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Effects of self-affirmation on responses toward graphic cigarette warning labels: testing the mediating role of perceived susceptibility and self-efficacy

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Abstract

Purpose – The purpose of this study is to examine the effects of self-affirmation on African American smokers' intentions to quit smoking sooner and desire to stop smoking altogether in response to viewing graphic cigarette warning labels. It also tested the mediating role of perceived susceptibility and self-efficacy in explaining the impact of self-affirmation.

Design/methodology/approach – African American smokers ($N = 158$) were recruited to participate in a controlled experiment. Participants first completed a short questionnaire about their demographic background and smoking-related attitudes and behavior. They were then randomly assigned to engage in either a self-affirmation task or a control task and viewed two graphic cigarette warning labels subsequently. Participants then responded to a questionnaire about their perceived susceptibility to smoking-related diseases, perceived self-efficacy to quit smoking, intentions to quit smoking and desire to stop smoking altogether.

Findings – Results showed that engaging in self-affirmation prior to exposure to graphic cigarette warning labels increased African American smokers' perceived susceptibility to smoking-related diseases, but decreased their perceived self-efficacy to quit smoking. Furthermore, self-affirmation indirectly enhanced smokers' intentions to quit smoking sooner and desire to stop smoking altogether through increased perceived susceptibility. It also had an unexpected negative indirect effect on intentions to quit smoking sooner through decreased self-efficacy.

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Originality/value – This study is one of the few studies that investigates the effect of self-affirmation on African American smokers' responses toward graphic cigarette warning labels.

Keywords Self-affirmation theory, Graphic cigarette warning labels, African American smokers

Paper type Research paper

Introduction

In recent years, scholars in the field of health communication have paid extensive attention to the use of self-affirmation for promoting health message acceptance and health behavior change. This is because personally relevant health messages are likely to provoke defensive reactions among high-risk populations, such as smokers (Dillard and Shen, 2005; Liberman and Chaiken, 1992). Self-affirmation, or the process of reflecting on one's positive attributes or cherished values, is able to reduce such defensive processing and effectuate behavior change (Epton *et al.*, 2015; McQueen and Klein, 2006).

Substantial research demonstrates that self-affirmation has a robust positive effect on intentions and behaviors in the health domain (for review, see Epton *et al.*, 2015; Ferrer and Cohen, 2019; Sweeney and Moyer, 2015). However, there is a limited understanding of how self-affirmation affects behavioral outcomes (McQueen and Klein, 2006; Sherman, 2013). The goal of the research reported here is to investigate two possible cognitive mechanisms – perceived susceptibility and self-efficacy. First, we examined the impact of self-affirmation on African American smokers' perceived susceptibility to smoking-related diseases, perceived self-efficacy to quit smoking, intentions to quit smoking sooner and desire to stop smoking altogether. We then tested the mediating role of perceived susceptibility and self-efficacy in the relationships between self-affirmation and behavioral outcomes.

We explored these research questions by manipulating self-affirmation before showing graphic cigarette warning labels to African American smokers. Tobacco use, mainly cigarette smoking, is the leading cause of preventable illness and death in the general population and African American communities (Kochanek *et al.*, 2016). Despite the fact that the smoking rate among African Americans (16.5%) is similar to that of White Americans (16.6%) (Jamal *et al.*, 2018), African Americans experience higher tobacco-related morbidity and mortality rates (Kochanek *et al.*, 2016). Although the racial disparity is mainly caused by socioeconomic and structural factors (Gee and Ford, 2011; Williams and Jackson, 2005), research also suggests that minority populations tend to have lower smoking-related risk perceptions than Whites (Borrelli *et al.*, 2010). Hence, to reduce the tobacco-related health disparities, one of the individual-level prevention efforts is to develop effective communication strategies to communicate smoking-related risks and reduce cigarette smoking among African Americans. Placing graphic health warnings to the cigarette packages is a promising strategy to inform African American smokers about the dangers of smoking and motivate them to quit (Cantrell *et al.*, 2013; Thrasher *et al.*, 2012).

Conceptual background

Graphic cigarette warning labels

Graphic warnings have been added to the cigarette packages in over 100 countries (Canadian Cancer Society, 2016). The US Food and Drug Administration (FDA) announced rules regulating cigarette warning labels to include graphic images and warnings to appear on cigarette packages and advertisements across the country in 2011. However, this petition was denied by the United States Court of Appeals for the District of Columbia Circuit in 2012 (Reynolds, 2012). More recently in 2019, the FDA proposed a new set of graphic warning labels, which feature text statements accompanied by photo-realistic color images depicting some of the lesser-known health risks of cigarette smoking (FDA, 2019). Beginning October 16, 2021, these new cigarette health warnings will be required to appear prominently on cigarette packages, covering the top 50% of the area of the front and rear panels of cigarette packages (FDA, 2020).

Overall, the existing literature suggests that compared to text-only cigarette warnings, graphic warnings are more likely to attract and sustain message recipients' attention, provoke negative emotions (e.g., fear) and increase intentions to quit smoking and to not start smoking (for review, see Drovandi *et al.*, 2019; Noar *et al.*, 2016, 2020). Despite these promising results, concerns remain about the potential of graphic warnings to elicit defensive responses among smokers (Erceg-Hurn and Steed, 2011; Hall *et al.*, 2018; LaVoie *et al.*, 2017a, b). One way to reduce defensive processing of threatening messages, which has been suggested, is self-affirmation.

Self-affirmation and responses to health messages

Self-affirmation theory assumes that people are fundamentally motivated to perceive themselves as "adaptively and morally adequate, that is, as competent, good, coherent, unitary, stable, capable of free choice, capable of controlling important outcomes, and so on" (Steele, 1988, p. 262). However, this sense of self-adequacy is not always sustained. For example, experience like learning about one's health risks is likely to threaten people's positive self-concept. According to the self-affirmation theory, affirming the self in an unrelated aspect to the threat can restore self-integrity (Sherman and Cohen, 2002). Self-affirmation can be accomplished in many ways and is typically induced by asking people to reflect upon their cherished values or positive traits (McQueen and Klein, 2006).

Extant self-affirmation research has shown that self-affirming prior to health messages exposure has positive effects on behavioral outcomes in different hedalth contexts, including promoting a healthy diet, getting screened for disease, reducing alcohol consumption and promoting smoking cessation (e.g. Armitage *et al.*, 2011; Armitage *et al.*, 2008; DiBello *et al.*, 2015; Harris *et al.*, 2014; Harris *et al.*, 2007; Iles *et al.*, 2019; van Koningsbruggen and Das, 2009; van Koningsbruggen *et al.*, 2016). Recent meta-analyses suggest that self-affirmation appears to have a small but significant positive effect on behavioral outcomes, across a range of health behaviors (Epton *et al.*, 2015; Ferrer and Cohen, 2019; Sweeney and Moyer, 2015).

Mediators of self-affirmation effects

Despite self-affirmation's promising positive effects on persuasive outcomes such as behavioral intention to quit smoking, the specific underlying mechanisms are understudied (McQueen and Klein, 2006; Sherman, 2013). Given that the overarching argument for the utility of self-affirmation in improving message effectiveness has been the potential of reducing defensive processing, studies have examined the impact of self-affirmation on message responses that are closely related to defensive processing. For example, DiBello *et al.* (2015) found that self-affirmation lowered threat ratings of smoking images in graphic warning labels among smokers who smoked more and who believed there were fewer health benefits related to quitting smoking. In another study (Iles *et al.*, 2019), self-affirmed smokers reported less message derogation and perceived message manipulation compared to nonaffirmed smokers, and these effects were most evident among those who were high-risk individuals (i.e. individuals holding less negative initial attitudes toward smoking).

Defensive processing is a complex phenomenon that is potentially manifested in an array of cognitive and affective responses. Perceived threat, message derogation and perceived message manipulation are but a few of the possible manifestations. According to Dillard *et al.* (2018), defensive processing can be broadly shown in the following cognitive and affective processes: Cognitive suppression (i.e. conscious efforts to refrain from thinking about a particular issue), emotional suppression (i.e. conscious efforts to minimize affective responses), fatalism (i.e. accepting that a risk exists, but believing that nothing can be done about it), source/issue derogation (i.e. actively criticizing the source of a message or the message itself), denial (i.e. making unrealistically low estimates of the likelihood of risk), bolstering (i.e. focusing on the positive attributes of a risky behavior), counterarguing

(i.e. active efforts to discredit a message by finding flaws in the argument or evidence) and risk normalization (i.e. taking the view that risks are common and, therefore, normal).

In line with this taxonomy of defensive processing, we argue that perceived susceptibility to health risks (e.g. smoking-related diseases) and perceived self-efficacy (e.g. perceived ability to quit smoking) are conceptually correlated with defensive processing. Specifically, greater defensive processing could be manifested in a decreased level of perceived susceptibility to health risks, consistent with the *denial* dimension in Dillard *et al.*'s (2018) framework. In addition, greater defensive processing could be shown in a decreased level of perceived self-efficacy, consistent with the *fatalism* dimension.

Indeed, there is emerging evidence that self-affirmation leads to an increase in risk perceptions or feelings of risk and efficacy beliefs. For example, Klein *et al.* (2011) found that self-affirmation increased feelings of vulnerability in response to threatening health messages. Harris *et al.* (2007) found that self-affirmed college student smokers had greater self-efficacy of quitting smoking and perceived behavioral control after being exposed to graphic warning labels, and the effects of self-affirmation were more pronounced among participants who smoked more. Another two studies also showed that self-affirmed (vs non-affirmed) participants had higher self-efficacy for exercising (Good *et al.*, 2015; Strachan *et al.*, 2020).

Direct evidence for the role of defensive processing in mediating self-affirmation effects can be obtained by testing the significance of the mediation effects, which was shown in a few studies. For example, van Koningsbruggen and Das (2009) exposed participants to threatening type 2 diabetes information and found that self-affirmation decreased message derogation and increased intentions to take a risk-level test. Moreover, the effects of self-affirmation on intentions were found to be mediated by message derogation. In the work conducted by Epton and Harris (2008), female participants were presented with messages about the health benefits of fruits and vegetables. Self-affirmed participants ate significantly more portions of fruit and vegetables across the week and that this effect was mediated by response-efficacy (i.e. the belief that eating fruits and vegetables can lead to the claimed health benefits). This finding indicates that efficacy beliefs can explain the effect of self-affirmation on behavior.

In addition, both perceived susceptibility and self-efficacy are central to several health behavioral theories (e.g. the health belief model (Rosenstock, 1974), the protection motivation theory (Rogers, 1975) and the extended parallel process model (Witte, 1992)), and have been found to predict health behaviors or behavioral intentions (Brewer *et al.*, 2007; Sheeran *et al.*, 2014). To the extent that self-affirmation influences perceived susceptibility and/or self-efficacy, which in turn predict intentions and desire to quit smoking, we expect self-affirmation to have indirect effects on intentions and desire through influencing susceptibility and/or efficacy beliefs.

Given the arguments and evidence presented above, we propose the following hypotheses. See Figure 1 for the proposed conceptual framework.

H1. For African American smokers exposed to graphic cigarette warning labels, engaging in self-affirmation prior to message exposure will lead to (a) higher intentions to quit smoking sooner and (b) stronger desire to stop smoking altogether.

H2. For African American smokers exposed to graphic cigarette warning labels, engaging in self-affirmation prior to message exposure will increase (a) perceived susceptibility to smoking-related diseases and (b) perceived self-efficacy to quit smoking.

H3. Self-affirmation will have an indirect effect on intentions to quit smoking sooner through perceived susceptibility and/or perceived self-efficacy.

H4. Self-affirmation will have an indirect effect on desire to stop smoking altogether through perceived susceptibility and/or perceived self-efficacy.

Method

Participants

A convenience sample of 158 African American smokers from the Maryland and Washington DC metropolitan area recruited through newspaper ads, community leaders and word-of-mouth participated in our community-based study [1]. Our research center is uniquely positioned to recruit African American participants because more than 64% of the population in the county (where our university locates) is Blacks or African Americans (US Census Bureau, 2019). Each participant was compensated with a gift card worth $25 or $50 [2]. We removed two participants from the analysis because they reported they currently did not smoke cigarettes. Another participant was also removed because they dropped out of the study early and thus, did not complete the posttest questionnaire. Therefore, the final sample size for the current study is 155. See Table 1 for participants' demographic background and smoking behavior information.

Design and procedure

The study was administered on the online survey platform Qualtrics using iPads and laptops. Participants first read the consent form and, if they agreed to participate, they then completed a short questionnaire about their demographic information, smoking-related behavior and pre-exposure attitudes toward smoking. They were then randomly assigned to engage in either a self-affirmation task or a control task (see below) and viewed two graphic cigarette warning labels subsequently (see below). After that, participants responded to a questionnaire about their perceived susceptibility to smoking-related diseases, perceived self-efficacy of quitting smoking, intentions to quit smoking and desire to stop smoking altogether [3].

Self-affirmation manipulation

Adapted from previous research (De Cremer and Sedikides, 2005; Van den Bos, 2001), participants in the self-affirmation condition were asked to spend at least three minutes writing down their positive attributes. Participants in the control condition were asked to list everything they ate in the previous 24 hours.

Graphic cigarette warning labels

Two graphic cigarette warning labels proposed in June 2011 by FDA were used in this study [4]. Both labels featured a picture and a text-based warning message depicting smoking as a

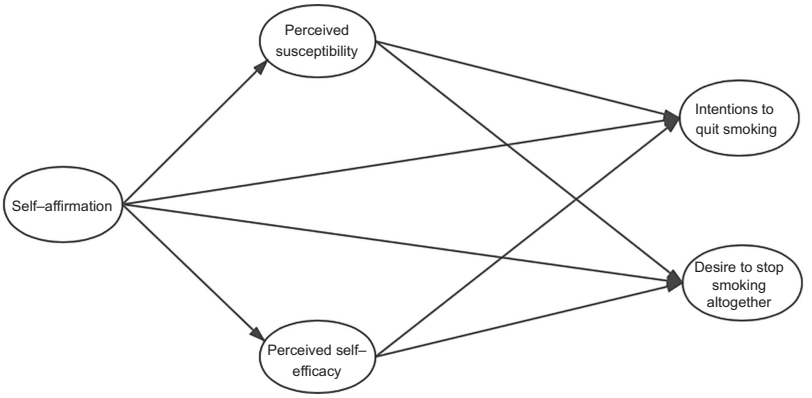


Figure 1.
The proposed conceptual framework

Variable	*n*	%
Age (years)		
18–25	3	1.9
26–40	33	21.3
41–50	24	15.5
51–60	67	43.2
61–70	26	16.8
Above 70	2	1.3
Gender		
Male	84	54.2
Female	71	45.8
Education		
Less than high school	4	2.6
Some high school	27	17.4
High school graduate	53	34.2
Some college	49	31.6
College graduate	18	11.6
Post-college	4	2.6
Annual Household Income		
Less than $15,000	57	36.8
$15,000–25,000	34	21.9
$25,001–45,000	29	18.7
$45,001–65,000	15	9.7
$65,001–100,000	1	0.6
More than $100,000	2	1.3
I do not know	9	5.8
Decline	8	5.2
Currently Smoke		
Every day	133	85.8
Some days	22	14.2
Cigarettes Per Day		
0–5	32	20.6
6–15	85	54.8
16–25	26	16.8
More than 25	12	7.7
Age when First Smoked		
Less than 18	89	57.4
18–25	56	36.1
26–45	6	3.9
More than 45	4	2.6

Table 1.
Participants' demographic background and smoking behavior information

cause of fatal lung disease or cancer. We chose these two images because research indicates that warnings depicting diseased organs or body parts (e.g. diseased lung and diseased mouth in our case) are most effective at encouraging cessation (Hammond *et al.*, 2012; Huang *et al.*, 2016). A quit smoking hotline number (1-800-QUIT-NOW) was also included and placed at the corner of the warning labels. Each label was displayed for at least 10 seconds on screen.

Measures [5]

Perceived susceptibility to smoking-related diseases. Perceived susceptibility to smoking-related diseases was measured with two questions asking participants how likely it was that they would experience fatal lung disease and cancer at some stage in the future because of smoking.

These items were created based on the two smoking-related diseases portrayed in the warning labels. Participants rated their susceptibility on a seven-point scale (1 = *extremely unlikely*, 7 = *extremely likely*). The mean of the two items formed an index of perceived susceptibility ($M = 5.04$, SD = 2.23, $r = 0.78$, $p < 0.001$).

Perceived self-efficacy to quit smoking. Participants were asked to indicate whether they were confident that they could stop smoking in the next 30 days/ 6 months/ next year if they wanted to. Responses to the statements were on a seven-point scale (1 = *strongly disagree*, 7 = *strongly agree*). An index of perceived self-efficacy was created from the mean of the items ($M = 5.01$, SD = 1.48, Cronbach's $\alpha = 0.83$).

Intentions to quit smoking. Participants were asked to indicate when they thought they might quit smoking. They were given four choices (1 = *no intention to quit*, 2 = *within the next year*, 3 = *within the next 6 months*, 4 = *within the next 30 days*). The mean of this item was 2.65 (SD = 0.97).

Desire to stop smoking altogether. Participants were also asked to indicate how strong was their desire to stop smoking altogether at this time on a seven-point scale (1 = *no such desire at all*, 7 = *extremely strong desire*). The mean of participants' desire to stop smoking altogether was 4.72 (SD = 1.95). Although the correlation between intentions to quit smoking and desire to stop smoking altogether was high ($r = 0.58$, $p < 0.001$), we analyzed them as separate outcomes because they were conceptually distinct (Bagozzi, 1992). While intentions tapped on the specific plan regarding quitting, desires were concerned with the motivation to quit.

Covariates. Participants' education level and pre-exposure attitudes toward smoking were used as covariates in the analysis. We included education level because the two experimental groups were not equivalent in terms of education levels (see below). We also included pre-exposure attitudes toward smoking because previous research has found that pre-exposure attitudes influenced the impact of self-affirmation on participants' responses to health messages (Iles *et al.*, 2019). Pre-exposure attitudes were measured with three semantic differential items before the experimental induction (e.g. "Think about how you feel about smoking at this moment. Would you say that smoking is bad/good?"). The items were scored on a seven-point scale from 1 = *bad/stupid/a very bad idea* to 7 = *good/smart/a very good idea*. Ratings were averaged across the three items to create an overall measure of attitudes toward smoking ($M = 2.13$, SD = 1.23, Cronbach's $\alpha = 0.87$).

Results

Randomization check

We conducted chi-square tests and independent-samples *t*-tests to check the success of random assignment. The results showed that the self-affirmation group and control group differed in education level, $t(153) = -2.10$, $p = 0.037$. There was no other difference in the distribution of age, sex, pre-exposure attitudes and smoking-related behavior. Education was included as a covariate in all further analyses.

Variable	Self-affirmation		Control		$F(1, 151)$	η^2
	M	SE	*M*	SE		
Perceived susceptibility to smoking-related illnesses	5.50	0.25	4.57	0.25	6.82*	0.043
Perceived self-efficacy to quit smoking	4.77	0.17	5.25	0.17	4.06*	0.026
Intentions to quit smoking	2.71	0.11	2.58	0.11	0.74	0.005
Desire to stop smoking altogether	4.91	0.22	4.52	0.22	1.49	0.010

Note(s): $N = 155$. Covariates include education level and pre-exposure attitudes toward smoking, Intention to quit smoking was measured on a four-point scale. Other dependent variables were measured on a seven-point scale, *$p < 0.05$

Table 2. Means, standard errors and one-way analyses of covariance statistics for study variables

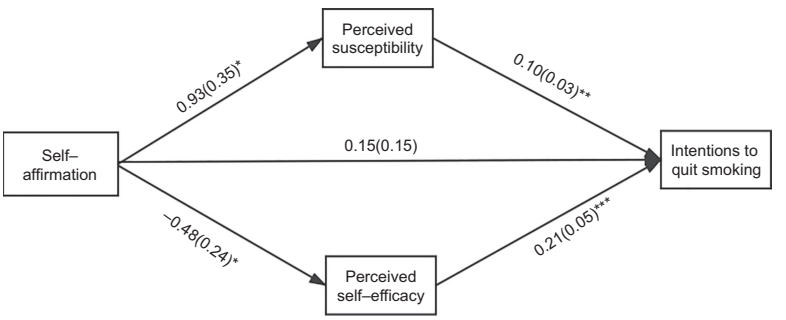
Hypothesis testing

H1 predicted that, for African American smokers exposed to graphic cigarette warning labels, engaging in self-affirmation prior to message exposure would lead to (a) higher intentions to quit smoking sooner and (b) a stronger desire to stop smoking altogether. Two analyses of covariance (ANCOVA) were conducted to test H1. The assumption of homogeneity was checked and met for each analysis. Results showed that self-affirmation had no main effect on either variable: intentions to quit smoking, $F(1, 151) = 0.74$, $p = 0.39$, partial $\eta^2 = 0.005$ and desire to stop smoking altogether, $F(1, 151) = 1.49$, $p = 0.23$, partial $\eta^2 = 0.010$. H1 was not supported. See Table 2 for a summary of results of ANCOVA.

H2 predicted that, for African American smokers exposed to graphic cigarette warning labels, engaging in self-affirmation prior to message exposure would increase (a) perceived susceptibility to smoking-related diseases and (b) perceived self-efficacy to quit smoking. Two ANCOVAs were conducted to test this hypothesis. The assumption of homogeneity was checked and met for the analysis on perceived susceptibility. The assumption of homogeneity was violated for the analysis on perceived self-efficacy, $F(1,153) = 7.76$, $p = 0.006$. Because our group sizes were equal (self-affirmation group: $N = 78$; control group: $N = 77$), the results should be robust to violations of this assumption (Lomax and Hahs-Vaughn, 2013, p. 437). Results showed that engaging in self-affirmation prior to message exposure significantly increased participants' perceived susceptibility to smoking-related diseases, $F(1, 151) = 6.82$, $p = 0.010$, partial $\eta^2 = 0.043$. H2(a) was supported. However, engaging in self-affirmation prior to message exposure decreased participants' perceived self-efficacy to quit smoking, $F(1, 151) = 4.06$, $p = 0.046$, partial $\eta^2 = 0.026$, contrary to H2(b).

Hypotheses 3 and 4 predicted that self-affirmation would have an indirect effect on intentions to quit smoking and desire to stop smoking through perceived susceptibility and/or perceived self-efficacy. We conducted two mediation analyses in SPSS Process macro (Model 4, Hayes, 2013). For all analyses, the predictor was the experimental condition, the mediators included perceived susceptibility and perceived self-efficacy, and the outcome variable was intentions to quit smoking and desire to stop smoking altogether in each analysis. Participants' education level and pre-exposure attitudes toward smoking were controlled for in both analyses.

