanom Ghebreyesus (Director General, WHO). The summit was co-hosted by Ministry of AYUSH.
Health Ministers Meeting	August 18–19, 2023	Offline/Gandhinagar, Gujarat, India	Discussions pertaining to first WHO summit on traditional medicines and One Earth One Health Advantage Healthcare India, 2023. Health Ministers and delegates deliberated on significance of traditional medicine and indigenous knowledge of well-being of societies and economies.	Delegates from 19 G-20 nations, 10 invited states, and 22 International Organizations.

The "Gujarat Declaration," which was the outcome of the first WHO Traditional Medicine Global Summit in 2023, has now been made public by the WHO. Global commitments to indigenous knowledge, biodiversity, complementary, traditional, and integrative medicine were reasserted in the declaration. WHO emphasized that using rigorous scientific methodologies is necessary to comprehend, evaluate, and, where necessary, implement more complex, individualized, context-specific, and tailored approaches to promote health and well-being in a holistic way. The WHO Global Traditional Medicine Center serves as a hub of knowledge for traditional medicine. It plays a crucial role in WHO's broader strategy on traditional medicine, emphasizing evidence-based practices, data analysis, sustainability, equity, and advancements in technology. These efforts aim to maximize the impact of traditional medicine on global health and sustainable development. The declaration also emphasized that India, as the host of the WHO's Global Traditional Medicine Center in Jamnagar, Gujarat, is crucial to expanding WHO capabilities to assist member states and other relevant stakeholders in advancing the summit action agenda and other pertinent priorities (G20, 2023f).

The evidence, discussions, and decisions made during the 2-day summit formed the basis for the action items that emerged from the event. The debates covered a wide range of topics, including sustainability, research and evidence, primary health systems, data and routine information systems, digital health innovations, and equity, human rights, and ethics. In addition, foci included safeguarding biodiversity, fair and equitable sharing of benefits from natural resources to indigenous people, the declaration highlights promotion and adoption of policies that facilitate the standardization of TCIM documentation, such as the increased and expedited use of the WHO International Classification of Diseases (ICD-11) to facilitate the standardized integration of TCIM evidence and data collecting into routine health information systems (Tillu, 2023). The overview of sessions during first WHO traditional medicine global summit is represented in Figure 2.

FIGURE 2 Sessions during first WHO traditional medicine global summit, Gujrat, India.

FUTURE PROSPECTS

The major takeaways from Indian G20 presidency should be to encourage dietary balance, increased physical activity, lifestyle modifications, and health-related advice. In addition to recognizing the benefits of conventional medical systems, it ought to promote preventative healthcare and place a high value on fostering healthy social and physical settings. The G20 should also work to close the gender gap in healthcare and education to improve the wellbeing of all animals and communities. The WHO should investigate ways to modernize and take on new problems by embracing a more all-encompassing approach to healthcare, according to the G20 health working group. This entails combining allopathic therapies with ancient medicinal systems like Ayurveda, Siddha, Unani, Homeopathy, and Sowa Rigpa, which may be helpful in the event of pandemics, providing a means of managing medicinal supplies. Particularly in the Global South, India might be well positioned to supply traditional medicines, producing stocks for their wider distribution and use. The G20, led by India, must promote more robust discussions about telemedicine, digital health and its safe, and effective integration in traditional medicine considering Integrative Holistic Health through "one world, one health." With the wellness industry growing at a reckless pace, Yoga is projected to reach $66.2 billion by 2027; it is therefore positioned to realize its full health and economic potential (Indbiz, 2021).

There is a need to develop common global standards to scientifically validate traditional medicines which will, in turn, promote its curative potential. Prioritized diseases highlighted during G20 Indian presidency such as AIDS, tuberculosis, malaria, tuberculosis, hypertension and diabetes need to be categorically addressed through the rigorous research and development of traditional medicines and finding new and potent natural molecules. The potential of preventive-curative-promotive model of traditional systems of medicine must be promoted worldwide with scientific validation at its core.

There is also a need to link climate change with traditional medicine sector, as many raw herbs are becoming vulnerable to climate change and their phyto-constituents are significantly varying with time. Because of the increasing global interest in herbs, foods incorporating herbs, and traditional medicinal practices, along with the unique healing principles and validity associated with traditional medicine, it is recommended that future G20 presidencies maintain the dialog on traditional medicines initiated during the Indian G20 presidency.

It's time for the world to tap the untapped potential of traditional systems of medicine by promoting investments, encouraging quality-based start-ups, and supporting entrepreneurship models in the sector.

CONCLUSION

The Indian G20 presidency effectively highlighted the importance of traditional medicines, establishing cooperation in this field as a fresh initiative. Important aspects of this work include telemedicine in Ayush, the Ayushman Bharat scheme in achieving universal health coverage, traditional medicine-based medical value travel, a One-World-One-Health approach, Yoga, the integration of traditional systems of medicine in primary healthcare, access and benefit sharing from natural resources with indigenous people, and the importance of scientific evidence of traditional medicines. The "Gujrat Declaration 2023" serves as a guiding force for formulating robust global policies concerning traditional medicines. Traditional medicine systems are the foundation of community healthcare, and safeguarding and enhancing them through a scientific approach is the most effective way to achieve a comprehensive healthcare system.

ETHICS STATEMENT

The authors have nothing to report.

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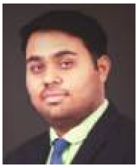

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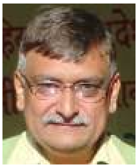

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