The first mediation analysis revealed that self-affirmation increased intentions to quit smoking sooner through increased perceived susceptibility to smoking-related diseases, $b = 0.09$, 95% CI [0.0136, 0.2031], but reduced intentions to quit through decreased perceived self-efficacy to quit smoking, $b = -0.10$, 95% CI [−0.2283, −0.0033]. The second mediation analysis found that self-affirmation led to a stronger desire to stop smoking altogether through increased perceived susceptibility to smoking-related diseases, $b = 0.18$, 95% CI



Note(s): *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Figure 2.
Indirect effects of self-affirmation on intentions to quit smoking. Participants' education level and pre-exposure attitudes toward smoking were controlled in the statistical analyses. The numbers in the parenthesis are standard errors

[0.0141, 0.4198]. Moreover, although perceived self-efficacy was positively related to desire to stop smoking altogether, $b = 0.26$, $p = 0.01$; the mediation analysis showed that self-efficacy was not a significant mediator for the desire to stop smoking altogether because the CI included 0, $b = -0.12$, 95% CI [−0.3309, 0.0049].

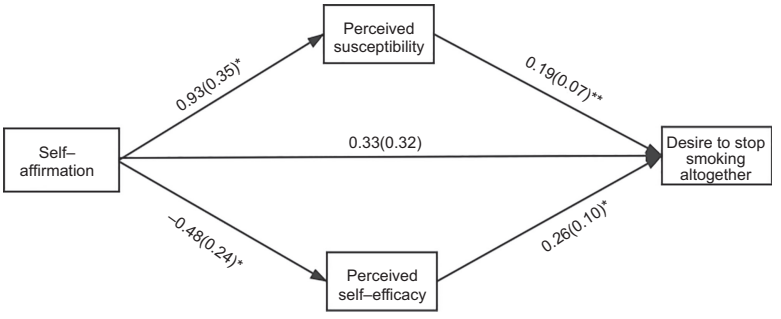
In summary, smokers in the self-affirmation condition had greater perceived susceptibility, which was positively related to intentions to quit smoking sooner and desire to stop smoking altogether. Unexpectedly, smokers in the self-affirmation condition had less self-efficacy. Yet, self-efficacy was positively related to intentions to quit smoking sooner. See Figures 2 and 3 for a summary of the mediation analyses.

Discussion

The goal of our study was twofold. We first aimed to examine the effects of self-affirmation on African American smokers' intentions to quit smoking sooner and desire to stop smoking altogether after viewing graphic cigarette warning labels. We then tested the mediating effect of perceived susceptibility and self-efficacy on intentions and desire to quit smoking.

Self-affirmation had no significant main effect on African American smokers' intentions to quit smoking sooner or desire to stop smoking altogether. We speculate that there is a much more complex mechanism to influence quitting intentions. One of the major reasons is that smoking is addictive due to nicotine, making it difficult for smokers to quit (Benowitz, 2010). In particular, smokers who started smoking at a younger age tend to have greater nicotine dependence and lower intentions to quit (Ali *et al.*, 2020). As shown in Table 1, the majority of our participants started smoking at a relatively young age (57.4% started smoking before 18 years old and 36.1% between 18 and 25 years old). This could mean that most of our participants are likely to be addicted to smoking and, thus, less likely to be influenced by interventions aiming to encourage cessation.

Yet, engaging in self-affirmation prior to viewing the labels had a positive impact on perceived illness susceptibility. As the increased level of acceptance of personal illness susceptibility can be considered as one manifestation of decreased defensive processing (Dillard *et al.*, 2018), this finding suggests that self-affirmation suppressed African American smokers' defensive reactions toward smoking risk information (i.e. graphic cigarette warning labels) and, thus, enabled an adjustment to perceived susceptibility to illness, relative to the control group (i.e. those who were not affirmed). Moreover, we found that perceived susceptibility mediated the effect of self-affirmation on quitting outcomes. Specifically, self-affirmation indirectly led to higher intentions to quit smoking sooner and a stronger desire to stop smoking altogether through enhanced perceived susceptibility. This finding contributes



Note(s): *$p < 0.05$; **$p < 0.01$

Figure 3.
Indirect effects of self-affirmation on desire to stop smoking altogether. Participants' education level and pre-exposure attitudes toward smoking were controlled in the statistical analyses. The numbers in the parenthesis are standard errors

to the literature by highlighting the mediating role of risk beliefs, such that perceived susceptibility could explain the impact of self-affirmation on behavioral intentions.

However, self-affirmation had a potentially problematic effect on African American smokers' self-efficacy: self-affirmed participants had lower self-efficacy than non-affirmed participants. This result was contrary to our expectation. Furthermore, we found that self-efficacy mediated the effect of self-affirmation on intentions to quit smoking. Our findings indicate that although self-affirmation is found to be effective to suppress certain types of defensive reactions, such as message derogation (Iles *et al.*, 2019; van Koningsbruggen and Das, 2009), it may be less effective at decreasing fatalism-related cognitions.

However, this finding should be interpreted with two caveats in mind. First, self-efficacy does not fully capture the concept of fatalism. Specifically, fatalism has been shown to incorporate several beliefs, including one's perceived lack of control over health risks, perceived hopelessness to negative health consequences and attributing one's health to luck (Shen *et al.*, 2009). Out of these beliefs, self-efficacy is most closely related to lack of control. Our results, then, indicate that self-affirmation may not be effective at decreasing the dimension of fatalism that emphasizes lack of control. Perhaps asking participants to reflect on their positive characteristics might have also made them think about their own weaknesses, such as past failed quit attempts, leading to lowered perceived self-efficacy to quit (Boardman *et al.*, 2005; van der Deen *et al.*, 2011). Future research could test whether asking African American smokers to self-affirm in a smoking cessation intervention would also make them recall their previous failures to quit. Future studies could also test the effect of self-affirmation on other aspects of fatalism, such as luck and pessimism.

Second, we also speculate that the lack of an effect of self-affirmation on self-efficacy stems from the features of the graphic warning labels themselves. It is possible that the efficacy message included in the graphic cigarette warning labels (i.e. a quit smoking hotline number) was too vague or brief, or not visible enough and, thus, overlooked or deemed as insufficient by our participants. In studies in which self-affirmation had a direct positive effect on efficacy perceptions (e.g. Good *et al.*, 2015; Epton and Harris, 2008; Strachan *et al.*, 2020), the health risk messages participants were exposed to included content specifically targeting efficacy perceptions (e.g. a list of strategies to be physically active in Strachan *et al.*, 2020). However, we were interested in testing graphic cigarette warning labels in their original format, meaning we did not add any text to more strongly address self-efficacy to quit smoking. These findings, then, suggest that the information provided as part of the labels, even if processed non-defensively as a result of self-affirmation, may not successfully increase self-efficacy, an important antecedent of behavior change. These findings also indicate that cigarette warning labels should include strategies to quit smoking if the goal is to increase smokers' self-efficacy. Due to the limited size of the cigarette packages, a QR code may be printed on the cigarette packages. Smokers can scan the QR code with a mobile device to obtain more information about how to quit smoking.

It is also possible that, as self-affirming better prepared our participants for processing and accepting the threatening message, it might also have shifted their focus entirely on the threat component of the graphic warnings, at the expense of the efficacy information. As Ferrer and Cohen (2019) previously pointed out, both timely threats (e.g. health risk information) and timely resources (e.g. skills training, support groups and hotlines) to foster behavioral change should be present for self-affirmation inductions to work; therefore, a lack of efficacy information could have detrimental effects. Unfortunately, in this study, we did not measure whether participants paid attention to the quit smoking hotline number. Future research could build upon this study and ask participants to recall the message they have seen to test this explanation. In addition, future research could also examine manipulating the amount or type of threat and efficacy information included in the graphic cigarette warning

labels, and test whether they would moderate the impact of self-affirmation on individuals' risk and efficacy perceptions.

Limitations and future directions

A few other limitations should be noted. First, our study included African American smokers only; therefore, the extent to which the findings can be generalized to other groups of smokers is unknown. Yet, our focus on African American smokers is also a strength, as it helps address significant tobacco-related health disparities. Second, the interpretation of our results could be clearer if we had measured whether participants paid attention to the efficacy information (i.e. a quit smoking hotline number). As timely threats and timely resources are two essential conditions to facilitate the effect of self-affirmation (Ferrer and Cohen, 2019), future research is needed to investigate if it was the lack of attention to the efficacy information or the amount of efficacy information that contributed to the decreased efficacy beliefs in the self-affirmation condition. Third, we measured smokers' responses immediately after viewing the pictorial cigarette warning labels. The long-term effects of self-affirmation are not clear. Future research could measure smokers' beliefs and behaviors a few weeks after the experimental manipulation to test its long-term impact.

Theoretical and practical implications

Despite limitations, this study contributes to the self-affirmation and anti-smoking communication literature in several ways. First, our study is among the few studies that test the impact of self-affirmation on African American smokers' behavioral intentions and desire to quit before exposure to graphic cigarette warning labels. Because African Americans are disadvantaged with higher tobacco-related morbidity and mortality rates (Kochanek *et al.*, 2016), this study advances our understanding of developing effective communication strategies to address this tobacco-related health disparity. Second, our study contributes to the limited literature investigating the mediating role of perceived susceptibility and self-efficacy in self-affirmation. We find that engaging in self-affirmation prior to viewing the graphic warning labels increases African American smokers' perceived susceptibility, which in turn promotes higher intentions to quit smoking sooner and a stronger desire to stop smoking altogether. This finding adds to the literature that perceived susceptibility, a form of defensive reaction (also labeled as Denial by Dillard *et al.*, 2018), is an important underlying psychological mechanism to explain the effect of self-affirmation on persuasive outcomes.

Yet, our findings also suggest that self-affirmation strategies should be used with caution when communicating smoking risks to African American smokers if the goal is to increase quitting self-efficacy. Affirming one's positive characteristics prior to exposure to smoking risk messages increases African American smokers' perceived susceptibility to smoking-related illnesses, but decreases their perceived self-efficacy of quitting smoking. Combined with previous studies (Armitage *et al.*, 2008; Burgess *et al.*, 2014), we speculate that self-affirmation may have a detrimental effect on self-efficacy among individuals of low socioeconomic status (the majority of our participants came from low socioeconomic background: 85.8% did not attend or finish college, and 77.4% had an annual household income of less than $45,000). Until more is understood, we recommended refraining from using self-affirmation when the goal is to increase the perceived self-efficacy of quitting smoking among African American smokers.

Notes

1. $N = 64$ participants from this sample were included in analyses reported elsewhere (Iles *et al.*, 2019). The only outcome included in both analyses was intention to quit smoking.

2. We provided the $25 gift card to participants ($N = 67$) who took part in our study at a convenient location for them (e.g., community libraries, community events). For participants ($N = 91$) who traveled to our research lab on campus, we provided them with a $50 gift card.
3. Other variables measured in the study included anger, message derogation, perceived message manipulation, and posttest attitudes toward smoking.
4. We used the old warning labels because the study was conducted prior to new graphic cigarette warning labels being released in 2019. Our study is still relevant as all the labels focus on smoking-related risks.
5. Measures used in the current study were adapted from previous smoking prevention research that have been validated (e.g., Armitage *et al.*, 2008; Harris *et al.*, 2007).

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Teaching and discussing mental health among university students: a pilot arts-based study

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Abstract

Purpose – Interdisciplinary approaches to health education are becoming increasingly common. Here, the authors describe an arts-based approach designed by academics and artists to both supplement the study of mental illness and support the individual mental health of undergraduate and postgraduate university students, by raising the visibility of mental illness in an innovative way.

Design/methodology/approach – Through workshops, university students were guided in a sensory and physical way to discuss psychological health and vulnerability. This was followed by the creation of physical representations of mental distress through art pieces.

Findings – Students were able to design their own art pieces and discuss mental health issues in an open and creative way. Students reported that the arts-based initiative was beneficial to their practice as future professionals and provided a holistic learning experience. At the same time, artists were able to generate powerful images which facilitated further discussions within the faculty.

Practical implications – This project provides an innovative model for workshops which could be employed to raise the visibility of common mental health disorders among university students while providing a safe space to discuss and support wellbeing. Additionally, variations could be implemented to enhance the teaching of affective disorders within a university curriculum.

Originality/value – This paper presents the results of collaboration between academics and artists, who together generated an innovative way to both support students' mental health and provide an alternative way to supplement experiential learning about common mental health conditions such as anxiety and depression.

Keywords Mental health, Anxiety, Universities, Arts, Qualitative methods

Paper type Research paper

Introduction

In the last few decades, arts- and humanities-based approaches have become increasingly established in health education, particularly medicine, reflecting a shift towards a more patient-centred curriculum. A range of art forms, including literature, performance and visual arts, have been incorporated into the core curriculum to support students to achieve a better balance between scientific knowledge, clinical skills and the capacity for empathy. This approach has helped medical students to better understand patient narratives within a broader psychosocial context (Garden, 2007; Willson and Jaye, 2017), develop empathy, resilience and self-care strategies (Shapiro, 2008; Kaufman *et al.*, 2014). Furthermore, arts-based learning applied to medical studies has supported students to reflect on their professional experience (Gaufberg and Williams, 2011), acknowledge error and negotiate ambiguity (Schaff *et al.*, 2011; Bentwich and Gilbey, 2017) and improve clinical observational and pattern recognition skills (Jasani and Saks, 2013; Perry *et al.*, 2011; Shapiro *et al.*, 2006).

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Arts-based approaches have also been successfully employed in the education of nurses (Robinson, 2007; Rieger and Chernomas, 2013; Rieger *et al.*, 2016, 2019).

Within this broad field, practitioners distinguish different approaches. The longest established is the "medical humanities" which describes the use of artwork and texts from the humanities and social sciences to engage students in discussions around themes pertinent to clinical practice such as pain, illness and cultural diversity (Shapiro *et al.*, 2009) and to reflect on their professional identity including the need for compassion and self-care (Jones *et al.*, 2017). More recently, the expression "art-based inquiry" has been used to identify a distinct approach which involves students in the creation of their own artworks, exhibitions and performances as a means of enquiry (Younie, 2013), whilst "clinical humanities" has been adopted by others (Yu, 2014; Shapiro, 2014; Zahra and Dunton, 2017) to shift the focus to more humanistic ways of learning that take place throughout clinical encounters. The benefits of such approaches are known, yet most university courses tend to use teacher-centred and lecture-based methods (Vercellotti, 2018), and instructors miss significant opportunities to increase students' engagement and their consequent learning experience.

Improving learning experiences

Learning experiences and educational outcomes of students are often highly connected with emotions (Tyng *et al.*, 2017). Positive emotions frequently help, for example, enjoyment has been shown to be beneficial for most learning strategies (Abe, 2011; Ranellucci *et al.*, 2015), and engagement is known to help students learn better (Carini *et al.*, 2006). Similarly, interactivity with peers and lecturers during discussions in classes has been linked to improvements in emotional engagement, which in turn positively influences learning performance (Nkhoma *et al.*, 2017). In contrast, negative emotions are frequently viewed as detrimental to learning (Rowe and Fitness, 2018). Difficulties in emotion regulation have been linked to anxiety (Cisler and Olatunji, 2012), and consequently high levels of anxiety are associated with negative effects on students' achievements, affecting cognitive abilities (Ameringen *et al.*, 2003; Russell and Topham, 2012; Moran, 2016).

There is also considerable research in education and psychology that collaborative approaches, in contrast to more uni-directional or didactic teaching styles, can be particularly motivating for student engagement and entail positive learning outcomes both in school (Tenenbaum *et al.*, 2019) and in higher education (Scager *et al.*, 2016). Based on this and as part of an education scheme which encouraged educators to collaborate with artists and develop projects to support students' learning, we designed a series of workshops to help students talk openly about their own mental health, supplementing their learning of mental health disorders. This would help to support students in their training as future clinicians to better understand and empathise with patient narratives of mental illness, whilst fostering greater peer support through creating a tangible and shared language for discussing mental health. Here we describe the development and delivery of these arts-based workshops and we also discuss future possibilities of applying an arts-based enquiry in undergraduate and postgraduate education.

The study methodology

Design, participants and context

The project team consisted of an artist and a designer from the Liminal Space group, academics from the Cultural Institute and from the Institute of Psychiatry, Psychology and Neuroscience (IoPPN) of King's College London and two recently graduated IoPPN MSc students. Of note, no team member had expertise in facilitating mental health discussions through therapy or psychoeducational groups, one of the artists involved had been a

university lecturer for many years, and both artist and designer had extensive experience delivering workshops for professionals, the general public, academics and students. The project was implemented between September 2017 and June 2018, during which six planning meetings were held to design creative curriculum-based workshops to be offered to undergraduate and postgraduate students.

An emphasis was placed on equal and reciprocal collaboration between the educators and the creative partners. This ensured the academic relevance of the initiatives, the quality of the artistic process of inquiry and the opportunity for professional development on both sides (Osman *et al.*, 2018). The artist and designer were paid with funding from the King's College London Arts in Mind Education Scheme.

Students were invited to participate in the study via email. The message sent encouraged them to "*deepen insight and understanding of the symptoms, causes and experiences that are connected to depression and anxiety disorders. Designed to complement your degree course, the sessions will support you to apply your knowledge and understanding within your professional life, your peer-group and yourself.*" The message explained that the workshops would be "*run by an artist and a designer and will use inventive and creative methods to bring these subjects to life for group exploration and discussion*". The approach to send invites using email was selected for practical reasons as we had access to mailing lists, and an emphasis in the words used was placed on the arts-based nature of the workshops which was different to anything else offered on the curriculum. A total of sixteen students participated, including BSc Psychology undergraduate students and MSc in Affective Disorders postgraduate students, who were not asked about previous or current personal experience of depression or anxiety.

The "visualising vulnerability" creative workshops

Two workshops were designed, each with the same format and content but which differed in the focal mental health disorder, one being based loosely around depression and the other loosely around anxiety disorders. These topics were chosen both as students had studied them as part of their curriculum and also as they are highly prevalent amongst students in higher education (Neves and Hillman, 2017). There was no requirement to attend both workshops, which took place in an unusual location to encourage a physical separation from the university and therefore to be creatively inspiring (Drake, 2003). Each workshop lasted approximately 2 hours and took place on a weekday evening, outside of timetabled classes. The layout of the room was deliberately informal with shared tables. Within the workshops, students were guided through a number of creative processes both individually and in small groups. These included the following:

(1) Language exercises encouraged students to deepen and expand the language used to describe psychological distress while looking at pictures and listening to music.

(2) Exploration of fictional scenarios and stories that encouraged students to identify different emotional states.

(3) Work with objects and visual stimuli to experiment with creating physical manifestations and "embodiments" of the language used to describe different psychological states.

Workshops progression

Sessions were planned starting with themes, language and approaches familiar to the students so that they felt comfortable and then moved towards a more personal, expressive and creative language to capture the whole person and their potential experience of mental health. The specific structure of the sessions is described in detail in the Results section.

Students were actively involved in a sensory and physical way (Haidet *et al.*, 2016), with warm-up activities to maintain a playful and non-judgemental atmosphere, with no right or wrong answers or approaches, where students could freely and spontaneously try things out. This was achieved by fast, fun actions in an informal room layout with continuous verbal reminders from the facilitators to "give it a go", work with whatever came to mind and not worry too much about the result.

Fictional personas

Students were introduced to three fictional personas: two students and one recent graduate, devised to be close to their own potential experiences. Each persona included a description about their mental health, for example, a first year university student struggling from social phobia. The personas used for discussion were designed as a bridging activity: close enough to case studies to be a comfortable place for the students to start, but different in their narrative approach to shift students away from the standard diagnostic approach, e.g. symptoms, threshold and precipitating factors. Additional information was provided on aspects of the personas' lives, introducing a range of factors based on the social graces model (Burnham, 1992), such as age, gender and religion, to encourage students to consider how broader systemic or social factors might impact a person's daily concerns and struggles. At their tables, students were then prompted to discuss how a day in the life of each persona might feel and the things they might struggle with. One example was "Nicola", for whom the students received a card with the following details:

(1) Nicola comes from a rural town in Yorkshire and has just moved down to London to start her degree. She is living in halls of residence where she shares a kitchen and communal space with 7 other students.

(2) Nicola has always struggled at school and in social situations. She made a few friends at an after-school dance club, but they all went off to different universities and Nicola is now trying to adapt to a new start whilst trying not to let people know about her struggles.

(3) Nicola has been prescribed medication to help navigate her social phobias and finds that these can sometimes enable her to join in social situations – but not always. She's been questioning whether or not to keep taking her medication.

Day in the life of Nicola

(1) Waking up – she hears her flatmates in the kitchen laughing but has woken up in a bit of a panic and feels unable to face anyone so hides in her room until everyone has gone. Then heads to the kitchen for breakfast but this morning has to complete her routine several times before she feels calm – which makes her late for her first class.

(2) In a lecture – wants to ask something important but cannot face everyone staring at her so stays quiet. She thinks that she'll just ask via email later, but then starts to overthink what the tutor will think of her for not asking in class and gets herself in a downward spiral of anxiety.

(3) At lunchtime – her course mates are all going to the canteen together and encourage her to join them as everyone is trying to make new friends. She heads with them but at the counter cannot find food she can eat. She does not know what to do to explain this to the group she is with, so fakes feeling unwell so that she can leave.

Evaluation

A qualitative approach was adopted to evaluate the effectiveness of the workshops in supporting students to develop empathic skills and encouraging students to talk about their own mental health. Feedback forms, created by the artists and students within the team to specifically evaluate the aims of the pilot intervention, were provided to attendees at the end of each workshop, including both open-ended and multiple-choice questions, with response categories yes, no or do not know:

(1) Having taken part in the workshop do you feel you are better equipped to describe the different emotional and mental states you are studying?

(2) What was your favourite part of the workshop? Why?

(3) What did you think about the creative approach to the topic? Using a creative process to talk about these issues was good/bad because. . .

(4) Having taken part in this workshop do you feel more confident/able to discuss any emotional vulnerabilities you might be feeling?

(5) Do you think that students studying in other fields would benefit from/like to take part in similar workshops?

(6) Are you planning to come to the second workshop? (only on the first workshop feedback form)

Answers were analysed following Braun and Clarke's (2006) method of thematic analysis. This involved six steps: the data were read thoroughly several times; initial label codes to describe the data were created; from these labels patterns were found across the different feedback questions identifying possible themes; the possible themes were reviewed and four overriding themes were identified; themes were named; and finally the results were written up.

Results

Workshops progression

As students came in, they saw a range of visual material on one wall, including images from fashion, art and design, literary extracts and real people's tweets about their personal experience of the mental health conditions under discussion. Following an icebreaker introduction, students were asked to move and look at the visual materials. They were also provided with MP3 players with earphones so that they could simultaneously listen to audio clips carefully selected by the team to relate to the theme of the session, which included tracks available on the web and music used by the neuroimaging team at the IoPPN to stimulate particular moods (Mitterschiffthaler *et al.*, 2007). The students were given ten minutes to look at the images, listen to the audio and then, using post-it notes, write thoughts or feelings generated by the sensory stimuli. Words and phrases from students included: "*feeling of darkness*", "*melting/dissolving*", "*covering over the symptoms*", "*not letting people see what's going on*", "*feels like a failure*", "*lonely even when not alone – isolated*", "*being there but not being noticed*", "*could not breathe*", "*restricted*", "*heaviness on your shoulders – pain / physical pressure*" and "*dread*".

During the second part of the workshop students were given information about the fictional personas. Upon receiving the cards with details and examples of a day from these fictitious characters, students were asked to imagine themselves in the character's situation and were encouraged to discuss what it would feel like for those individuals. As the students were talking, the facilitators captured the language the students used, for example, "*Trapped,*

no escape, head is squeezed". The facilitators wrote key words and phrases on post-it notes, which were later offered to students to select ones to work with. At this point, a table with arts and crafts materials was revealed (Plate 1). The table was previously covered as students entered the space. Materials are known to facilitate learning processes by engaging students' emotions (Taylor and Statler, 2014), and this timing was designed to generate new energy and curiosity once trust had been established, so that the students would not be intimidated by the prospect of having to make "art". The table contained a range of materials chosen for their variety of textures and included balloons, pipe cleaners, polystyrene heads, fabric, latex gloves, scour brushes, charcoal, safety pins, soap, clay, plastic masks, wooden mannequin, cling film and feather boas, as well as different types of paint.

To free the students to think creatively they were introduced to what the artists referred to as the "magic eight" activity, where they folded a piece of paper in half and then half again, so that four squares were marked on each side when the paper was unfolded. Students were given thirty seconds to draw or write something in each square in response to their chosen words from the post-it notes, being reassured that the idea was simply to think quickly and not worry about the result, even if they felt their work was "rubbish". They were then given three items from the table and three minutes to make something relating to their words, followed by twenty minutes to select additional items from the table and turn them into whatever they chose. At the end of each workshop, each student stood up and shared their art pieces with the group, discussing the meaning behind the sensory materials used and how this reflected the language or emotional state they wanted to represent. Students were invited to name their pieces of art when describing them. Some examples and the explanations provided include:

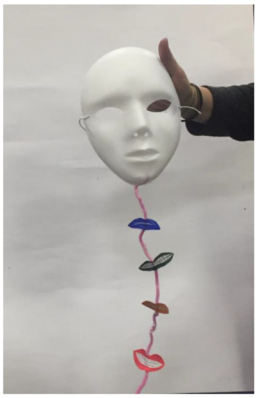
"Words, words, words"

> I had "lose sense of self". It's supposed to be a lot of dialogue, so, like what the person's saying they ['re] kinda protecting themselves with what they say, and how they portray themselves, but just forgetting who's there and not showing their real person. Like confusion. . . so many things going on around you, not being able to cope with everything that you're surrounded by, and then this is kinda like hiding behind what you're saying and the way you present yourself – so it's covering up the body but it's words (Plate 2a)

"My smile may change but my eyes remain the same"

Plate 1.
Some of the materials revealed during the workshop

(a)



(b)

(c)

(d)

(e)

(f)

Plate 2.
Some final pieces from students who took part in the workshops and the description they use in their presentations
(a) "Words, words, words" (b) "My smile may change but my eyes may remain the same" (c) "Losing your sense of self"
(d) "Beneath the bill"
(e) "Jane Doe" (f) "The scream"

> I have putting [on] like a different face each day, so I have a mask I have not really assembled it properly. But there are different mouth shapes that you can attach on, the important thing is that the eyes remain always the same, so the eyes kinda reflect what's actually going on inside but then the person is always putting on a different smile. So, I'm representing the part of depression that looks at your face changing everyday –putting on a different face every day. And I've called this "my smile may change but my eyes may remain the same" in the sense that you can put on a different smile everyday but thanks to this mask your eyes cannot change. I feel that eyes represent your real thoughts and what's actually going through your mind. I mean you could, change, put a different amount of smiles and frowns or whatever. But I've also left the mask clear, I have not put anything on the face just because I feel the mouth and the eyes are the two parts of the face that can show the most emotions (Plate 2b)

"Losing your sense of self"

> This mask is distress. I was gonna do it all black but then the red is just sort of to point out that that's where everything's going wrong (Plate 2c)

"Beneath the bill"

> I got shame and covering, so these are supposed to signify her damage issues (. . .) then she's kinda wrapping and covering it up and making it seem like she's all put together when she's not inside. So, the pegs in the head is like the pain and the emotional turmoil. And the fabric and the ribbon and the pins kinda like a fake facade of just covering up I'm actually doing fine like I'm alright but the person's not. And it's a blank face as well because like them, its anonymous and it could be anyone . . . It's called "beneath the bill, it's just your cover, when you walk outside you kinda put on a show, like one of the quotes – you're an actor, but when you go back home and when you take it all off you're vulnerable inside, layers of bandage and bubble wrap hide the face, the blank face shows anonymity – but vulnerable inside (Plate 2d),

"Jane"

> I have you do not want to be seen or you do not want your problem to be seen. So that's the side with her problem, and I've used colours that make me think of it, then this one's meant to go on there so she's kinda covering up her problem. . .but then the eyes are closed because even [though] it's her true self on the inside because you cannot really change your eyes she's still closing that because she does not want to share that to anyone. Doesn't have a name, but this is Jane. It's the whole idea that there's a pretty side and then there's like the real side that you do not want to show to everyone (or like that side). And then it's kinda slowly, slowly, taking over – which is why like the bubble wraps coming over onto the other side, and when that moves this is gonna move over, it's like you do not wanna show anyone your problems which why you put up a front but then this is the real you, you do not show to anyone (Plate 2e)

"The scream"

> He is screaming but you cannot see – the mouth is stapled closed from the front the person is pale – not able to express many things, but on the inside, he is suffocated by his own thoughts. Eyes represent lack of focus and lack of control – he is everywhere but nowhere (Plate 2f)

Following the workshops, a fashion illustrator took the concepts that the students had explored and developed four illustrations that express the different types of emotional pain and mental distress in a physical form. The illustrations were turned into posters (Plate 3a–3d) and are on permanent display in the IoPPN canteen, where they continue to inspire curiosity and conversations around the subjective experience of mental states.

Immediate impact

The leads and facilitators were able to observe the immediate impact of the session through the students' behaviour and their comments during the workshops. Students mentioned that

Plate 3.
Artist illustrations: (a) "Do you ever feel like you have to hide vulnerabilities behind a mask?" (b) "Do you ever feel trapped and overwhelmed by negative emotions?" (c) "Do you ever feel you are losing your sense of self and dissolving at the edges?" (d) "Do you ever feel like your thoughts are spiralling out of control?"

they had not thought of themselves as creative but that the design challenge had helped. What happened at each stage of the workshop was telling: a more expressive language began to emerge as students moved from the post-its, to the case studies, to the making activity: "*Feeling lonely even when not alone*," "*Scattered and fragmented*", "*Melting and dissolving*." "*No true friends, no meaningful connections. Fraud actor*."

It was notable that all students were happy to stand up and present their pieces at the end and appeared proud to talk through what they had done. The team members were impressed by the quality and openness of their explanations of the materials they had chosen and their interpretation of what they had made, using their own language. It was interesting to compare this to earlier stages in the workshops where students had been invited to share verbal feedback on their ideas and were reticent to do so. Finally, the team noticed that both sessions had an extremely positive energy with students making comments such as, "*Oh, my God! Everyone should do this*." Students did not want to leave and a number of them stayed on to help clear up.

Evaluation findings

All attendees gave positive feedback. The students came up with a variety of responses, including: "*Great to immerse in and explore how emotions are felt and how everyone checks*

something different" and "*It's easier to express feelings and understand emotions when one sees pictures*".

The feedback responses were thematically analysed to uncover the following themes:

More than just symptoms and signs

This theme encapsulates participants' realisation that the study of mental health issues goes beyond symptoms and diagnostic tools. Participants reported how the workshops had helped them to gain a more holistic understanding of mental health issues and developed their clinical skills. The workshops were described as "*a deeper and alternative approach*" that helped to highlight the importance of accessible language particularly when communicating with patients: "*Feel more of a personal connection to it*", "*Whilst clinical knowledge is important, it's also important to understand the patient.*" Remarkably, a participant described their frustration over the lack of clinical skills taught: "*We are always looking at the theory of mental issues and never at how to describe/express it*".

I can feel it

A common theme reported across the feedback forms was the idea that they could "feel" the emotion through the exercises and materials utilised during the workshops. Participants reported "*I could physically feel it*", "*Made it real*" and "*Easier to feel and express feelings*". Additionally, during the workshop students commented, unprompted, on the raw emotions that they were feeling.

Another perspective / the patient

This theme captures participants' reflections on the value in sharing thoughts within groups and how this helped develop empathy and understand different perspectives: "*Interesting to hear different interpretations of the abstract art pieces*", "*Hearing [talk] one picture allowed me to see other emotions*". During the workshops, students spontaneously shared how listening to each other was prompting them to think about their future clinical work, encouraging them to ponder about their prospective patients in a different, more open way. This led participants to feedback "*We must remember the patient's perspective*" and "*I stepped into the shoes of a patient with depression*".

Reflecting

This theme covers the personal reflections the participants made about taking part in the workshops. Reflections were mainly about their ability to be "creative" as science students: "*I found it difficult at first as I am not a creative person, but the design challenges really helped me have a good idea on how to approach the project.*" Participants described their surprise at "*being able to make something*" and how physical objects could represent emotions or disorders that were being discussed.

Discussion, limitations and implications

Through the series of creative processes involving visual, audio and tactile stimulation used in our workshops, students were provided a safe space to express feelings of vulnerability without judgement and further develop empathy skills. The workshops are an innovative addition to the increasing number of arts-based approaches available in educational settings, here providing university students with opportunities to explore ideas and express themselves in ways that were not offered elsewhere in the curriculum. Importantly, the collaborative relationship between artists and academics was a key to ensuring genuinely

creative and original learning opportunities whilst maintaining relevance to discipline-specific learning.

Reflecting on what was learnt and the legacy of the pilot, the research team discussed how the extracurricular nature of the sessions inevitably meant that students were self-selecting, meaning that not all who might benefit would necessarily attend future similar workshops. Different approaches would be needed if the workshops were to be offered to discuss students' mental health or to support learning about mental health. This led to discussions of how a session like this could be embedded into the curriculum without "losing the magic", as students could stiffen up in a more formal setting and the crucial element of spontaneity, playfulness and creativity would be compromised. However, a body of educational research has consistently demonstrated that, under the right circumstances, peer and collaborative learning can be beneficial to learning and that the social dynamics or "stiffness" of interactions can, largely, be overcome with appropriate facilitation (Tenenbaum *et al.*, 2019). Perhaps key elements that can present an obstacle to effective art-science collaborations stem from stereotypes and expectations regarding "artists" and "scientists," and a perception of irreconcilable methods, epistemologies, objectives and endeavours between the two fields. Effective engagement could be facilitated by focussing on common goals, similarities between artists and scientists (rather than merely differences) and the potential positive and innovative outcomes of interdisciplinary collaboration. In a similar vein, it was felt that taking students into an alternative space that was different to the normal learning environment would be important to maintain a creative and encouraging environment. This then led to considerations of where in the curriculum it would sit, whether it should be a whole session, or whether elements of the approach might be incorporated into standard teaching as a springboard for discussions around specific topics. Further work will be needed to develop optimal interventions.

While this arts-based pilot was perceived by staff and students to be beneficial in relation to a range of educational and professional areas, another limitation to consider is that our evaluation did not prompt or ask for any negatives of workshop design or content, nor did we ask about any challenges of engagement or barriers to accessing the workshops. Instead this information was observed by the organisers and inferred from the facilitators' interactions with students. It was clear that there was initial hesitation in some students to engage creatively and it was also seen how the icebreaker activities helped to open students up to creative tasks. Any future studies could assess and evaluate the different components of the workshop and how acceptable they are for student attendees, as this will allow for better translation into the university curriculum.

Nevertheless, the workshops generated useful reflections that could be used to improve interactions with individuals with mental health issues, an aspect of particular relevance to students as future clinicians, considering that service users' negative experiences of mental health facilities can be exacerbated by stigmatising labels frequently used by clinicians (Ben-Zeev *et al.*, 2010; Rüsch *et al.*, 2011). The success of the two pilot workshops reported here demonstrate the acceptability of incorporating arts among psychology students and highlighted important factors to be considered in any potential future integration of arts-based inquiry into a course curriculum at university. Considering that mental distress is widely present among university students, irrespective of their chosen careers (Wongtongkam, 2019; Karyotaki *et al.*, 2020), we see the described approach as a pilot for a model that could be adapted and implemented to discuss mental health within as well as outside the curriculum.

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Developing a framework for youth empowerment to prevent smoking behavior in a rural setting: study protocol for a participatory action research

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Abstract

Purpose – There is limited research examining community-based youth empowerment that addresses smoking prevention in the rural Indonesian context. This paper describes participatory action research (PAR) applied to develop a framework for empowering youth aged 17–25 years toward smoking prevention. This research conducted in the Indonesian rural community setting was divided into four stages: diagnosing, planning action, taking action and evaluating action.

Design/methodology/approach – PAR was chosen as the approach to developing a framework for youth empowerment in smoking prevention programs. In this study, the PAR cycle started with a prestep stage through interviews with village heads, community leaders, youth organization organizers, observations of target resources and observations of participation in youth activities as well as forming teamwork with target

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participants. The diagnosis stage consists of three activities, that is, focus group discussions with youth groups of male and female, youth assessment of empowerment domains through the Participatory Rural Appraisal (PRA) with the Empowerment Assessment Rating Scale (EARS) and measuring individual and group involvement levels related to the smoking behavior prevention program by questionnaire. The EARS assessment results were presented in the action planning stage, followed by a discussion on youth empowerment plans and strategies. In the action stage, activities and programs are planned according to the planning discussion, that is: training in healthy life skills (outbound and training) and initiating youth health programs without smoking called "Remaja Berdaya Sehat Tanpa Rokok" (Empowered Youth Healthy Without Smoking) or the JayaStar Program. After these community participation activities, the evaluating action stage will assess the empowerment domain in the youth groups, conduct focus group discussions with parents, evaluate the impact of empowerment on individual and group changes with a questionnaire and facilitate self-reflection by the youth community called Madiska.

Findings – This protocol describes a doctoral research project on developing a youth empowerment framework in smoking prevention programs through PAR. The intended study will provide valuable information on the planning, implementation and evaluation of youth empowerment in the prevention of smoking behavior.

Originality/value – This research project is expected to contribute to the literature relating to PAR for rural settings and the use of empowerment strategies to prevent youth smoking behavior. The results can be replicated in the same settings, but the process of empowerment must still be adapted to the characteristics and local wisdom of the community.

Keywords Study protocol, Youth empowerment, Smoking prevention, Tobacco control, Participatory action research

Paper type Research paper

Introduction

Prevention of tobacco use in youth is very important to end the tobacco epidemic in the world (Backinger *et al.*, 2003). The results of a systematic review and meta-analysis on a population of young people aged 11–21 years in America found that interventions engaging youth in community activities in smoking behavior prevention programs in youth groups using health promotion messages and education were effective (Macarthur *et al.*, 2016). Meanwhile, another review demonstrated that health promotion methods are more effective than other smoking prevention methods. Effective health promotion interventions consist of three main approaches, namely: (1) reaching the wider community such as social marketing and mass media interventions; (2) reaching out to individuals, including through peer education and motivational interviews; and (3) reaching the community through community mobilization and environmental change with advocacy and setting-based interventions. Of the three approaches, community mobilization is an effective method for smoking prevention and smoking cessation. Community mobilization is an essential method of health promotion that aims to empower the community. Empowering people to change the social domain they have is not only more sustainable but also very effective (Golechha, 2016).

Research on youth empowerment for smoking behavior prevention in the context of Indonesian rural communities is still very limited. Recent research showed that the number of smokers in rural areas is higher than in urban areas with 30.3 and 27.6%, respectively (Kementerian Kesehatan Republik Indonesia, 2018). Furthermore, based on the current review, research on smoking prevention and control programs that focus on youth, which was mostly conducted in the school setting, have not been effective (Backinger *et al.*, 2003). As a viable alternative, this research is conducted in the community with youth empowerment and engagement strategies that are well established and proven to be effective. The community setting was chosen because there are youth organizations that naturally enable young people to do activities independently, and the informal ambiance of the community compared to schools allows youth to interact with peers in a more relaxed manner. This strategy is believed to be able to contribute to initiating social change (Backinger *et al.*, 2003). Other research also found that the youth empowerment model is effective in preventing teen smoking compared to helping them stop smoking when they have tried smoking once (Saw

et al., 2018; Wheeler *et al.*, 2007). This is because smoking behavior that begins in adolescence will become an unhealthy habit primarily during adulthood (United States Department of Health and Human Services, 2012).

Empowerment as a health promotion strategy can improve the health status of individuals, groups and communities (Glenn Laverack, 2006). As the main concept of health promotion (Kasmel and Tanggaard, 2011), empowerment can be achieved through planning strategies that enhance each domain identified by community members. According to Lavarack (2007), there are nine domains of community empowerment, namely: (1) increasing participation, (2) developing local leadership, (3) developing organizational structure empowerment, (4) increasing capacity in problem assessment, (5) improving the ability of the community to be critical, (6) increasing resource mobilization, (7) strengthening the relationships with others and other organizations, (8) creating fair relations with outside agencies and (9) increasing control over program management (Laverack, 2007).

Youth empowerment focuses on creating opportunities for active group participation in developing positive youth. Participation is a manifestation of the empowerment process and the direct cause of empowerment outcomes (Holden *et al.*, 2004). This model links the quality and natural participation of young people in building youth group atmosphere and structure with the individual attributes that they bring into the group. Adult involvement is indirectly associated with youth participation, by influencing the structure and climate of youth organizations. Finally, youth participation is linked to changes in the concept of youth participation itself and also their potential actions as agents of social change that influence tobacco control efforts in adults and youth (Holden *et al.*, 2005).

Youth empowerment emphasizes the participation of youth during the research process so that a good rapport between youth and researchers and a good relationship between researchers and society, in general, are needed (Holden *et al.*, 2004). Youth involvement is known as one of the best practices in health education and promotion as recognized by the Center for disease Control and Prevention (CDC-P) (Anyon *et al.*, 2018). For example, youth participation in structured, organizational activities has been associated with positive impacts related to self-identity and social achievement. This includes an increase in self-esteem followed by an increase in competence and control with improvements in personal and social skills (Holden *et al.*, 2005). Participation outcomes include reducing school dropout rates, increasing academic performance and involvement and lowering delinquency and drug use or tobacco use (Holden *et al.*, 2004).

Health promotion through youth empowerment in this smoking prevention program applies the theoretical framework of the stages of empowerment from Laverack (Laverack, 2006) and the youth empowerment model in tobacco control from Holden (Holden *et al.*, 2004). Empowerment is a process in which there are community activities to increase the empowerment domains such as participation, local leadership, resource mobilization, among others. Factors that influence the process of youth empowerment are predisposing factors for youth, group structure and group climate. The empowerment indicators are measurable as an increase in empowerment domains during the intervention. Furthermore, this empowerment will have an impact on the individual or group changes (Holden *et al.*, 2004).

Empowerment approaches have been used for noncommunicable disease prevention programs in India (Mohan *et al.*, 2006), to prevent suicide in residents in Japanese cities (Motohashi *et al.*, 2007), for malaria prevention in Thailand (Geounuppakul *et al.*, 2007), for safe community programs, acquired immunodeficiency syndrome (AIDS) prevention and drug abuse, programs improving the quality of life of the elderly and many other health promotion activities (Kasmel and Andersen, 2011). In Indonesia, several agencies have experience implementing community empowerment in immunization programs (World Health Organization and Indonesia, Regional Office for South-East Asia and Departemen Kesehatan Indonesia, 1993), for examples, integrated health posts for infants (Menteri Dalam

Negeri dan Otonomi Daerah Republik Indonesia, 2001), integrated health posts for the elderly and helminth/diarrhea control (World Health Organization and Regional Office for South-East Asia, 1987). Furthermore, an empowerment strategy has also been used to initiate noncommunicable disease prevention programs for cardiovascular diseases and diabetes in Yogyakarta, Indonesia (Dewi, 2013).

Furthermore, Youth Empowerment Strategies (YES) through Community-Based Prevention Research (CBPR) is designed using participatory action research (PAR) methods to improve problem-solving skills, social action and participation in elementary and junior high school adolescents. The YES program was adopted from the Adolescent Social Action Program (ASAP), which was previously implemented in several junior and senior high school schools in America. ASAP aims to reduce morbidity and mortality, encourage adolescents to make healthier choices, conduct a critical dialogue about youth experiences led by facilitators and encourage youth involvement in social and political change actions in schools and their neighborhoods (Wilson *et al.*, 2008). Meanwhile, the YES program aims to help vulnerable children have a healthy life and a better future. The stages of youth empowerment begin with designing a curriculum domain consisting of team building, photography and activities based on empowerment education, involving groups in the identification of social action projects. Another example is community empowerment for people living with AIDS and drug abuse prevention programs of adolescents in Estonia (Kasmel and Andersen, 2011). The stages of empowerment for these programs consist of: (1) assessment of empowerment domains; (2) community empowerment planning by defining empowerment objectives, measuring indicators and identifying process assessments and action plans; (3) comparing the two parallel implementation processes of the empowerment process and the issue-specific process; and (4) evaluation of changes in empowerment domains. There are four domains for empowering the results of the assessment, namely increasing community activities, increasing community competence, improving program management skills and creating a supportive environment. Each of these domains is described in the form of activities by community members as a group. There are specific activities for the prevention of AIDS and drug abuse, including organizing education for adolescents to raise awareness of adolescents, lobbying local policymakers to support alcohol sales regulations and reducing youth access to alcohol, holding alternative activities for adolescents (summer camp, drug-free discotheque), conducting anti-AIDS campaigns and distributing condoms to adolescents and producing printed materials about sexual education for adolescents (Kasmel and Andersen, 2011).

This PAR project applies a framework for empowering youth aged 17–25 years toward smoking behavior prevention involving stages, namely prestep, diagnosing, planning action, taking action and evaluation activities in the rural communities setting, in Bantul District, Yogyakarta Province, Indonesia. Based on the aforementioned research objectives, the following research questions are formulated:

RQ1. How will the process of diagnosing, planning action, taking action and evaluation activities of the youth empowerment strategy in the smoking prevention program be implemented?

Methods

Study site

The study setting is in rural areas of Bantul district, Yogyakarta province, Indonesia. Yogyakarta is one of the 34 provinces of Indonesia and lies in Middle Java. Yogyakarta is bordered by the Indonesian Ocean to the south, and the northeast, southeast, west and northwest are bordered by Central Java (BPS DIY, 2019). Meanwhile, Bantul district is one of the five districts/Cities of Daerah Istimewa Yogyakarta (DIY) Province. Bantul District is bordered by Yogyakarta City and Sleman District in the north, Gunungkidul District in the

east, Kulon Progo District in the west and the Indonesian Ocean in the south (BPS Bantul, 2019). Furthermore, this research was conducted in the Karet Hamlet, Pleret Village, Pleret Subdistrict, Bantul District, Yogyakarta. Karet Hamlet is located near the community health center and Pleret district. The area of Karet Hamlet is 32 ha. Karet Hamlet is located 12 km from Bantul District and 15 km from Yogyakarta Province.

The land use in Karet Hamlet is as follows: 60% for settlers and 40% for agriculture. The livelihood of the community is predominately as farm worker. Hamlet Karet has 452 families (household) and 8 RT (neighborhood units) and is headed by a village head. The number of youths aged 17–25 years was 36.2%, and most of the participants attended high school. Generally they work after graduating from high school, but there are some participants who go to undergraduate programs. They come from low socioeconomic status such that 72.2% of the young people's parents earn less than IDR 1,572,150 (Bantul district minimum wage).

Karet Hamlet has a youth community called *MudaMudiDusunKaret* or commonly called by its acronym, Madiska, who engage in activities to coordinate religious activity in children such as *Taman PendidikanAlquran* or Bible study groups and children's *tarawih* praying, assist activities held in the hamlet, such as being a committee of the independent day, helping to clean tombs and helping with clean water monitoring activities. Madiska holds religious monthly meetings and coordination activities are done at any time when needed using the WhatsApp group. Karet Hamlet has a leader who is very supportive of the youth program. The dukuh head and his wife play a role in motivating youth to be more active in advancing youth activities. There is also the organization that consists of mothers called *PemberdayaanKesejahteraanKeluarga* (PKK) or (Family Welfare Empowerment), and the organization that consists of fathers is called the Bapak's meeting with activities, which are routinely held once a month.

The researchers have a close relationship with the youth leaders and stakeholders in the area of Karet Hamlet, and this facilitates the empowerment process in that place. The role of the researchers in this case is as facilitators. Meanwhile, the challenge at the study site is that there are already some young people who smoke, and smoking behavior is still considered normal for most people as well as for youth. At the time of youth activities, there was still some who smoked. The expectation of community leaders and youth officials interviewed was that children and youth who had not smoked would not be interested in trying cigarettes. This PAR project is an opportunity for a youth empowerment program to prevent youth and children who have not smoked from becoming interested in smoking.

Another opportunity that can support the youth empowerment program at the research site in Bantul is the regulation that bans smoking in smoke-free healthy areas, namely Regent Regulation No. 18 of 2016. Furthermore, Karet Hamlet is an area in Pleret Village that has declared a nonsmoking area with the name of Smoke-Free Home or "*RumahBebasAsapRokok*" (RBAR). Meanwhile, the control area is the Purworejo Hamlet, located in Purworejo Village, Pleret Subdistrict, Bantul Regency. This hamlet has characteristics that are almost the same as the location of the intervention and is also declared as an RBAR nonsmoking area.

In the control area, no intervention was done through the empowerment process, but a pretest and a posttest were given to determine the area's indicators of empowerment. The pretest and posttest with a questionnaire in the intervention and control areas aim to evaluate the indicators of successful empowerment such as attitudes toward sociopolitical control, efficacy, knowledge resources, participation competencies, assertiveness, advocacy, intentions involved and openness in matters of smoking. The function of the control group in this study is as a comparison to measure the effectiveness of health promotion strategies through empowerment in smoking prevention programs.

Strategy to minimize the bias such as the possibility of the participants from Karet Hamlet and Purworejo Hamlet sharing some information that they got, they were asked to sign the informed consent and promised not to inform others about the contents of the questionnaire

and the information obtained from the researcher. This is very necessary for the success of the empowerment program that will be conducted. Besides, although Karet and Purworejo Hamlet are located in one subdistrict, the two hamlets are located in different village areas, Karet Hamlet in Pleret Village and Purworejo Hamlet in Wonolelo Village (Appendix Figure A1). Generally, the routine activities of a youth organization such as *Karangtaruna* are centered at the village level while the activities of the *Karangtaruna* at the subdistrict level are still incidental. Thus they are less likely to interact with each other.

Study design

Participants in this study were youth groups located in Pleret Village, and Wonolelo Village, at Pleret Subdistrict, Bantul District, Yogyakarta Province. The criteria of the participants were all youth aged 17–25 years who were willing to be involved in the program and voluntarily agree to sign the informed consent before participating in the action research. At this stage of the study, the key informants are the head of the village, hamlet chief and the wife of the head hamlets, youth administrators, health promotion officer, Pleret Health Center and Health Department Health Promotion Section Bantul. The number of youth in the intervention group include 50 young people in Karet Hamlet, Pleret Village. While the research team consists of the main researcher, two research assistants and two coresearchers, namely the wife of the hamlet head (community leader) and the head of the Madiska youth community.

This study uses PAR also called the action research (AR) method. The PAR process cycle is as follows: problem identification, planning, intervention and evaluation (Montgomery *et al.*, 2015). Meanwhile, other authors added the prestep stage before the diagnosis stage, involving the activity of understanding the context and explaining the objectives of the project, which are the same as those in the problem identification. Next, the stages are continued with planning action, taking action and evaluating action (Coghlan and Brannick, 2014). Following is a figure of the stages of PAR (see Figure 1):

Table 1 shows PAR stages in the Madiska program for youth empowerment to prevent smoking behavior, which is called "Remaja Berdaya Sehat Tanpa Rokok" (Empowered Youth Healthy Without Smoking) or the acronym, JayaStar.

Prestep: context and purpose

The PAR cycle takes place in the real-time frame, starting from finding an understanding of the program context, reasons why the program is needed and considered and change the driving force (Coghlan and Brannick, 2014). Before the study, researchers established rapport with the community at the study sites (Smith *et al.*, 2010). The purpose of this stage is to understand the suitability of the context of the program, building trust with the target at the research location, socialization of research objectives on the target, identification of resources and potential possessed by the target, forming a research team.

The activities included an introduction meeting with the village head, hamlet head as well as youth administrators to convey the purpose of the intended activities. The researchers interviewed these people to find the target level of acceptance of the planned activity and identify the available resources. Besides, the researchers also held meetings with health promotion officers of Pleret Community Health Center and Health Promotion Section of the Bantul District Health Office to introduce the program and explore possibilities for collaboration. At this stage, available resources and potential targets for change were identified. In addition to meeting key personnel, the researcher also developed groups to be invited to cooperate in tackling raised issues. Review of the secondary data of hamlet profiles was obtained from Bantul District website, including *PerilakuHidupBersihdan Sehat* (PHBS), or Hygiene and Healthy Behavior, and data obtained from the Pleret Community Health Center. Furthermore, the principal researcher approached youth groups through participation in activities organized by youth, such as religious activities during Ramadan

Table 1.
Participatory action research stages of youth empowerment program to prevent smoking behavior: "Remaja Berdaya Sehat Tanpa Rokok (JayaStar)"

Research stages and time	Objective	Activities/Method
Prestep: context and purpose March–September 2019	• Understand the suitability of the context of the program • Building trust with the target (communities at the research location such as stakeholder, youth group, mothers groups and fathers groups) • Socialization of research objectives on the target • Identification of resources and potential possessed by the target • Forming a research team (coresearchers)	• Introductions and interviews with the Pleret Village Head, Karet Hamlet Head, the representative of the youth organization (Madiska), health promotion officer at the Pleret Health Center, Health Promotion Section of Bantul District Health Office • Participation in every activity held by Madiska • Secondary data review from the Bantul Regency website, Hamlet Karet profile, Pleret Puskesmas data profile • Discussion with coresearcher (wife of Head of Karet Hamlet and Secretary of Madiska) related to the program, the division of roles and responsibilities in the research process
First Round *Diagnosing* The first week of November 2019 First week of December 2019 The first–fourth week of January 2020	• To test the validity of the measuring instrument of empowerment and change the level of individuals and groups in Hamlet Kersan, village Tirtonirmolo, Bantul Yogyakarta, and test validity to three experts in empowerment • To collect data of the youth empowerment determinants: Apperception the meaning of empowerment (goals, forms of activity, indicators of empowerment success, duration of activity) • Describe youth's understanding of youth health problems, and efforts to prevent smoking • Assessment of the domain or indicators of youth empowerment: collective participation, the ability to identify problems, the formation of organizational structures, the ability to relate to others, resource mobilization, leadership, cooperation with outside agents, program management and critical awareness • Pretest: (1) Individual level: attitude towards control, efficacy, knowledge of resources, assertiveness, advocacy, intention to engage, openness in smoking; (2) Group level: there are activities to plan smoking prevention programs, effective activities improve results, there is a level of member satisfaction • To share experiences and motivate youth about the importance of youth organization	• Assessment of youth empowerment indicators and filling out questionnaires by Karang Taruna Plosok (hamlet youth group) of 30 people • Discuss with the youth group about the measurement results and ask for input on the clarity and use of language in the measuring instruments used • Focus group discussions on groups of young boys (6–12 people) • Focus discussion group of young women (6–12 people) • Participants for FGD are Madiska management and members who are willing to sign an informed consent • Focus group discussions are conducted for 90–100 min • Participatory rural appraisal: FGD with EARS measurement tools (30 male and female youth) • Filling in the questionnaire on all members Madiska (Hamlet Karet) and youth in Hamlet Purworejo group • Sharing sessions on the management of the youth organization "Karangtaruna"

(*continued*)

Research stages and time	Objective	Activities/Method
Second Round *Planning action* First week of February 2020	• Describe the results of youths assessment about the domain of empowerment in Karet Hamlet (presentations and discussions) • Determine empowerment goals, strategies, and resources needed, division of responsibilities • Make a list of activities to increase the empowerment domain: training in healthy life skills (outbound and training), initiation of a youth health program without smoking "Remaja Berdaya Sehat Tanpa Rokok (JayaStar)"; Madiska Empowered with the activity of making posters on the impact of smoking on youth life, following youth agreement or initiatives youth for the prevention and control of smoking behaviour	• Presentation and discussion with Madiska group: around 30 people • Discussions with Madiska groups, main researchers as facilitators, secretaries of Madiska and discussion participants were all youth present • Coordination with psychologists for youth activities and training modules • Coordination with youth health care communities in Yogyakarta
Third Round *Taking actions* Fourth week of October–November2020	• Activating youth activities through Implementing youth health program without smoking or "Remaja Berdaya Sehat Tanpa Rokok (JayaStar)"	• Healthy life skills training for youth • Exposure to youth health, the impact of smoking on youth life • Parenting education: The role of parents in realizing a healthy and superior young generation • Vlog or video contest about the impact of smoking on youth's lives • Inauguration of youth volunteers for youth health programs without smoking (JayaStar Volunteers) • Declaration of a youth movement with healthy power without smoking(JayaStar Movement)
Fourth Round *Evaluation actions* December 2020	• Reassessment the empowerment domain • Evaluate individual-level changes, and group level changes (post-tests) related to smoking prevention programs • To get feedback from the Madiska Group regarding activities that have been carried out and follow-up plans	• PRA (Participatory Rural Appraisal) with focus group discussions to reassess the empowerment domain • Posttest with a questionnaire to all members of Madiska (Karet Hamlet) and youth groups in Purworejo Hamlet • Focus group discussions on parents (father and mother groups) • Madiska wrote down their experiences while being involved in the program and made a follow-up plan

Note(s): During the COVID-19 pandemic, starting from March to August 2020, youth empowerment activities stopped according to the direction of the hamlet head, but the communication between the youth community and researcher continued by telephone and WhatsApp. Community activities such as the elderly Integrated Healthcare Center "posyandu" have started in September 2020 by implementing health protocols such as using masks, maintaining distance and washing hands. Thus, youth empowerment activities can also be started from mid-September 2020 while still applying health protocols

Table 1.

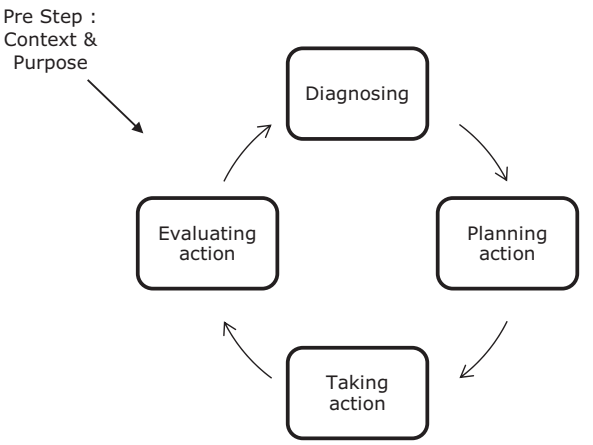

Figure 1.
Stages of action research according to Coghlan and Brannick (2014)

and Eid Mubarak celebration, supporting the development of a children's reading corner initiated by Madiska youth by providing children's books and magazines.

Stage 1. Diagnosing

The diagnosing phase focuses on identifying and defining the problem and collecting data for further investigation (Coghlan and Brannick, 2014; Susman and Evered, 1978). This stage involves conducting dialogue activities with stakeholders in the program to determine the themes of the planned activities to be conducted. The topics discussed concerned general youth problems and explored youth smoking prevention programs. The diagnosis stage includes an articulation of the underlying theory with careful consideration of the community context (Coghlan and Brannick, 2014). What is important in diagnosis is the collaborative interaction between the researcher and the target audience (Smith *et al.*, 2010). At this stage, several research steps were accomplished. First, the validity test of the empowerment indicators was done on the community and experts, and the second-stage focus group discussions were conducted to equalize the perceptions related to the meaning of empowerment and the domain of empowerment through participatory rural appraisal (Holden *et al.*, 2004). Secondly, interviews were conducted to explore youth issues and determinants of youth empowerment such as predisposing youth group structure and group climate, and finally, the pretest about the level of the individuals with the research questionnaire was administered to the intervention and control groups.

Stage 2. Planning action

Planning action involves considering courses of action based on initial diagnosis (Coghlan and Brannick, 2014; Susman and Evered, 1978). At this stage, several meetings were held to share ideas and experiences as well as learn techniques, models and experiences. Participants provided their assessment of each domain, by comparing experiences and opinions (baseline assessment), then recorded the reason for the agreed rank (Laverack, 2007). The objective of planning action is to describe the results of youth's assessment about the domain of empowerment in Karet Hamlet with presentations and discussions; to determine empowerment goals, strategies and resources needed, division of responsibilities; and to make a list of activities to increase the empowerment domain. The activity plan involves training in healthy life skills with the following materials: self-awareness, empathy, interpersonal relationship, effective communication, critical thinking, emotional control,

problem-solving, coping with stress and decision-making skills. This stage also included the initiation of a youth health program called JayaStar with Madiska empowerment activities such as making posters on the impact of smoking on youth life followed by youth agreement making or initiatives by the community youth for the prevention of smoking behavior.

Stage 3. Taking action

Taking action is implemented according to the specified plan (Coghlan and Brannick, 2014; Susman and Evered, 1978). This section describes the taking action of some programs that have been mutually agreed between the participants and the facilitator. The mechanism of youth empowerment programs consisting of enhancing local leadership and management skills. Youth activation programs that have been agreed on include training (indoor) and outbound (outdoor) activities with the theme of boosting the potential of young people by explaining the dangers of smoking to health, parenting activities, initiation of the youth movement into the JayaStar youth group, creating a banner with the JayaStar declaration and the inauguration of health care youth volunteers as official JayaStar representatives.

Stage 4. Evaluating action

Evaluation is assessing the actions and their consequences, documenting and interpreting cycle outcomes to aid improvement (Coghlan and Brannick, 2014; Susman and Evered, 1978). At this stage, evaluation and visual representation are needed at the group level, namely the evaluation of the youth empowerment domain, which aims to find out the extent of the process and implementation of youth empowerment in smoking prevention programs. This is done with the PRA method with the EARS (Empowerment Assessment Rating Scale) measuring tool, and then spider web configuration will be created to reflect the community ties to the PAR project goals. Next, evaluation of the impact of the JayaStar youth empowerment program on individual and group level changes will be done using the research questionnaire. Evaluation of the individual-level changes will assess attitudes toward control, efficacy, knowledge resources, assertiveness, advocacy, intention to engage and openness in smoking after the intervention. Furthermore, evaluation of group-level changes includes the presence or absence of activities for planning smoking prevention programs, effectiveness of activities implemented on the results and whether or not there is an increase in the satisfaction of members of the youth group among themselves. Moreover, the Madiska youth community will ultimately conduct self-reflection and conduct youth meetings to explain the lessons learned while being involved in the JayaStar program and to develop a follow-up plan.

Data analysis

Analysis of the qualitative and quantitative data obtained at the diagnosis and evaluation stages uses mixed methods. Qualitative data analysis involves using three interacting stages, namely data reduction, data presentation and conclusion drawing or verification (Miles and Huberman, 2014). To ensure the trustworthiness and quality of the data, three different techniques are used: (1) prolonged involvement in the community, (2) peer debriefing in research participants and (3) triangulation of resources with the research team (Miles and Huberman, 2014). Moreover, the quantitative data collection using the computer program in the evaluation phase applies the PRA method to compare the pretest and posttest results. Each domain of youth empowerment is measured and displayed visually as part of an evaluation program using the spider web configuration. Figure 2 is an example of a spider web configuration.

Research ethics in the context of PAR research is built on participation with the community in which the research is conducted. This participation assumes that community members consist of the youth community and stakeholders in the setting area who

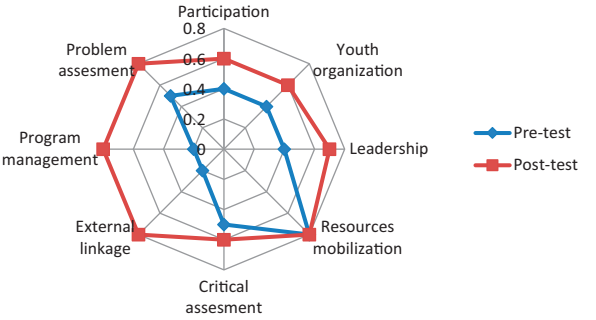

Figure 2.
Example of a *spider web* configuration

understand the research process and actively participate in the research process. All youth participants in this research had permission from their parents and provided informed consent before the study started. This study received approval from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada (KE/FK/1334/EC/2019).

Discussion

This paper describes the stages of JayaStar youth empowerment in smoking behavior prevention programs in a rural area of Indonesia that is called Karet Village. The proportion of smokers aged over ten years is more in rural areas than in urban areas with a percentage of 30.3 and 27.6% (Kementerian Kesehatan Republik Indonesia, 2018). This finding is in line with the results of research by (Rahim *et al.*, 2016), which showed that smoking in rural areas is higher than in urban areas, respectively 36.8 and 31.9%. The study took data from the Global Adult Tobacco Survey among Indonesian adults aged ≥15 years. The strongest predictors of smoking behavior in rural areas were the high tolerance of the community toward smoking in the house and the male gender. Men smoke more than women, which has implications for family economic stability. Besides, tobacco consumption shows addiction, which means smoking is an irrational behavior (Rahim *et al.*, 2016). Furthermore, smoking behavior at a young age is associated with low socioeconomic status, the use and acceptance of cigarettes in siblings and peer groups, the perception that smoking is an acceptable norm and low skills to resist the social influence of smoking (United States Department of Health and Human Services, 2012). This is following the characteristics of rural communities, namely generally living in poverty, having a conservative nature and respecting others (Jamaluddin, 2015).

Community empowerment is a process that involves community components continuously in a strong relationship between differences in individuals and social groups in society (Laverack, 2006). However, in the context of a program, empowerment is a process with individuals, groups and communities that are more organized and broadly shaped based on community action. Empowerment can overcome social, economic and structural conditions that affect public health status (Laverack and Labonte, 2000; Laverack, 2006, 2007).

Research has shown that community empowerment has an impact on improving health outcomes (Laverack and Labonte, 2000; Laverack, 2006, 2007). According to the community psychology research, empowerment is an effort to increase individual competence and self-esteem and increase perceived control, which will have a direct impact on improving outcomes, namely health (Wallerstein, 1992) (Laverack, 2007). Community-based empowerment initiatives that can improve health outcomes focus on broad environmental

change. The direct impact of empowerment is a behavior that can be measured during the intervention period. Community action can promote sustainable changes in the social and organizational environment and is associated with improving health, for example, prevention of alcohol use, tobacco use and accidents (Laverack, 2007).

The process of participation is the basis of empowerment, and it is believed that participation will not occur if the strategy used does not address unresponsive institutional capacity and overcome power imbalances. The empowerment strategy will be effective depending on the number of agency and leadership people involved in the various contexts in which they exist. One aspect that affects the success of the empowerment strategy is if it is done in marginalized communities such as the youth population with risky behavior (smoking) and among those living in poverty since this condition is in line with the characteristics of rural communities (Jamaluddin, 2015). This strategy encourages participation, which can increase autonomy and decision-making ability, a sense of community and social interaction and power from within, which leads to change in people's circumstances (Laverack, 2007).

This study applies the theoretical framework of the stages of community empowerment (Laverack, 2007) and models of youth empowerment in tobacco control (Holden *et al.*, 2004) using the PAR method. The PAR cycle of youth empowerment programs for smoking prevention consists of diagnosing, planning action, taking action and evaluating action. While the stages of community empowerment according to (Laverack, 2007) consist of program design, program objectives, strategies approach, implementation and evaluation of the program outcomes.

The rationale for choosing the PAR method in this study was because it uses a participatory approach to the target (Smith *et al.*, 2010), and this participation is an indicator of empowerment (Holden *et al.*, 2005; Laverack, 2007). Also, there are seven principles of the PAR process that support the success of youth empowerment strategies, namely ongoing self-examination, haring power, giving voice, facilitating awareness-raising, building strength and equipping communities with the skills needed for social change (Smith *et al.*, 2010). Furthermore, PAR bridges the difference between theory and practice, then focuses on problem-solving (Montgomery *et al.*, 2015). The outcomes achieved from the PAR process are dynamic and the novelties created by each PAR team are a cycle between education, reflection, investigation, interpretation and action for a period of months or years (Smith *et al.*, 2010). PAR has been used successfully in many community development projects in developing countries as well as in community-based projects in developed countries. PAR plays a role in various fields such as community development, agricultural expansion, education, health and organizational management (Lennie, 2005). Youth engagement has been recognized as best practice in health education and promotion by the CDC-P (Center for Diseases Control and Prevention, 2010, 2019). For youth empowerment, YPAR is believed to be an effective tool for engaging youth in public health planning and youth-driven transformative community change (Anyon *et al.*, 2018).

The diagnosis phase focuses on identifying and defining the problem under investigation and entails an analysis of the educational needs of the Madiska youth community. At this phase, program design uses a participatory planning approach to the target because it is believed to be more empowering (Laverack and Labonte, 2000; Laverack, 2006, 2007). For example, youth were involved in assessing the empowerment domain and the results of this assessment will be used as the basis for planning the JayaStar program. In the context of empowerment, the program becomes an important vehicle for health promoters to build relationships with communities and stakeholders (Laverack and Labonte, 2000; Laverack, 2007).

Planning action is concerned with the design and development of a pilot training program. The training program will be informed by an analysis of the results from the diagnostic phase. At this stage, program objectives were determined and the selection of planning

strategies to be implemented. Program objectives and empowerment goals are accommodated together in a program (Laverack, 2007) so that the purpose of the empowerment program in this study is to increase the domain of youth empowerment, which consists of participation (Holden *et al.*, 2004; Laverack, 2007), problem assessment capacity, local leadership, structure organization, mobilization of resources, relations with other parties, being critical, program management and relations with outside agents (Laverack, 2007). Training and outbound were chosen by the youth community as a strategic approach because they are intended to create positive action in every empowerment domain that requires improvement (Laverack and Labonte, 2000; Laverack, 2006, 2007).

Stage 3, taking action: at this stage, the mechanism of youth empowerment programs is described to increase the capacity of adolescents in smoking prevention programs. This phase is closely related to the problem identification stage and the expression of the needs of the target population (Laverack, 2007). Factors that influence the process of youth empowerment are predisposing factors for adolescents, group structure and group climate. The empowerment indicator is any increase in the empowerment domains during the intervention (Holden *et al.*, 2004; Laverack, 2007). The relationship between the facilitator and participants and the development of participant's critical awareness are two aspects that are very important in the empowerment process (Mohajer and Earnest, 2009)

The fourth stage of action evaluation is assessing the suitability of action and plan and assessing the impact of youth empowerment programs (Coghlan and Brannick, 2014; Montgomery *et al.*, 2015). The evaluation uses the PRA method, which involves the youth community becoming more active, more visual and acting as a sharing-empowering group (Chambers, 1994). Furthermore, youth empowerment will have an impact on individual and group changes (Holden *et al.*, 2005). The results of youth empowerment at the individual level include youth actively participating in the planning and implementation of smoking prevention activities with the community. In the context of smoking prevention, these changes can occur as a result of youth participation in organizations. Specific characteristics that indicate the outcome of the empowerment process are changes in attitudes and beliefs of adolescents (such as certain efficacy domains, attitudes toward sociopolitical control and participatory competence), specific knowledge such as knowledge about the availability of resources and skills as agents of social change such as assertiveness and advocacy (Holden *et al.*, 2004, 2005). Meanwhile, indicators of group changes include activities that have been made for planning, effective activities in increasing results, retaining and adding members and level of member satisfaction (Holden *et al.*, 2004). Moreover, empowerment impacts on health and well-being with indicators of increasing awareness of risk behaviors and behaviors that improve health (Wilson *et al.*, 2008).

An evaluation to see the relationship between the empowerment process and the outcome also needs to be done (Rothman *et al.*, 2019). The purpose of the evaluation design is not to detect the impact of the program on changes in adolescent smoking behavior, because it is a longer outcome compared to the length of time this study was collected (Holden *et al.*, 2004; Rothman *et al.*, 2019). The model for the "JayaStar" youth empowerment program emphasizes the descriptive analysis of the characteristics of participants, group structure and youth initiation related to tobacco control. The key point to increase youth empowerment is the quality and participation of youth who naturally engage in activities that contribute to empowering individuals. This empowerment process will affect changes in individuals, groups and society and other desired outcomes. Empowerment manifests interactions between individuals and the environment that are culturally and contextually defined. As a result, the manifestation of empowerment will look different in different people, organizations and locations. In some people, the empowerment mechanism can give rise to a sense of control; for some others causing real control, and the result is that the power of practice affects their own lives as well as the lives of the people around them (Holden *et al.*, 2004).

This research is part of a dissertation project. Some papers related to research results will be published in international journals and scientific meetings at an international and a national level. Besides, the results of the activity will be published to local masses both online and off-line to increase public awareness of the importance of the program. The findings will also be disseminated to stakeholders, health centers and local health offices.

Conclusion

The PAR cycle of youth empowerment framework for smoking prevention consists of four stages: diagnosing, planning action, taking action and evaluating action. The rationale for choosing the PAR approach in our study is found in action research characteristics, which include participatory, collaborative and empowering. This approach is suitable for contextualization of problems faced in the process of development and implementation of the JayaStar Youth empowerment in the smoking prevention program. The diagnosis stage consisted of three activities, that is, focus group discussions with groups of male and female, youth assessment of empowerment domains and measuring individual and group involvement levels related to the smoking behavior prevention program. The diagnosis results were applied in the action planning stage, followed by a discussion on youth empowerment plans and strategies. In the action stage, activities and programs are arranged according to discussion and planning, that is, training in healthy life skills (outbound and training) and the "rites of passage" initiation of community youth as members in the JayaStar Program. The evaluating action stage will assess the progress in the empowerment domains in the youth group, then conduct focus group discussions with parents, to evaluate the impact of the empowerment program on individual and group changes and to facilitate self-reflection by the Madiska youth community. This research project is expected to contribute to the literature relating to PAR for rural settings and the use of empowerment strategies to prevent youth smoking behavior.

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Appendix

Figure A1.
Map of Pleret district according to Pleret (2019)

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In search of 21st-century high-quality health education teachers

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Abstract

Purpose – Teachers with subject-area knowledge and certification in their teaching content areas positively contribute to student academic achievement. This study aims to identify the trends in academic majors and subject-area certifications of K-12 US public school staff teaching health education during this century.

Design/methodology/approach – Data were extracted from a comprehensive nationally representative survey of school employees conducted regularly by the National Center for Educational Statistics of the US Department of Education.

Findings – Approximately 60% of the health education teachers indicated they were certified in health education during the study period. Nearly two-thirds of staff teaching health education did not have an academic major in health education. These findings suggest an ongoing trend of granting teachers state certification in health education devoid of any academic major in health education. Other increasing trends include staff with an academic major in physical education and no academic major in health education teaching health classes and certified in physical education teachers who were not certified in health education teaching health classes. Overall, students in the USA were not taught health education by quality or qualified health education teachers as defined by having an academic major and certification in health education.

Originality/value – The findings are a call to action to hire health education teachers who not only have certification in health education but also an academic major in health education, which is imperative to increase healthy behaviors, reduce risk behaviors and increase academic achievement among youth.

Keywords School health, Health education, Quality teachers, Health teachers

Paper type Research paper

Background

Children and adolescents in the USA having low health literacy are estimated to range from 9 to 41%, with lower rates among minority groups (Kutner *et al.*, 2006). Limited health literacy has a profound effect on managing medical conditions, engaging with health-care providers, overall reduced health status and health outcomes and mortality (Baker *et al.*, 1997; Lloyd *et al.*, 2006; Berkman *et al.*, 2011; Easton *et al.*, 2013). In 2019, the US Department of Health and Human Services (USDHHS) instituted the National Action Plan to Improve Health Literacy identifying the significant problem of inadequate health literacy among kindergarten–12th grade (K-12) students (USDHHS, 2010). The role of the health educator is to provide not only health education, but also assess community needs, develop health education programs, teach health condition management and evaluate program effectiveness (Bureau of Labor Statistics, 2020). Health teachers in primary and secondary school, K-12, settings are specifically trained to serve as health educators with common health education topics, including, but not limited to, good hygiene, benefits of healthy lifestyles, safe sex, effects of drugs of alcohol abuse, healthy relationships and mental health (Auld *et al.*, 2020; Lee *et al.*, 2020). Health literacy is related to overall literacy (USDHHS, 2010). Both are affected by social determinants of health such as race and ethnicity, age, socioeconomic status and education (USDHHS, 2010).

Healthier students learn better, which improves academic achievement and educational attainment (Basch, 2011; Centers for disease Control and Prevention (CDC), 2014a). Evidence consistently supports a positive association between educational attainment and adult

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mortality rates (Kaplan *et al.*, 2015; Olshansky *et al.*, 2012; Sasson, 2016). Due to this link between health and education, schools offer a suitable environment to improve educational attainment and overall health simultaneously. Health education provided in US schools, as defined in the Report of the 2011 Joint Committee on Health Education and Promotion Terminology (2012), is any combination of planned learning experiences using evidence-based practices and/or sound theories that provide an opportunity to acquire knowledge, attitude and skills need to adopt and maintain healthy behaviors. The school health educator/teacher is expected to provide youth with the knowledge and skills to empower them to practice healthy behaviors and reduce health risk behaviors, thus improving their academic performance (Banspach *et al.*, 2016; Basch, 2011; Bradley and Greene, 2013).

National policies and guidelines in the USA exist to promote health in schools. The Every Student Succeeds Act (ESSA) and the National Association of State School Boards of Education (NSBA) encourage state boards of education to work with state education agencies and departments of health to set curriculum standards for health education and provide for planned, sequential health education curriculum and instruction (Fobbs, 2015). Further, Healthy People 2020 emphasizes the role of schools in promoting quality of life, healthy development and healthy behaviors, including objectives, Early and Middle Childhood (EMC) and Educational and Community-Based Programs (ECBP), specific to health education in schools (Office of Disease Prevention and Health Promotion (ODPHP), 2020). Common themes of Healthy People objectives include school health education, National Health Education Standards, priority areas of comprehensive school health education and promotion of overall health and wellness (ODPHP, 2020). In addition, the National Association of Chronic Disease Directors (NACDD) (2017) provided a guide to implement the Whole School, Whole Community, Whole Child (WSCC) model in schools. The WSCC model uses a collaborative and integrated approach to address barriers and support related to health and learning (NACDD, 2017).

CDC National Health Education Standards include health education provided by qualified, trained teachers to help students attain the knowledge, attitudes and skills needed to make healthful decisions, achieve health literacy and advocate for the health of others (CDC, 2019). In general, qualified teachers, often synonymous with quality teachers, are both knowledgeable about curriculum content and skilled in implementing subject-specific instructional strategies (CDC, 2020a; Darling-Hammond, 2000; Stronge, 2018). Two widely used standards that describe quality teachers are demonstrated subject-matter competency through passing a subject knowledge test or having a baccalaureate degree or better in the subject or having full-state teacher certification or licensure in the area they are teaching (Darling-Hammond, 2006; Elfers *et al.*, 2004; Ingersoll, 2002; US Department of Education, 2015). Evidence supports the relationship between teachers' subject-area knowledge and certification and student academic achievement (Feng and Sass, 2013; Darling-Hammond *et al.*, 2005; Darling-Hammond, 2000; Andersson *et al.*, 2011; Clotfelter *et al.*, 2007; Wayne and Young, 2003). For example, US Department of Education data were used to demonstrate that one of the strongest correlates of positive student achievement was having a teacher certified in the subject area they were teaching (Darling-Hammond *et al.*, 2005).

Subject-area knowledge, another element of quality or qualified teachers, includes content knowledge as well as specific topic knowledge and classroom management (Stronge, 2018). Teachers' professional knowledge is necessary for effective teaching (Childs and McNicholl, 2007; Wenglinsky, 2002; Yeh and Santagata, 2015). Evidence shows teaching effectiveness required a combination of both content knowledge and the ability to analyze student thinking (Yeh and Santagata, 2015; Hill *et al.*, 2005), teacher academic major and professional development in higher-order thinking skills (Wenglinsky, 2002) and reported level of subject-area knowledge influences pedagogical practice and effectiveness of a lesson (Childs and McNicholl, 2007). Overall, empirical evidence supports that student learning and academic

achievement are positively impacted by teachers who are not only are knowledgeable about how students learn but are also knowledgeable about subject content and principles of content-specific effective instruction.

Finally, the importance of subject-area knowledge and teacher training, certification, licensure or state endorsement in health education are reflected in Healthy People 2020 objectives EMC-4.1 and 4.2 (ODPHP, 2020). As of 2014, EMC 4.1 and 4.2 objectives show a shift from newly hired staff who teach health instruction having an undergraduate or graduate to certification, licensure or state endorsement (ODPHP, 2020). Nationally, in 2016, the School Health Policies and Practices Study (SHPPS) found 78.4% of the school districts reported they had adopted specific staffing policies that newly hired high school health education teachers would be state-certified in health education, and 67.8% of school districts had adopted this policy for newly hired middle-school health education teachers (CDC, 2017). More recently, Healthy People 2030 (ODPHP, 2020) designates school health education as a high-priority public health issue. One goal is to increase the proportion of secondary schools that require students take at least two health education courses between grades 6 and 12. This update continues the recognition and support for the need to have high-quality health teachers to teach health courses designed to increase healthful behaviors and prevent risk behaviors among youth.

In recognition of the effects of low health literacy, the role of the health educator/teacher in schools, subject-area knowledge and teacher certification as characteristics of quality health teachers and the national goals of Healthy People 2020 that call for staff teaching health education to have academic training and certification in health education, this study aimed to evaluate trends beginning early in this century and answer the questions (1) what percent of health education teachers had an academic major in health education teachers per school year? and (2) what percent of health education teachers were certified, licensed or endorsed in health education?

The purpose of this study is to identify trends from 2003 through 2016 in academic majors and subject-area certifications, licensures or endorsements of K-12 public school staff in the USA who were teaching at least one health education class during this century.

Methodology

Data for this study were extracted from four consecutive administrations of the National Teacher and Principal Survey (NTPS) previously titled the Schools and Staffing Survey (SASS), This national survey is conducted regularly by the National Center for Educational Statistics (NCES) of the US Department of Education to provide descriptive data on the context of elementary and secondary education. Some core topics of the NTPS are teacher preparation, classes taught, school characteristics and demographics of the teacher labor force. These data are nationally representative of school employees in the USA (NCES, 2015). Teachers' responses to questions about their education and certification were included in this study. Responses from four survey years (2003–2004, 2007–2008, 2011–2012 and 2015–2016) were compared to determine trends in health education teachers' academic majors and subject-area certifications during this century. The most current 21st-century data available from NCES at the time of this were used.

Participants

Teachers were defined as staff members in US traditional public, non-charter schools who taught students in any of the school grades K-12. Teachers were included in this study on the basis of their teaching at least one health education class. Small variations in the sampling methodology were evident for each administration of the NTPS, but the design was

established to support this type of longitudinal analysis (Cox *et al.*, 2016, 2017). Table 1 describes the final sample details from each survey year include in this study.

Instruments

The 2003–2004 year was chosen as a baseline because it asked respondents about health education as a distinct subject area. Previously, health education was combined with physical education into one category.

The NTPS teacher questionnaires consisted of multiple sections (NCES, 2015). For this study, questions pertaining to education and certification were used. Education was assessed by responses to items that asked teachers to list the major fields of study for their baccalaureate degrees, advanced degrees (master's and doctorate) and educational specialist degrees. Teachers were also asked to self-report their state certifications, licenses and endorsements.

Procedure

As described by Cox *et al.* (2016), the objective of the NTPS survey sampling method was to produce a sample that could be generalized to represent the population of US public school teachers as a whole. Teachers were defined by the NCES as staff members who teach regularly scheduled classes to students in any of grades K-12. Districts selected within the sample provided electronic teacher roosters for inclusion in the sample. Data were collected using paper forms, online surveys and telephone follow-ups to reduce non-response bias. Response rates were generally very high. The NCES undertook post-hoc analysis and applied weighting variables to correct for unit non-response for some NTPS survey strata (Cox *et al.*, 2017). In addition, NCES designed weights and sample methodologies to support trend analysis among NTPS (Cox *et al.*, 2016, 2017). Data were expressed as population estimates, with standard errors and 95% confidence intervals to indicate the confidence in the estimated parameters. As a result, all weighted samples were nationally representative of public-school teachers in the USA.

To identify academic major, a variable was created to classify respondents as "health education degree holders" if they reported attaining a bachelor's, master's, PhD or education specialist degree in health education. To identify health certification, a variable was created to classify respondents as "health certification holders" if they reported they were certified, licensed or endorsed in health.

Data analysis

For this study, descriptive statistics were used to identify the weighted frequencies of teachers' academic majors and subject-area certifications. Tables and discussion in this article used these weighted data for the presentation of frequencies and calculation of percentages along with the upper and lower boundaries of 95% confidence interval, as obtained using the weighted analysis techniques described above.

Sample	School year			
	2003–2004	2007–2008	2011–2012	2015–2016
Public schools sample frame (*N*)	87,760	90,410	90,530	87,600
District sample frame (*N*)	16,040	14,990	14,550	N/A
Schools sampled (*n*)	9,440	8,950	10,250	7,100
Teachers sampled (*n*)	53,190	48,350	51,060	43,700
Weighted response rate (%)	84.8	84.0	77.7	67.9

Table 1. Description of study sample by school year

Results

Trends in academic majors and subject-area certifications, licensures or endorsements of K-12 public-school staff in the USA who were teaching at least one health education class during this century are described below. First, health teachers with health major addresses the question "what percent of health education teachers had an academic major in health education teachers per school year?" Then, health teachers with health certification addresses the question "what percentage of health education teachers were certified, licensed, or endorsed in health education?"

Health teachers with academic health major

The first purpose of this study was to describe the trends in the percentage of health teachers who had an academic major in health education. Subjects included in the sample were full-time equivalent teachers and taught at least one class in health education during the survey period. Three trends were identified (Table 2). First, teachers who held any college degree in health education declined from a high of nearly 39% in 2007–2008 to 32% in 2015–2016. Second, the percentage of health teachers holding no degree in health education but any degree in physical education increased every year during the study period from 30% to over 35%. Third, the remaining teachers of health education who held degrees in areas other than health education or physical education did not change from approximately 28% beginning 2007–2008 through 2015–2016. Overall, data show a trend of fewer health education teachers having an academic major in health education. Conversely, health education teachers with an academic major in physical education and no academic major in health education has increased to such a great degree that by the 2015–2016 school year, more physical education teachers with no academic major in health education were teaching a health class than teachers who did have an academic major in health education.

Health teachers with health certification

Another purpose of this study was to describe trends over the 21st century regarding the percent of staff teaching health education who were certified, licensed or endorsed in health education. Subjects included in the sample include respondents who reported they were certified in their state to teach health education and were teaching at least one health education class, specifically the percentage of K-12. Notably, during the study period, nearly 40% of staff teaching health education reported no state certification in health education, and therefore were teaching out-of-subject (Table 3). This trend increased during the 21st century; whereas, the percentage of health teachers who reported they were not certified in health education certification was approximately 12% in 2003–2004 and increased to nearly 17% in 2015–2016. Over the period of this study, an increasing trend of health teachers who were certified in both health education and physical education was discovered. Notably, staff

Table 2.
Academic major of health education teachers per school year as percent[a] of population

	School year (weighted *n*)			
Academic major (%)	2003–2004 (58,783)	2007–2008 (56,468)	2011–2012 (49,902)	2015–2016 (49,416)
Health education	36.6 (32.5–40.9)	38.8 (32.5–45.6)	33.6 (28.3–39.4)	32.2 (27.3–37.5)
Physical education	29.6 (25.8–33.6)	32.5 (27.2–38.3)	32.7 (27.0–38.8)	35.2 (30.1–40.7)
Other	33.3 (29.5–37.5)	28.0 (23.2–33.4)	28.8 (23.6–34.7)	28.3 (23.7–33.5)
Missing	00.5 (00.3–01.1)	00.7 (00.2–02.4)	04.9 (02.8–08.4)	04.3 (02.7–06.6)
Total	100.0	100.0	100.0	100.0

Note(s): [a]Design adjusted 95% confidence interval for population estimate boundaries (upper, lower)

teaching health education were most likely to be certified in both health education and physical education. The percentage of staff teaching health education who were certified in health and physical education increased from approximately 40% in 2003–2004 to nearly 43% in 2015–2016. A declining trend exists for staff teaching health who were certified in health education, with no additional certification in physical education. As results show, health teachers certified in health education, with no additional certification in physical education, declined from 17% in 2003–2004 to 15% in 2015–2016. In summary, 21st-century data show an increase of health education teachers who have certification in both physical and health education and fewer certified health education teachers who do not also have physical education certification.

Discussion

The results from this study showed a longitudinal trend throughout the 21st century for a decline in the percentage of health teachers who had an academic major in health education at the undergraduate or graduate level as well as the percentage that were certified, licensed or otherwise endorsed to teach health education. This indicates, overall, K-12 health education classes were not staffed with qualified or quality health teachers.

The percentage of health teachers who had an academic major in health education declined from 39% in 2007–2008 to 32% in 2015–2016 (Table 2). The evidence from both 2003–2004 and 2015–2016 indicates an ongoing trend of nearly 64% of staff teaching health education not having an academic health education degree (Table 2). Health education has its own unique national learning standards for K-12 youth (CDC, 2019). There is a substantial body of content, professional knowledge and pedagogy specific to health education that emphasizes the development of health literacy among youth (CDC, 2020b). Lower student achievement occurs when students are taught by teachers with out-of-subject certification (Andersson *et al.*, 2011; Clotfelter *et al.*, 2007; Darling *et al.*, 2005; Feng and Sass, 2013; Wayne and Youngs, 2003). Because of ample empirical evidence that subject-area knowledge positively influences effectiveness of a lesson and student academic achievement in that subject (Childs and McNicholl, 2007; Hill *et al.*, 2005; Stronge, 2018; Wenglinsky, 2002; Yeh and Santagata, 2015), along with persistently low levels of health literacy among youth (DeWalt and Hinks, 2009), the findings suggest most staff teaching health education lack the professional knowledge necessary for effective teaching in health education.

Certified health teachers increased from 56% in 2003–2004 to upward of 60% in 2007–2008, 2011–2012 and 2015–2016 (Table 3). Taken together, these findings suggest a trend of granting teachers state certification in health education devoid of subject-matter competency, as indicated by an academic major in health education (Childs and McNicholl, 2007; Hill *et al.*, 2005; Stronge, 2018; Wenglinsky, 2002; Yeh and Santagata, 2015). Considering low health

Certification (%)	School year (weighted *n*) 2003–2004 (58,783)	2007–2008 (56,468)	2011–2012 (49,902)	2015–2016 (49,416)
Health education	16.8 (13.0–21.3)	19.2 (14.7–24.6)	14.4 (11.3–18.2)	15.3 (12.3–19.0)
Both HE and physical education (PE)	39.5 (34.8–44.3)	40.2 (34.6–46.1)	45.9 (40.6–51.2)	42.9 (38.0–48.0)
PE	11.9 (09.3–15.2)	17.7 (13.3–23.2)	15.5 (10.8–21.6)	16.6 (12.8–21.3)
Other subjects	30.7 (27.1–34.5)	21.9 (17.4–27.0)	23.3 (18.2–28.6)	24.3 (19.9–29.4)
Missing	01.1 (00.7–01.8)	01.0 (00.4–02.5)	00.9 (00.3–02.5)	00.8 (00.3–02.2)
Total	100.0	100.0	100.0	100.0

Note(s): [a]Design adjusted 95% confidence interval for population estimate boundaries (upper, lower)

Table 3. Certification of health education (HE) teachers per school year as percent[a] of population

literacy among the US youth (DeWalt and Hinks, 2009), data suggest that states are certifying teachers who have not acquired a level of subject-matter knowledge associated with effective teaching.

This study identified a decline in health education teachers who had an academic major in health education, along with a steady increase in the percentage of health education teachers who had an academic major in physical education (Table 2). In addition, there was an increase in the percentage of staff teaching health education who were certified in physical education and not certified in health education (Table 3). The SHPPS (CDC, 2014b), reported a similar trend at the school level. The percentage of schools in which health education was taught by physical education teachers or specialists increased from approximately 50 to 65% between 2000 and 2014 (CDC, 2014b). These increasing trends of staffing health education classes with teachers who had an academic major in physical education and not in health education or who were certified in physical education and not in health education are disconcerting. Physical education and health education are two distinctly different disciplines with a substantial body of content, professional knowledge and pedagogy specific to physical education that emphasizes the development of physical literacy or health literacy, respectively (Birch *et al.*, 2019). Health education and physical education have their own unique national learning standards for K-12 youth (Birch *et al.*, 2019). Both the WSCC model and the US 2015 ESSA legislation lists health education and physical education independent of each other, further emphasizing they are separate and distinct subjects (Birch *et al.*, 2019). Overall, the results of this study suggest that school districts in the USA are increasingly hiring staff to teach both health education and physical education, which is, therefore, requiring their teachers to take on an additional responsibility of maintaining professional expertise in two separate and unique academic disciplines.

Most concerning is having health education classes taught by teachers with no health education certification, which is characterized as out-of-subject teaching. As previously described, lower student achievement occurs when students were taught by teachers with out-of-subject certification (Andersson *et al.*, 2011; Clotfelter *et al.*, 2007; Darling *et al.*, 2005; Feng and Sass, 2013; Wayne and Youngs, 2003). Furthermore, teachers with no academic major in health education lack subject-area knowledge of a qualified health teacher. Overall, this study showed an increasing trend during the 21st-century of staffing health education classes with teachers who had an academic major in physical education, rather than health education.

For each survey year, NCES used a cluster sampling design to produce a sample that would support generalization to the entire population of K-12 public-school teachers in the USA. The complex design of the sampling strategy and subsequent assignments of replicate weights allowed for generalization of subsamples of the population. Each survey sample used in this study was a subsample of the larger national frame. However, this study was not without limitations. While generalization was at the national level, there was a higher possibility that design-related bias was introduced into the results. Subjects self-reported the data used to measure postsecondary education and state certification. Data were subjected to a series of computer edits related to consistency of responses and deletion of questions that should have been skipped as per questionnaire directions. These NCES edits were reviewed by external analysts. External analysts for NCES also imputed missing data. Imputed data underwent computer edits to verify inputs were consistent with existing questionnaire data (Cox *et al.*, 2016, 2017).

Conclusions

This study finds, in general, students in the USA during the 21st century were not taught health education by qualified or quality K-12 health education teachers, as defined as those who have an academic major or certification in health education. The low levels of healthy literacy among the US youth reflect this trend, indicating staff teaching health education most likely lacked the

content knowledge, pedagogical knowledge and pedagogical content-specific knowledge required of high-quality health teachers. Professional knowledge and pedagogical skills in health education are necessary to provide students with knowledge, attitudes and skills to adopt and maintain healthful behaviors and reduce risk behaviors. Staffing health classes with out-of-subject teachers is a lost opportunity, as schools are an ideal setting to provide students with opportunities to learn and practice healthy behaviors. Students with fewer risk behaviors experience more academic success and students who are heathier and practice health-enhancing behaviors have greater educational achievement (i.e. grades, standardized tests, graduation rates) (CDC, 2014a). Therefore, to meet the national goals of Healthy People 2020 and Healthy People 2030 to prevent health problems and promote personal health and wellness among youth through comprehensive school health education, it is imperative to hire qualified health education teachers who are either certified in health education or, preferably, have an academic major in health education. The COVID-19 pandemic provides a definitive example of the need for youth to be taught by quality health education teachers so that they may develop foundational public health knowledge and skills of disease prevention.

Recommendations for action

Previously, Kahn *et al.* (2007) provided recommendations for increasing the percentage of staff teaching health to be certified in health education teachers and who had an undergraduate or a graduate major in health education. With their findings from SHPPS data (Kahn *et al.*, 2007), National Committee on the Future of School Health Education recommendations for strengthening school health education (Auld *et al.*, 2020) and findings from this study, the recommendation to increase the percentage of health teachers with a health education major continues to be relevant more than ten years later. This paper found a trend for decreasing and a shift in quality and qualification of K-12 health education teachers, with no improvements in health literacy or academic achievement, thus providing a foundation for the following recommendations:

(1) For principals, administrators and school boards of education:

- Hire qualified health education teachers who have both an academic major in health education and certification in health education.

(2) For state and federal accountability reporting systems (i.e. school report cards):

- Include certifications and academic majors of health education teachers;
- Require an academic major in health education for teacher certification, licensure or endorsement that includes pedagogical knowledge, health content knowledge health pedagogical content knowledge; and
- Establish Healthy People 2030 goals that aim to increase the proportion of schools that require newly hired staff who teach health education to have an undergraduate or a graduate degree (not simply "training") in health education.

(3) For state departments of education and institutions of higher education:

- Establish academic majors in health education to meet the staffing needs of school districts for qualified health education teachers.

(4) For professional organizations (i.e. Society for Public Health Education, American School Health Association):

- Target principals, administrators and school boards of education to increase awareness that health education and physical education are two distinctly

different disciplines with their own K-12 national learning standards, substantial body of content, professional knowledge and pedagogy.

(5) For everyone:

- Promote the message that health education, when taught by qualified health teachers, provides youth with the knowledge and skills to practice healthy behaviors and reduce health risk behaviors, which positively affects students' academic performance.

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Health education teachers' historical bodies: constructing teacher identity and teaching information evaluation

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Abstract

Purpose – This article describes how Finnish health education teachers verbalise and construct their teacher identity based on their lifestyle, subject area and relationships with their students.

Design/methodology/approach – Narrative interviews were conducted amongst eight secondary and upper secondary school teachers. The nexus analysis was used to analyse teachers' methods of teaching students information-seeking, evaluation and critical thinking skills.

Findings – The teachers' historical bodies – their skills, interests, information-seeking habits and familiar sources – impacted the chosen teaching methods. The results indicate that teacher identity is constructed along different paths and is constantly performed and transformed in the classroom through interactions with students.

Originality/value – The study illustrates the reconstruction of teacher identity through interaction in interviews. Teachers act as role models, information gatekeepers and trustees who guide students to choose credible health information sources.

Keywords Critical thinking, Health education, Historical body, Information evaluation, Nexus analysis, Teacher identity

Paper type Research paper

1. Introduction

Contemporary health information is fragmented and multichannelled. The amount of information available exceeds the human capacity to handle it. In 2020, when coronavirus disease 2019 (COVID-19) spread across the world, the Internet was suddenly flooded with information on the disease that was only partially credible and correct. The ability to locate and evaluate contradictory health information critically became more important than ever.

Health education teachers play an essential role in guiding students towards credible information sources on issues related to health and well-being. In Finland, health education is a stand-alone and mandatory subject in secondary school aimed at enhancing students' versatile health literacy, that is, seeking, evaluating, producing and utilising health information (Nygård *et al.*, 2020; Finnish National Board of Education, 2016). Besides

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theoretical and practical health-related knowledge, desirable learning outcomes in health education include health communication, self-efficacy, critical thinking and functional literacy (Ormshaw *et al.*, 2013).

At the secondary level, students' information-seeking and evaluation skills are still developing; thus, they tend to rely heavily on their teachers' guidance (Nygård *et al.*, 2020; Heinström and Sormunen, 2019). Moreover, a teacher serves as a trusted person, or trustee, who directs students towards credible information sources (Nygård *et al.*, 2020; Jessen and Jørgensen, 2012). This position is not self-evident but is socially constructed and influenced by, for instance, a trusting relationship between the teacher and students (Nygård *et al.*, 2020), the teacher's content knowledge and the pedagogy in the classroom interaction (Tschannen-Moran and Hoy, 2000). These personal and professional factors represent a teacher's identity (Beijaardand Meijer, 2017), on which they base their teaching practices and ways of encountering students, that is, how they "fulfil the duties of the position" (Gee, 2000).

This paper focusses on Finnish health education teachers' ways to construct their teacher identity and considers teachers' professional choices, training and experience when teaching health information-seeking and critical evaluation skills to students.

1.1 Teacher identity

Blommaert (2005) defined identity as "who and what you are" (p. 203). However, instead of being stable, identity evolves and alters according to the situation, context and purpose. Teachers' pasts including their former careers, teacher training and life experiences form their way of teaching and how they view it (Ball and Goodson, 1985). Life outside of school also has an impact on teacher's work and thus on their teacher identity (Ball and Goodson, 1985). In particular, the concept of teacher identity refers to the way in which teachers see and consider themselves as teachers (Mockler, 2011). Teacher identity is continually performed and transformed through classroom interaction by teachers' doings and knowledge (Miller, 2009).

Teacher identity research on pre-service (e.g. Beauchamp and Thomas, 2009; Christensson, 2019) and primary teachers (e.g. McDougall, 2010; Palmér, 2016) has been vibrant for some time. Subject teachers' teacher identity has been of interest in several recent studies (e.g. Anspal *et al.*, 2019; Bukor, 2015; Lutovac and Kaasila, 2019). In research on teacher identity, health education has been studied as an adjunct to other subjects, most commonly physical education and social studies (e.g. Byrne *et al.*, 2018; Pang and Soong, 2016; Sirna *et al.*, 2010; Tinning, 2004). This is because, unlike Finland, other countries do not teach health education as an independent, mandatory subject, it is instead taught as a part of physical education or in a combination of subjects (Kannas *et al.*, 2009).

Although health education is a stand-alone subject in Finland, teachers usually teach it as a second teaching subject (Kannas *et al.*, 2009). According to Kannas *et al.* (2009), health education teachers' primary teaching subjects are most often physical education, home economics and biology. This influences the formation of their teacher identity because most teachers have a particular preference for their subject; the field they have primarily chosen to study is their special interest (Sikes, 1985). In England and Ireland, health education is taught as a part of social and personal education (Byrne *et al.*, 2018). Although the subject is compulsory in Ireland, it can only be studied as a minor subject. Thus, teachers' own specialist subject has a greater influence on their professional identity (Mannix McNamara *et al.*, 2012).

In Australia, health and physical education (HPE) teachers traditionally identify themselves as "doers" and physical activity seekers, with less of an emphasis on health (Tinning, 2004). Puchegger (2018) found that for HPE teachers, the body plays an important role in constructing teacher identity. Furthermore, teachers seem to behave differently during health education lessons compared to physical education lessons. In addition, teacher identity

likely depends on teachers' relationships with students and the students' needs; thus, each moment can generate a new performance of identity (Puchegger, 2018).

Teacher identity draws upon subject expertise and pedagogical knowledge, but working environments and interaction maintain the change and the development of teacher identity throughout a teacher's career (Bukor, 2015; Day, 2012; Jourdan *et al.*, 2016). Although teacher identity has been widely studied, in the context of information evaluation, research is still scarce. This area needs to be explored as teachers are no longer just information mediators but serve as information sources and guide to other credible sources (Nygård *et al.*, 2020).

1.2 The aim of the study

The aim of this study is to examine health education teachers' *construction of* teacher identities in relation to teaching *information seeking and* evaluation. The findings of this study will help to broaden our understanding of teachers' roles in guiding students towards credible health information sources *and enhancing their critical thinking skills*. The following research questions are addressed:

RQ1. How do health education teachers construct their teacher identity during an interview?

RQ2. How do the teachers verbalise their role in teaching students to seek and critically evaluate information?

1.3 The theoretical perspective

The theoretical perspective of this study emerges from the nexus analysis and its concept of historical body. The main objective in the nexus analysis is to understand the social action and the significance of different mediational means in that action (Scollon and Scollon, 2004). *At the centre of the social action, the historical body is intertwined with two other significant elements: discourses in place and the interaction order (Scollon and Scollon, 2004). Discourses in place draws attention to aggregates of discourses circulating in material places (Scollon and Scollon, 2004). The interaction order, in turn, means all the social arrangements, by which social relationships are formed in the social action (Scollon and Scollon, 2004).* Mediational means (or cultural tools) refer to language and other semiotic or material communicating means that people use in the social action (Scollon, 2001). Understanding social action involves understanding the tension between the provided mediational means and their actual use (Jones and Norris, 2005; Wertsch, 1994). *Norris (2004) differentiated actions into lower- and higher-level actions, of which lower-level actions pointed at the smallest interactional meaning units, such as, single sayings and sentences. Higher-level actions, in turn, consisted of many chained lower-level actions.* The focus of this study is on higher-level actions, like teaching and learning, rather than on people, discourses or technologies, specifically (see Scollon and Scollon, 2004). Teachers' professional choices in information-seeking and evaluation situations may create tension between their practices and desired learning outcomes, which generate a change in their habitual ways of teaching and, thus, their teacher identity (Räisänen and Korkeamäki, 2015).

In this article, teacher identity is scrutinised as a part of teachers' historical bodies because their background and choices have an effect on their teaching practices. In other words, teachers' historical bodies are constructed of teacher identity, training and experiences in and out of school. Scollon and Scollon (2004) deployed the concept of the historical body from Nishida (1958), who described the historical body as referring to the idea of a person's past, present and future life experiences *reflecting* and contradicting one another. This means that different people act differently in the same situation based on their history of personal experience (Scollon and Scollon, 2004). Scollon and de Saint-Georges (2013) defined the

historical body as the social actor's combined social practices and experiences. Therefore, teachers bring their historical bodies into the social action of the classroom, that is, they bring their own skills, experiences, affordances and constraints (Blommaert and Huang, 2009). The historical body is dynamic and unstable because individuals actively create and develop new social practices within the social action and with the environments in which they operate (Larsen and Raudaskoski, 2020). Nishida (1958) stated that individuals are "in the transitory movement from being a formed individual towards becoming a forming individual" (p. 168).

In educational research, teachers' historical bodies have been studied amongst language student teachers (e.g. Kuure *et al.*, 2016), emphasising the participants' experiences and accumulated practices. Teachers' historical bodies in online environments have also been of interest in several nexus analytic studies on online social practices (e.g. Dooly, 2017). These studies considered teachers' accumulated learner–teacher experiences, life histories and digital technology usage which they bring into the social action. Teachers' historical bodies have also been analysed in the context of literacy learning (Wohlwend, 2009), information literacy (Hirvonen and Palmgren-Neuvonen, 2019), critical thinking (Nygård *et al.*, 2020) and bilingual education (Dressler, 2018). These relevant studies, together with the current study, highlighted the teacher's role and teaching practices in the classroom. Christensson (2019) found that the presence of historical bodies affects the circulating discourses in the social action. Based on these studies, the concept of the historical body enables the co-construction of situational identity within the social action (Norris, 2008): the teacher identity is embedded in and intertwined with the teacher's historical body (Norris, 2011).

2. The research method

Data for this study were collected through interviews with eight secondary school health education teachers in Finland between November 2019 and January 2020. The length of the interviews ranged from 56 to 80 min. Snowball sampling (Goodman, 1961) was used to recruit interviewees: each interviewee was asked to name one or more health education teachers who might be interested in taking part in the study. Recruitment continued in this manner until no further interviews were needed, that is, when data saturation was achieved. In the study, three male and five female teachers participated. The participants' teaching experience and educational backgrounds varied (see Table 1). All teachers had a master's degree, which is a common educational background for Finnish teachers. In addition, one teacher had completed a licentiate degree and one teacher had doctoral studies in progress. Further, two teachers had previous training and work experience in the health sector. All names were pseudonymised.

Only one teacher had health education as her primary teaching subject. She also worked as a student counsellor. The other teachers' primary teaching subjects were physical education, home economics, biology and geography and history and social studies. One teacher was a primary school teacher, but he also taught health education for grades 7 to 9. A total of six teachers had completed health education teacher qualification studies, one was in the midst of completing their studies and one teacher was without qualifications.

To explore teachers' perceptions and views of their teacher identity and to reflect their education, teaching experience and teaching subjects in terms of that professional identity, unstructured, narrative interviews were chosen as the data collection method (Hua, 2016). The theme highlighted in the interviews was teachers' ways of promoting students' critical thinking and information-seeking and evaluation skills from the perspective of the teachers' historical bodies and teacher identities. The interview themes were broadly decided in advance, but the structure was otherwise kept open, allowing each interview to develop individually and situationally (Hua, 2016). *The narrative interviews were conducted avoiding precise "how" or "what" questions, but instead, the participants were asked to tell or reflect*

Teacher	Subjects	Teaching years	Former profession	Further studies
Annie	*Physical education* Health education	16	Primary teacher	Licentiate degree
Julia	*Geography* *Biology* Health education	Six Two (full time)	—	Health education studies in progress
Karen	*Health education* Student counselling	16	Nurse Vocational teacher	—
Laura	*Home economics* Health education	<One	—	German language studies in progress
Lenny	*Geography* *Biology* Health education	Two	—	—
Matthew	*History* *Social studies* Religion Ethics Health education	Five	—	Psychology studies in progress
Nancy	*Geography* *Biology* Health education	19	—	Doctoral studies in progress
Rick	*Primary teacher* Health education	16	Physiotherapist	—

Note(s): Primary teaching subjects are indicated in italic

Table 1.
Teachers' educational background and teaching experience

topics, such as, "tell me about your teacher path". At the same time, the narrative interviews were bounded by the research questions in order to define research interests (Josselson, 2013).

The analytical lens of this study is the *historical body as a key element of the social action (see 1.3) within* the nexus analysis (Scollon and Scollon, 2004). In the analysis, the focus was on the teachers' historical bodies, which were considered to be an entity comprising teacher identity, training and experiences. Moreover, the analysis of the teachers' historical bodies was based on the participants' own narratives, and thus, the main mediational mean was language. Although the nexus analysis considers all situated mediational means (Scollon and de Saint-Georges, 2013), the teachers' teacher identities were primarily explored based on their statements. The connection between what the teachers said (informing) and did (action) and their being (identity) was of interest in this study as it allowed us to understand what they aimed to do and whom they wanted to be by describing their teaching (Gee, 2005).

3. Results

According to the analysis, the teachers described their teacher identity in terms of (1) embodying their profession*: teachers as "doers",* (2) subject content*: teachers as content specialists* and (3) trust*: teachers as relationship builders. In the first two categories, two teachers were placed in each, and in the third category, four teachers.* In the following sections, these different ways of constructing teacher identity are analysed. The way in which these teacher identities are manifested in teachers' ways of teaching information-seeking, information evaluation and critical thinking skills to students is also explored.

3.1 Teachers as "doers"

A total of two teachers*, Annie and Rick,* with very different educational background constructed their identity through their personal interest in physical activities, exercising and

doing. Annie, the physical education teacher, stressed that "My professional identity and outside-of-school identity do not differ strongly. I mean, physical activity and health [have] always been important to me, and it is an extremely significant part of me". Annie considered herself to be a bodily person whose historical body was based on the background of being a ballet dancer and participating in women's voluntary military service. After graduating from high school, becoming a physical and health education teacher was not Annie's priority for professional aspiration; *in fact, she* never thought she would strive for the *teaching* occupation. However, she had no doubts as to the suitability of her career choice. As she said in her interview, "It's strongly me, and now I get to do the job that I am". She viewed that she was the embodiment of her own work; her work expressed her historical body: "I perceive myself totally as . . . a role model of physical, mental, social wellbeing at school. And it is kind of genuine and endogenous".

Rick sought to explain his teacher identity through the trajectories of his former and current occupations. He worked earlier as a trained physiotherapist, but he had had to change professions for health reasons. *He noted in his interview that*

> Nowadays I am more and more a teacher, but of course, I cannot get rid of that physiotherapy either, and I do not want to get rid of it. It has probably contributed to my point of view or my way of thinking.

Rick first studied to be a primary teacher and after some years of working, he continued with his health education teacher qualification studies. He *said that* these studies *were* a kind of a connective factor between *his* former and the current profession *and thus completing the qualification was adequate*.

Rick described himself as a person for whom physical activity played an important role in life. According to Rick, his penchant for sports and exercise influenced his attitudes towards the health education: "Well yes, mainly, of course, because it is my favourite subject this exercising thing, so maybe it could be that I look at it [health education] through those glasses a little more then". Being a physiotherapist was part of Rick's historical body and had helped construct his teacher identity. He named it as one of the cornerstones. However, with age, Rick had come to realise the importance of teachers' educational work and students' well-being at school. He described this transformation of the teacher identity: "In the teacher's job, there is a part, is it an educational side . . . maybe more with age, I have started to notice ways one could bring a good atmosphere to these juniors and meaningfulness for the schoolwork". Rick's case illustrates how, like his historical body, teacher identity is constantly in a state of both conscious and subconscious changes.

Challenges related to teaching information-seeking and evaluation skills were mainly based on the modern media environment, that is, the Internet and social media and the rapidly growing amount of health information. Annie stated that

> All kinds of information bursts from thousands of places. In a way, to learn to question, what is information, like factual information. What is just provocation. What is worth believing. The amount of information concerning health, exercise, standard of beauty, sportiness, wellbeing, especially nowadays, it's a shocking amount of information out there. To learn to know what information we need, what we can utilise.

Annie viewed it was crucial for students to learn how to assess information credibility. Thus, her role as a teacher was to "Introduce information sources to them. I teach them to use the right channels". For Annie, it was obvious that students could not learn information evaluation and critical thinking skills by themselves. It was her duty to question and doubt and to teach students to doubt, to think critically and to ask.

Both health and physical education are subjects in which teachers are "on display" (Annie), meaning the teacher is positioned in front of the students, both figuratively and

literally. In addition, the content taught can be intimate. To enable learning, teachers must present themselves as trustworthy and approachable people. Thus, students know that "In this class, when the door closes, you are allowed to ask" (Annie). According to Annie, teachers' substance knowledge was important, but the most essential tool was their own personality.

Annie and Rick constructed their teacher identity through a combination of activity, healthy lifestyles and doing. This functional approach was also seen in their ways of teaching critical thinking and information evaluation. Rick emphasised varied teaching styles and learning methods, including group works, learning games and videos and learning by doing. So far, the selection of health information had been teacher led and Rick emphasised common sense being important: "There are all sorts of trends in these health issues, and maybe it's not quite worth going for any new recommendations in full . . . so, realism in health-related issues and how they are handled". However, he had noticed that teachers' role in teaching information seeking and evaluation was changing:

> The present trend is that kids should increasingly discover it [information] themselves, but, of course, it is significant if someone directs towards information, tries to divide that information into comprehensible pieces . . . And if even the great and mighty teacher does not know everything, you know where to find that additional, relevant information. And when seeking information, critically evaluate whether that information is smart or not.

Rick accentuated the significance of relevant, rational information and common sense, which support choices in everyday life.

3.2 Teachers as content specialists

A total of two teachers, *Nancy and Lenny,* clearly constructed their teacher identity based on the subjects they taught. However, in the interviews, it was difficult to distinguish a person's teacher identity from their overall identity. Nancy pondered her teacher identity: "I do not know if I've actually thought about it. It is part of my identity, professional identity is part of a person's identity, yes, my identity is that of a teacher". Nancy had been working as a subject teacher at the secondary and upper secondary levels for almost 20 years and as a qualified health education teacher for 10 years. Geography was her first choice, but she later gravitated towards health education for practical reasons: "At that time, it was probably because I did not have a permanent post, so it gave an additional opportunity to apply for jobs". According to Nancy, being a qualified health education teacher alongside biology and geography is an advantage in a job search.

As a doctoral researcher, Nancy had a strong scientific interest in her teaching subjects and teaching. She enjoyed teaching health education as a part of a three-subject triangle – biology, geography and health education – because it enabled *her to carry out teaching as* phenomenon-based learning. That was possible because she taught the same student groups in all three subjects could, therefore, tailor her lessons around the same phenomenon theme but from various perspectives. For Nancy, her own teaching subjects gave her work meaning. She pointed out that

> Well, in a way . . . that I have the privilege of doing this work, I never have to think whether my job has significance. Indeed, I draw from geography, biology, and health education the relevance of the work from the contents of what I teach.

Lenny also constructed his teacher identity based on his teaching subjects. He said in his interview that "Maybe my identity comes more, however, from the point of view of biology and geography . . . in a way, that health education feels kind of being a bit detached". His interest in the natural sciences and nature-related hobbies, such as fishing and hunting, was the initial reason he studied geography as a main subject. He graduated as a teacher three

years ago, and since then, he had been teaching geography, biology and health education for which he is qualified. He explained his choice of subjects by saying, "Perhaps it was my first idea to study biology, geography, and my focus was in these disciplines. But when I thought about the school world . . . health education nowadays kind of belongs closely to the biology-geography teacher's package".

Like Nancy, Lenny obtained his qualification in health education for practical reasons, considering future work assignments. However, Lenny had also reflected on other reasons to study health education:

> When thinking about human biology, what is taught and then health education, it is important to understand both sides . . . yes, they are so tightly interrelated that I thought it begins to be self-evident to study health education in support of this.

The contents of biology and health education overlap, which enables a broader, phenomenon-based perspective of the different themes. Both teachers noticed this advantage and sought to utilise it in their teaching.

The teachers highlighted the significance of seeking and evaluating the credibility of health information as learning goals of health education. Nancy noted that health information is increasingly sought on the Internet:

> Google searches related to health and illness are the most common [searches] of all . . . so, critical media literacy is absolutely essential. And then, the students are keen on being specifically guided towards credible information sources . . . and in everyday life making sensible choices to promote their own and community's health.

According to Nancy, students relied on her abilities to guide them towards credible information sources and expected her to do so. Explaining her method of conveying scientific knowledge, Nancy said that "The absolute truth is probably not even found on many topics. Then you just have to point out that this is the current scientific understanding [of] the subject".

Secondary school students need their teacher's help to learn how to evaluate information because

> Students in the upper secondary school have clearly better transferable skills. Secondary school students have more of that the first Google hit is the one from which the text is copied and pasted . . . this happens a lot more with secondary school students.

Nancy viewed teachers as able to make an impact and teach information-seeking and evaluating skills to the young people because their skills in this area had proved to be deficient. In grade 7, students' ability to seek and evaluate credible health information was still undeveloped but by the end of secondary school, most of them had advanced in these areas.

Lenny based his teacher identity on the subject content and knowledge. This was evident in his views on teaching information seeking and evaluation. He named the most important learning goal in health education as being "Precisely this critical thinking . . . because today, it is needed more and more. The power of social media is growing unrestrainedly all the time, everyone goes to social media, everything is on the net, so yes, it is needed". His professional role model was his former teacher, who *gained a position of* authority through his knowledge. *Lenny's* aim was the same, that is, gaining the authority role by knowing and especially through being a trustee. He said that

> The teacher is, if necessary, the databank, but on the other hand, I have tried to think and get rid of it in the sense that if the teacher is always that databank, who always gives the answer, so then as if to guide the students to seek information and discuss, where to look for that information. That is, without giving all then ready.

In Lenny's case, students easily resorted to posing questions to the teacher, especially if they were then provided with the correct answers without their own effort. Lenny had noticed that students appreciated his special knowledge, for instance, the scientific names of animals, which encourage students to ask him questions and, in addition, trust him as a teacher because "the information has been accurate".

3.3 Teachers as relationship builders

Amongst the participants, most common teacher identities were grounded in interpersonal relationships in the classroom. *Karen, Laura, Julia and Matthew saw that their teacher identities were primarily built through everyday interaction.* Teachers with a longer work history were able to verbalise their teacher identity more fluently. Karen had worked as a nurse for a long time before studying to become a qualified vocational teacher. She taught nursing and, at the same time, studied health sciences at the university. When health education became a mandatory subject in 2004, she was asked to teach it at her current school. Later she completed the health education teacher qualification alongside the job. Her historical body was based on her extensive educational background and work experience setting the tone for her teacher identity, which had formed

> In a bit of searching, or I have had to take an effort for it . . . I think it builds gradually; it does not change in an instant . . . I remember during my first years, my nurse identity was pretty dominant, and I strove to nurse students back then also.

Karen's professional identity had gradually transformed from a nurse identity to a teacher identity in which "The educational side, especially now in recent years, it feels like this educational grasp, because students have a huge need for adult presence. In other words, being an adult to them". Despite her strong content knowledge, she valued her role as a safe and responsible adult for the students.

In contrast, Laura had a shorter work history as a teacher. She had graduated as a home economics teacher a year before the present study was conducted, and she had also completed her health education teacher qualification during these studies. As a recent graduate teacher, she had given much thought to her teacher identity and had approached it through her strengths and weaknesses: "I feel that I have strengths as a teacher, and, in a way, it supports the growth of my teacher identity". At the same time, she felt uncertain about her resilience because a teacher's work can occasionally become onerous. Also, students' life situations and difficulties made her ponder:

> Students have a variety of problems, often due to their family background, and it feels bad to be a bystander. When you see that in a way, they are going in the wrong direction and you have really limited possibilities to help when you see them one hour once a week. Somehow the fact that how to cope when so many students are doing badly.

As an empathetic and kind person, Laura would have liked to be able to help more than she was actually able to. This not only aroused powerlessness and perplexity in her but also a sense of the importance of her work. Laura's teacher identity had not yet been established, but she was beginning to construct it.

Julia graduated six years ago and had worked as a substitute teacher ever since, of which for two years as a full-time subject teacher. Her main teaching subjects were geography and biology, and she was completing her health education teacher qualification studies at the time of this study. The decision to complete this qualification was based on the opportunity to teach health education at her current school. Of teacher identity, she viewed that

> It probably evolves during the career . . . yes, it will emerge gradually. And without it you cannot cope. Somehow, I think everyone has a teacher identity of their own kind. It will emerge, it develops over the years, but it exists already from the beginning.

Julia perceived that the construction of a teacher identity starts at the very beginning and continues throughout a teacher's career. At the time of her interview, Julia had been working as a teacher for several years and was, therefore, able to analyse her teacher identity. She emphasised "Being a role model . . . really in everything, whatever we talk and whatever subject. If we talk about health education, lifestyles and on the other hand, behaviour and emotional skills and consideration for others and so forth". Julia viewed her teacher identity as being intertwined with a teacher's position as a role model for students. She stressed that, in the working environment, she is above all a teacher, even when she is tired: "As soon as you step into the workplace or that area there, that teacher identity and role come on and you greet and so on". For her, teacher identity was based on constructing relationships with her students and could be maintained through interaction.

Matthew differed from the other interviewees, in that he was not a qualified health education teacher and at the time of the interview, he had no intention of completing the qualification. This was because he was a history and social studies teacher and if he were to apply for permanent posts, health education would not fall within a history teacher's package. Matthew graduated five years ago and had since taught history, social studies, religion, ethics and health education at the secondary and upper secondary levels. In addition, he had worked as a supervising teacher for student teachers. Because he was involved in constructing their teacher identities, he viewed *that he already had to have a pretty solid teacher identity*. Matthew explained his teacher identity:

> I have noticed that this [teaching] works well for me, and basically, it's kind of interpersonal work and encountering people. I feel that it is natural for me. Maybe the content knowledge is not my number one concern here, or why I am a teacher. But it just focuses on human encounter.

For him, teaching was primarily about working with people. His teacher identity was constructed through interaction, not based on teaching subjects.

Matthew emphasised secondary school teachers' opportunities to teach students how to approach information sources in all subjects critically. He stated that "We can teach it a lot, just this sort of source criticism and media literacy comes forth more or less in all subjects. At least in my teaching". In his main subjects, history and social studies, he had taught source criticism but had not yet taught it in health education. The interview brought forth tension in this matter, and thus, Matthew stated that he intended to change his actions in this regard in the future: "In health education, I have not paid so much attention to it, partly because lack of time, but maybe inspired by this [interview] then even more. I could discuss it".

Although Karen had a strong working experience both in nursing and teaching, she found assessing the credibility of contemporary health information to be difficult and confusing. She said in the interview that she sometimes could not tell what to think about health recommendations concerning cholesterol, for instance. It can be challenging to determine what to believe and whom to trust in these recommendations. Karen had taught her students how to ponder the information credibility by advising them that "Manifold information is available; you just have to somehow find the correct one. So, I have no answers to that what is exactly the right information either".

In her teaching, Karen emphasised the significance of joint discussions and viewed that effective teaching methods were "Just exploring different kinds of sources and guiding to use them and discussing those sources". Karen's teacher identity was built and maintained through classroom interaction. Thus, it was natural for her to evaluate credible sources as part of the learning community. However, the restrictions of the school schedule affected the

content of the lessons. Karen said, "I wish that we had more time for discussions, which are occasionally left out, especially, because one lesson is only 45 min".

Julia also wished she had more time or at least double lessons instead of having "45 min once a week, it's terribly inadequate in order to discuss all these questions". She said that this presented a challenge in teaching health education because she would like to be able to teach more thoroughly, using varied teaching methods and focus on the use of credible information: "all blogs and more, I did not grasp to take them as an example of how important [it] is to know who is behind the stories. Many may even consider themselves as experts, after reading on the net sufficiently information". Julia pointed out that information environments had changed over the past few years, so health authorities and informal Internet sources were now considered to be on the same footing when selecting information. This change meant that teachers now played an even more important role in helping students to develop the skills to seek and assess information credibility.

> It plays an important role, because if you do not have these skills, you are not critical enough and cannot seek information. You might just take as a fact the first webpage or anything that comes up in social media without realising that many issues have many sides. And just these experts by experience and others then. It [skills to evaluate information] really plays an important role. And then to learn to seek information from credible sources.

During her first five months of teaching, Laura had noticed that secondary school students had weak information-seeking and evaluation skills. However, she viewed that this was mainly due to the huge amount of information available. *In her opinion, the students did not care to focus on seeking credible information but rather took the first title without comparing different information sources.* Laura found that teachers acted as gatekeepers, because "The teacher selects what to go through there . . . from where we study those things and then what is used as additional material for it". This role is further emphasised when learning material other than a health education textbook is used because teachers determine all the information that the lesson offers. In addition, teachers filter and limit the information and also guide students towards credible information sources. Laura noted that when they jointly discussed health related advertisements on the lessons,

> Lack of critical thinking is clearly quite prevalent among students . . . they may not realise that these are mere advertising slogans, intended to evoke the need to some product . . . [it] requires practice and repetition, systemically process different kinds of texts.

Laura believed students developed competencies through joint discussions and reflection, as well as with the teacher's guidance.

4. Discussion

This study focussed on teachers' professional identities in relation to teaching information-seeking and critical evaluation skills. In the interviews, the teachers were given an opportunity to reflect on their teacher identity and narrate it to the researcher as they viewed it at the time. The analysis indicated that the teacher identities were constructed along different paths, but their goal was the same: interact with their students as a trusted adult. The teachers viewed that trust did not arise by itself but through doing, knowing and being in the interaction with students. The relationships between students and teachers played an important role in this trust process and teachers' strong content knowledge laid the foundation for a trustworthy relationship (Nygård *et al.*, 2020; Tschannen-Moran and Hoy, 2000). According to Beijaard and Meijer (2017), these interacting personal and professional factors have an impact on teacher identities and teachers' ways of teaching information evaluation and critical thinking, for instance.

Annie and Rick, whom we defined as active "doers" and bodily oriented, emphasised common sense and the practical side of information-seeking skills. They brought up the fact that students are not able to attain these skills – information seeking, credibility evaluation and critical thinking – by themselves, but they need to be taught. Besides teaching all the skills, teachers act as role models and, through their actions, show how to question, doubt and choose health information. The teachers noted that attention should be paid to seeking and evaluating credible information in each task, which, however, has not always been the case. Although the current curriculum (Finnish National Board of Education, 2016) increases students' responsibility to self-direct in information-seeking and evaluation situations, the teachers are still significant information sources and the ones who guide students towards credible information sources (Nygård *et al.*, 2020). Similar to our previous research, teachers' credibility as trustees depended on their relationships with their students and more importantly, awareness of the trustful interaction during health education lessons (Jessen and Jørgensen, 2012).

Nancy and Lenny, who considered content knowledge to be a key factor in the construction of teacher identity, highlighted their position as trustees and informational authorities (Nygård *et al.*, 2020). The trustee position was, above all, based on information. A trusting relationship was the result of repeatedly given correct information. The teachers noticed that secondary school students, in particular, needed their teacher's support in seeking and evaluating health information. Thus, they specifically relied on the teacher's guidance and advice. The teachers themselves leaned on scientific knowledge and wanted to teach this same attitude towards information to their students. Their teacher identity was based on subject expertise and pedagogical knowledge and was constantly performed and transformed in the classroom through interaction with students (Bukor, 2015; Day, 2012; Jourdan *et al.*, 2016; Miller, 2009).

Teachers Matthew, Karen, Julia and Laura constructed their teacher identity through interactions with their students. As teachers, they found genuine encounters with students and filling their students' needs to be important (Puchegger, 2018). Some of the teachers admitted that information seeking today is a challenging task for the teacher as well as the students. Health recommendations may confuse even health professionals and teachers do not always have the correct answers. The teachers expressed that an important means of evaluating information was joint classroom discussions, which the teacher was able to take part in equally. Collaborative meaning-making and knowledge construction were also highlighted as an important teaching method in assessing the credibility of health information, despite insufficient time resources. Teachers' roles were seen diverse, serving as a knowledge co-constructor, a gatekeeper and a trustee at the same time. This finding coincides with that of our earlier study, which found that teachers are informational authorities (Nygård *et al.*, 2020). The teacher's role was significant because the lack of source criticality led the students to resort to the teacher for guidance (Heinström and Sormunen, 2019).

According to the results, teachers' ways of teaching information-seeking, evaluation and critical thinking skills and how important they considered teaching those skills to be in health education, were based on the teachers' historical bodies. The historical body combines an individual's social practices and life experiences (Scollon and de Saint-Georges, 2013), which feeds teacher's professional perception of themselves, that is, their teacher identity (Blommaert, 2005; Mockler, 2011). Therefore, a teacher's skills and interests, information-seeking habits and familiar sources affect how they teach and guide students (see Hirvonen and Palmgren-Neuvonen, 2019; Blommaert and Huang, 2009; Dressler, 2018). It can even be said that teachers are not necessarily aware of incorrect, even dangerous, health information if they do not actively seek it.

The results of the study were based on only one round of interviews; hence, it would have been advisable to monitor changes in teacher identities with follow-up interviews. *However, teacher identity was scrutinised through the concept of historical body, which could be considered as a repository of past, present and future experiences. Thus, each historically loaded social action could be seen as a socially and culturally mediated moment (Blommaert and Huang, 2009).*

5. Conclusions

The study discussed how teacher identity is formed through teacher training and work experience, as well as through interaction and verbalisation of the phenomenon. The interviews prompted the teachers to reflect on their ways of teaching information-seeking, evaluation and critical thinking skills, causing tension between their accustomed practices and desirable learning outcomes. Thus, the interviews served not just as a repetition of reality but as a reconstruction of it in terms of teacher identity. This finding suggests that a research approach can be utilised to produce and develop identity.

Health information environments today are complex and erratic. Therefore, new kinds of literacy skills – *such as information seeking and evaluation as part of* multiliteracy – are needed. Schools and teachers must respond to the prevailing situation and be prepared to adjust their accustomed practices as the situation changes. Teachers have an important role to play in teaching information credibility assessment because parents' competences in this matter are of very different levels.

This study highlights the need to reconsider ways of learning and teaching information-seeking and evaluation skills in health education. *Health education is in a challenging position because most of the teachers teach it as their second teaching subject. The central question is how to motivate teachers to enhance their skills as a health education teacher, when their primary interests are perhaps the first chosen teaching subjects. The findings of this study on teacher's historical body as one of the cornerstones of teacher identity can help teachers reflect their identity in teaching health education in particular. Collegial collaboration amongst teachers could contribute to this reflection and even increase the perceived value of the subject.* New research on a virtual teacher network is currently underway; in this virtual network, *health education* teachers will have the opportunity to develop their skills in a peer group. The purpose is that teachers with their varied historical bodies will be allowed to join in collaborative brainstorming and knowledge construction in order to develop ways of teaching information seeking and critical evaluation.

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Diabetes self-management: what role does the family play?

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Abstract

Purpose – This paper aims to explicate one of the major findings of a research study seeking to understand how Indonesian people with diabetes learn about their disease. The one key finding discussed in this paper is how families influence the learning and self-management processes adopted by Indonesian people with diabetes.

Design/methodology/approach – A grounded theory methodology was adopted to investigate how Indonesian people with diabetes learn about their disease. Twenty-eight semi-structured interviews were undertaken with Indonesian people living with diabetes, families of people living with diabetes, healthcare professionals and other healthcare providers. Data was analysed by using constant comparative analysis during three coding stages.

Findings – The study explicated the basic social process of how people with diabetes in Indonesia learn about their disease through a generated theory "Learning, choosing, and acting: self-management of diabetes in Indonesia". This study found family engagement was integral to Indonesian people living with diabetes who were self-managing their disease. Families assisted with seeking information, providing recommendations, selecting and implementing actions, appraising implemented actions, and informing others about their experiences. By acknowledging that family is involved in this process, the healthcare professional can adequately provide health education to both the person with diabetes and their families. Involving families in health education is crucial as family can influence decision making made by people with diabetes in a proper or improper way. Thus, clinicians need to also skilfully recognise difficulties these people encounter by monitoring their self-management progress and by working closely with them and their family members.

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Originality/value – This is the first study conducted in Indonesia that specifically investigates the process of how people with diabetes learn about their disease. The involvement of families in this process is a central finding of the study. Families can enhance the overall health and well-being of the person with diabetes, aid in early recognition of aberration to health status and trigger the initiation of interventions to re-establish homeostasis if they are actively engaged and supported by health professionals.

Keywords Diabetes, Family, Health education, Learning, Qualitative research methodology

Paper type Research paper

Introduction

Diabetes mellitus is a chronic disease and becomes a burden as soon as the person is diagnosed. Once diagnosed, people with diabetes are more likely to find information related to diabetes from those around them including their families, who often help them make positive self-care management decisions (Low *et al.*, 2016). People can be influenced by media reports about health conditions (Calnan, 1992). This may or may not be beneficial advice depending on the source. Often people make health decisions based on their own experiences and knowledge and seek information from countless sources, which in turn shapes their own health practices (Blaxter, 1990; Lupton, 2005). Our study found that friends and family members can be sources of trusted information. People depend on their own judgment to decide whether the information they receive is reliable or not and then make decisions regarding health behaviours (Ligita *et al.*, 2019a).

Engaging or involving families in diabetes care can help people with diabetes to promote effective diabetes self-care management (Oftedal, 2014; Baig *et al.*, 2015; Keogh *et al.*, 2011), to improve knowledge about diabetes (Baig *et al.*, 2015), to promote sustainable positive behavioural change (Hu *et al.*, 2014) and to improve clinical outcomes (Keogh *et al.*, 2011). The involvement of family can provide both emotional and psychological support for the person living with diabetes (Hu *et al.*, 2014), so that they can recognise their condition and consequently promote positive self-management practices. The implementation of adequate diabetes management is found to be associated with family support; therefore, in developing diabetes interventions, family members need to be included in the education program (Shawon *et al.*, 2016).

A grounded theory study was undertaken to generate a theory about the process of how people situated in an Indonesian context learn about their diabetes. Basic social process (BSP) is a term used in a grounded theory study to show that the researcher has generated a process containing developed categories and subcategories and the relationships of these categories and sub-categories (Birks and Mills, 2015). BSP refers to "...fundamental, patterned processes in the organization of social behavio[u]rs which occur over time and go on irrespective of the conditional variation of place" (Glaser and Holton, 2005). The basic social process of this study was: *Learning, choosing, and acting: self-management of diabetes in Indonesia* (Ligita *et al.*, 2019a). Through this basic social process, people with diabetes learn about their disease during five categories of the process. The detailed methodology and the overall findings from this study are published elsewhere (Ligita *et al.*, 2019a). This paper focuses explicitly on how families are engaged in each of the five categories of the theory.

Despite the beneficial impacts of family engagement, support from families can be either helpful or harmful (Mayberry and Osborn, 2014) or be encouraging/discouraging, particularly, the family's involvement associated with managing blood glucose levels. Family actions that help people with diabetes adhere to diabetes regimes is an example of a positive impact (Mayberry *et al.*, 2016). The actions of supportive behaviours include: eating and exercising together; positively reinforcing a healthy diet; encouraging physical activities; taking medications on time; and planning activities and assisting in decision making (Mayberry and Osborn, 2014; Mayberry *et al.*, 2014). People with diabetes perceive their family as helpful, because they increase their confidence in self-care behaviours and encourage their adherence in managing well (Yang *et al.*, 2016).

On the other hand, there are also negative outcomes associated with family involvement. People with diabetes occasionally receive discouraging support that is labelled as non-constructive support (Oftedal, 2014) and as obstructive support (Mayberry and Osborn, 2014). When families are involved, and they provide discouraging or obstructive support, people with diabetes are more likely to decrease their adherence to self-care management, which manifests as unstable blood glucose levels (Mayberry and Osborn, 2014). Obstructive supports include criticisms (such as criticizing their loved one with diabetes for not engaging in physical activity, or for eating an unhealthy diet); nagging their loved one about diet and blood glucose records; arguing with them about their non-adherence and allowing their loved one to skip their medications (Mayberry and Osborn, 2014; Mayberry *et al.*, 2014).

The family is central to the Indonesian way of life (Effendy *et al.*, 2015a, 2015b). Family members often live with each other or in very close proximity to one another. Regardless of the type of family unit, nuclear or extended, when a member of the family is ill, it impacts the whole family (Scarton *et al.*, 2014). One study showed how important the family was to the unwell family member's wellbeing, as they provided support, motivation and understanding to the person (Maulana *et al.*, 2018). There is an expectation that the "family" will support and care for each other, especially for family members who experience personal challenges or illness (Moffatt, 2012; Rochmawati *et al.*, 2016). Three studies conducted in Indonesia (Putra *et al.*, 2016; Mizutani *et al.*, 2017; Aklima *et al.*, 2013) found that support from the family can be a source of self-efficacy for Indonesian people with diabetes to enhance their healthy eating lifestyle. However, a dearth of information is currently available about the involvement of family when people with diabetes in Indonesia are learning about their disease and how to manage their diabetes. People with diabetes in Indonesia received care from various healthcare professionals (HCPs) including nurses, physicians, dieticians, pharmacists and diabetes educators (Ligita *et al.*, 2018). The authors emphasise that there is a need to strengthen collaborative working relationships between HCPs to enhance comprehensive diabetes management planning that traverses pharmacological and non-pharmacological therapies. By considering how family are regarded by Indonesian people with diabetes (Aklima *et al.*, 2013; Mizutani *et al.*, 2017), diabetes education and management planning can be enhanced.

Methods

Design

Grounded theory methodology was used to undertake this study in West Kalimantan, Indonesia between April 2016 and July 2017. There was a total of three phases of data collection. Seven participants were interviewed in phase one, 17 participants in phase two and four participants in phase three. In phase three, two participants who had been interviewed in either phase one or phase two, were interviewed a second time for a second purpose which was to validate the developed storyline. This process is referred to as storyline validation or member checking (Corbin and Strauss, 2008). Therefore, 26 participants were involved in the study, but 28 interviews were conducted. Initially, participants were purposively selected to be interviewed. The inclusion criteria were employed to select these initial participants. Seven participants were included in phase one: a person with diabetes, a nurse academic, a dietician, a nurse clinician, a pharmacist, a nurse in a public health centre and a specialist doctor. For HCPs, the criteria included having experience in providing diabetes care, working in either an inpatient or outpatient care setting and having direct interactions with people living with diabetes in practice. Lastly, a nurse academic who teaches students about health education and the subject of diabetes mellitus, as well as having experiences in supervising students as they are providing health education during clinical placement, was included. Inclusion criteria for the person with diabetes are those who have been diagnosed with pre-diabetes, type 1 or type 2 diabetes. The selection of these participants was aided by an

earlier scoping review that was conducted, identifying which HCPs provided diabetes care to people in Indonesia (Ligita *et al.*, 2018).

Further participants were later selected through theoretical sampling, which is unique to grounded theory, and interviewed during two further phases of the study. Theoretical sampling occurs when the researchers constantly compare and analyse the data for the purpose of searching for further options of where or who to collect data from (Charmaz, 2014). This process was facilitated by analytical tools such as memo writing, field notes, storyline as well as concept mapping; tools commonly used when undertaking grounded theory (Birks and Mills, 2015). This grounded theory study was informed by two philosophical positions: symbolic interactionism and constructivism. Symbolic interactionism helped in understanding people's behaviours and actions (Blumer, 1969) and constructivism aided in understanding how participants acquired their knowledge and learnt about their diabetes (Charmaz, 2006).

The theory generated from this study was the result of data generated and analysed from 28 in-depth interviews, field notes, memos, concept mapping and the constant comparative analysis process. The theory entitled *Learning, choosing, and acting: Self-management of diabetes in Indonesia,* was developed from five major categories: seeking and receiving diabetes-related information; processing received information; responding to recommendations; appraising the results; and sharing with others. Family involvement was seen throughout all five major categories.

Participants

Participants included HCPs that provide diabetes care such as nurses, physicians, dieticians, and a pharmacist; other health service providers including a "kader" (a lay health worker in Indonesia), a hospital health promotion officer, and an exercise instructor; families of people with diabetes and a nursing student. Family perspectives were directly represented by interviewing a family member on their own, by interviewing a family member together with the person with diabetes, or by having the family member present at the interview, but not contributing to the conversation. Family member perspectives were also indirectly represented when the person with diabetes spoke about their own family member's involvement. The topic of family also emerged frequently when interviewing HCPs and providers.

These participants were recruited initially by purposeful sampling and later by theoretical sampling from seven settings including an academic institution and both private and public healthcare facilities. This process involved an ethics amendment to the Human Research Ethics Committee. Please refer to Tables 1–3 for information about participants' details (As modified from Ligita, 2019). The decision to interview family members came about after analysis of the initial seven interviews, where the family's role was becoming evident.

To ensure local culture was respected, a number of the interviews were conducted with a family member accompanying the person with diabetes. Having others present while being interviewed may have limitations in that the perspective of the person with diabetes may not

Table 1.
Participants' details from phase 1

Pseudonyms	Gender	Profile
Aditya	Male	Young adult nurse who works as an academics and in a wound care clinic
Betty	Female	Older adult with type 2 diabetes for 13 years
Cahyo	Male	Young adult pharmacist working at a hospital
Danur	Male	Middle-aged adult nurse working at wound care outpatient clinic in a hospital
Elita	Female	Middle-aged adult dietician working in a hospital
Flora	Female	Middle-aged adult nurse working at a public health centre
Galih	Male	Middle-aged adult specialist doctor working at a hospital

Note(s): Young adult: 18–39 years old; Middle-aged adult: 40–60 years old; Older adult: more than 60 years old

Pseudonyms	Gender	Brief profile
Haris	Male	Middle-aged adult with type 2 diabetes for five years. No secondary complications of diabetes
Irena	Female	Young adult general practitioner at a PHC.
Jovita	Female	Middle-aged adult. A sister of a person with type 2 diabetes
Kevin	Male	Older Adult living with type 2 diabetes for 5 years. No secondary complications of diabetes
Larisa	Female	Older Adult living with type 2 diabetes for 4 years. No secondary complications of diabetes
Mutia	Female	Middle-aged adult newly diagnosed with type 2 diabetes. Was hospitalised at the time of interview
Nirma	Female	Young adult. A daughter of a hospitalised person with type 2 diabetes
Oscar	Male	Older adult living with type 2 diabetes for 6 years. Was hospitalised at the time of interview
Putri	Female	Middle-aged adult lay health worker ("kader")
Qosim	Male	Young adult health promotion officer at a general hospital (Bachelor of Public Health)
Satria	Male	Young adult student nurse
Tiara	Female	Middle-aged adult ward nurse at a general hospital
Utama	Male	Middle-aged adult living with type 2 diabetes for 9 years
Viola	Female	Middle-aged adult. The wife of a person with type 2 diabetes (Utama)
Widya	Female	Middle-aged adult exercise instructor with type 2 diabetes for 11 years
Xeniya	Female	Older adult living with type 2 diabetes for 17 years with diabetic foot ulcers for three years

Note(s): Young adult: 18–39 years old; Middle-aged adult: 40–60 years old; Older adult: more than 60 years old

Table 2. Participants' details from phase 2

Pseudonyms	Gender	Brief profile
Aditya	Male	Young adult nurse who works as an academics and in a wound care clinic
Widya	Female	Middle-aged adult exercise instructor with type 2 diabetes for 11 years
Yoda	Male	Middle-aged adult doctoral nurse who works as academics and in a wound care clinic
Zeta	Female	Middle-aged adult living with diabetes type 2for 12 years with retinopathy

Note(s): Young adult: 18–39 years old; Middle-aged adult: 40–60 years old; Older adult: more than 60 years old

Table 3. Participants' details from phase 3

have been fully captured. To minimize this limitation, when the interviews involved two people (e.g. couples), the interviews were conducted one after the other for each person. Before the interview commenced, the interviewer explained the interview aims and process and obtained consent from both people. The interviewer conducted the interview with the person with diabetes first, being respectful of the family member's presence, and then once the interview was completed asked if the family member was happy to contribute information as well. The recording and the transcript were labelled according to who was interviewed and their role (as a family member or as a person with diabetes). This information was all recorded in the one transcript and only used if the family member had provided consent. This situation may also have a limitation in which the interview may have obtained the perspective of the person in the family who is more articulate. To minimize this, the interviewer needed to re-focus the questions back to the person with diabetes, so that rich data was captured from the participants who were the focus of that interview. The interviewer also reminded the other person (the family member) that he/she would have an opportunity to speak, following the interview with the person with diabetes.

Data collection and analysis

Semi-structured interviews were conducted with the participants. Grand tour questions were used relevant to the participant's role. For example, if the person was a HCP, they were asked to describe their experiences of providing education to people with diabetes. If they were a person with diabetes, they were asked about their experiences of receiving education. A number of sub questions were also asked to elicit deeper information about the topic area (Ligita, 2019).

All interviews were conducted in the Indonesian language of Bahasa. Two members of the research team, who spoke Bahasa fluently, worked together to translate the audio recordings verbatim, to the English language. Analysis of the data also occurred throughout this process (Ligita *et al.*, 2019b). Having two researchers, who were bilingual (England and Indonesian languages) undertake this process, added to the validity of the data generated.

Concurrent data collection/generation and analysis were performed as one of the essential steps in grounded theory methods. Memos were used to record interpretation of the interviews as data were generated and concurrently analysed. Constant comparative analysis of the data to compare existing data with incoming data was undertaken throughout the study (Birks and Mills, 2015). Data analysis involved three coding processes: initial coding; intermediate coding; and advanced coding. In initial coding, the codes reflecting processes and actions were developed, while in intermediate coding, the categories and sub categories of these initial codes were established. In this stage, dimensions and properties of each category and sub category were also identified. The final coding stage revealed the core category; *Learning, choosing, and acting: Self-management of diabetes in Indonesia*. In the advanced coding stage, a theoretical code (experiential learning theory) was chosen to facilitate building this final theory. Figure 1 illustrates the process of theory generation from this study.

Ethical approval

Research ethics approvals were obtained from both Human Research Ethics Committee of a University in Australia and Ethical Committee of Nursing Research of the Faculty of Nursing, at the University in Indonesia for conducting this grounded theory study. The participants were provided with a letter of information, which contained the study aim, interview process, participant autonomy and confidentiality details, together with a consent form to be signed before the interviews were performed. To protect participants' identity, pseudonyms are used.

Findings

The core category established from the study revealed a theory enlightening the process of how people with diabetes in Indonesia learn about their disease. This process is inclusive of five major categories illustrated in Figure 2 (adopted from Ligita *et al.*, 2019a). This paper elucidates how the family interacted with their relative who was living with diabetes as they navigated the process of *Learning, choosing, and acting: Self-management of diabetes in Indonesia*.

This paper affirms that Indonesian people living with diabetes have diverse self-management needs that they determine following a process we labelled the Theory of *Learning, choosing, and acting: Self-management of diabetes in Indonesia*. HCPs involved in the delivery of health education should understand the unique thinking process that people living with diabetes go through, when endeavouring to understand and learn how to self-manage their disease. This process occurs dynamically, involving both linear and cyclical movements (see Figure 2; Ligita *et al.*, 2019a). As can be seen from Figure 2, linear movements refer to category 1 ("Seeking and receiving diabetes related information") that leads to category 2 ("Processing received information") and category 2 to category 3 ("Responding to recommendations"), etc. Cyclical movement is then captured in category 3

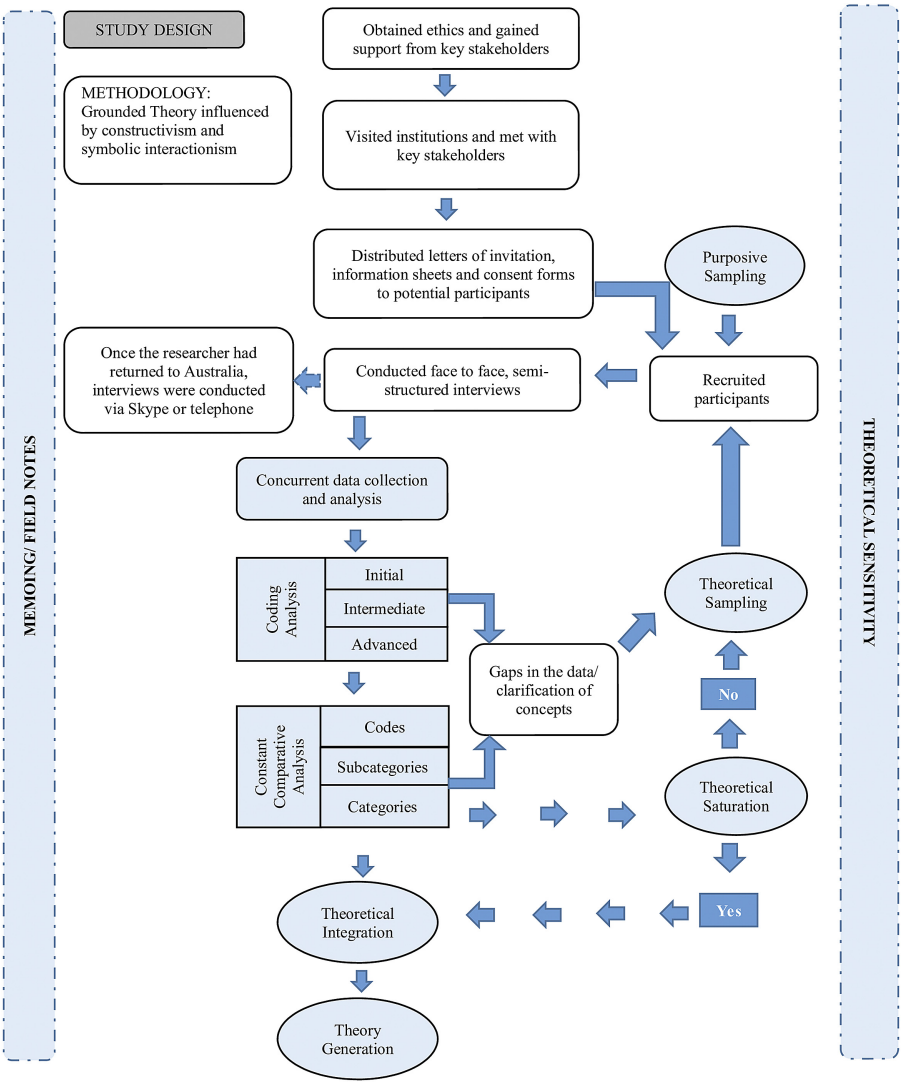

Figure 1.
The study process

where people living with diabetes "Respond to recommendations" may then return to category 1 to "Seek and receive additional diabetes related information" before moving to category 4 that involves "Appraising the results," they may or may not then can go back to category 2 ("Processing received information").

Category 1: seeking and receiving diabetes related information

Families supported relatives with diabetes as they learnt about their disease and how to self-manage it. Families were engaged from the very start of the process. In seeking diabetes-related information, family members also frequently asked other people about diabetes care. They asked questions mostly of other people with diabetes or those who had a relative with

diabetes. The questions they asked were mostly about how to treat diabetes. It was not uncommon to ask about therapies other than conventional therapies. Once the family received the information about diabetes treatment, they passed on the information to their own relative with diabetes. In addition, people with diabetes, especially those who were not familiar with using the Internet themselves, instead asked their families to search for information about diabetes treatment from a website they perceived as reliable.

> . . .I want to know a lot. From the Google. My son is good at it. [I asked him] how to do. . .exercise. . . [about] the food, the medication, [and] the herbals. Recently, I took herbal. . . "karetkebo". The leaves of "karetkebo". . .[were searched from] the Google. My son browsed it [from Google]. It was good. . . (Kevin: G2P7-8, a person with diabetes [PWD])

In other situations, family members generally accompanied their relative with diabetes to healthcare services such as outpatient clinics. Information was provided to people with diabetes and their families, by HCPs. As Aditya, both a nurse academic and a clinician explained:

> . . .[The] family role is important. When we provide health education, involving families [is]good. It means that there will be a family [member]to remind [the person with diabetes]what [information] we have delivered as there are obedient and disobedient patients. The family will remind [them what was discussed]. When [people with diabetes are] disobedient, the family can [help to] control it. . . (Aditya: G1P9, HCP)

In this category, we found that people with diabetes mostly ask their families about non-conventional therapies, more than conventional therapies. The families then helped them to find that information from available sources, such as websites.

Category 2: processing received information

After receiving information, people with diabetes processed and filtered information that may have been sourced from a variety of people and/or from other channels such as newspapers, social media, television and health promotion materials. They then determined what information they would accept. During this category, families also provided recommendations to their relative with diabetes about which information to believe or not to believe. Family members also received and processed information from a variety of sources, including attending health education sessions. They would then share this information with their loved one who has diabetes.

The excerpt below shows when a person with diabetes had doubts about a decision regarding injecting insulin. The participant was advised by the physician (a general practitioner or GP) in a medical clinic to have a prescribed insulin injection, which could only

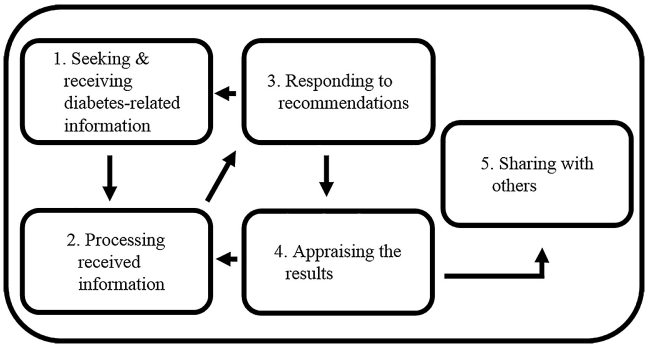

Figure 2.
The process of learning, choosing and acting: self-management of diabetes in Indonesia

be obtained from a specialist doctor (an internal medicine doctor). Therefore, the GP gave this participant a referral letter to see the internal medicine doctor in a hospital, who could prescribe insulin. However, this participant delayed going to see the doctor. The participant's son helped to process the information; and advised the participant to go to the hospital and encouraged and supported the participant to consider taking the insulin injections.

> . . .Firstly, I was afraid to inject [the insulin]. I firstly did not want [to have an insulin injection]. My son urged me [to have the insulin]. "Let's go to the hospital", he said. . . (Betty: G1P7, a PWD)

In this category, we discovered that people with diabetes did not always follow recommendations offered by HCPs. For example, people with diabetes made their own decisions about whether or not to go see the specialist doctor. Moreover, the family member provided advice regarding their decision.

Category 3: responding to recommendations

In this category, families supported their relatives with diabetes, before and during the implementation of their chosen recommendations. The supports included encouraging, assisting and teaching. Before commencing a therapy, people with diabetes were influenced by their families regarding therapeutic recommendations. Sometimes families encouraged their relatives with diabetes to continue the current regime, rather than commence a new treatment. As Jovita explained:

> . . .Once, Jaka [Jovita's brother living with diabetes] was told to start taking a traditional medication but I felt sorry for Jaka. It [the traditional medicine] is very bitter. I cannot bear to give it to Jaka. Many people talk about it. My aunty also has diabetes. [My aunty] saw other people talking about taking "mahoni" [seeds]. I never tried it. Many people talk about the "mahoni". I plant it. But I am not brave to give it to Jaka because it tastes very bitter. . . (Jovita: G2P4, family member (FM) of a PWD)

When people with diabetes chose to follow recommendations, they implemented the advocated therapeutic interventions or regime. During the implementation of the regime, families assisted by reminding them about diet or about taking their medication and even helped them to purchase medication. Sometimes, the family needed to remind the person to follow the restricted diet. Such reminders may be appreciated or unwelcome as the following participant exemplars demonstrate:

> . . .I have my daughter here. The food, for example. When I want to eat sweet food, she reminds me [not to]. "That food [the donuts' brand name] has a lot of sugar". Then, it makes me think. At night, I usually get tired and want to go to sleep. "You have not taken your medicine", she said. So, there is someone to remind me to take the medicine. . . (Larisa: G2P13, PWD)

> . . .When I eat any [unhealthy]food, she [my wife] is mad at me. She makes me stop eating that food, [or] having that drink. But, well, it's me, I do not want to follow a strict diet. . . (Kevin: G2P11, PWD)

In some instances, people with diabetes did not follow the recommended diabetes care plan that impacted on the family who became anxious and frustrated. People with diabetes sometimes justified their inappropriate behaviours. Nirma, a daughter of a person with diabetes offered:

> . . .My mother sometimes prefers eating cake. In the morning, she sometimes eats one piece of cake, she thinks in her mind, "just one piece of cake. . .one piece of cake does not have much sugar, a little. . . it's okay, it's [just] a little". She thinks if it is a little, it will [still] be fine. She said it is okay. She seems to underestimate it. She believes a little amount [of sugar] is okay. . . (Nirma: G2P2, FM)

Families assisted their relatives with diabetes to adhere to their management plan at home. A member of the person's family would often accompany their relative with diabetes to the clinic. During clinic appointments, the person and their family member received useful

information from HCPs, such as how to administer an insulin injection; thus the family member gains knowledge, alongside the person who has diabetes. This knowledge then allows the family member to reiterate the information, and to teach and assist their loved one in managing their diabetes.

In the excerpt below, a person who has lived with diabetes for seven years, accompanied by her son, was taught how to administer insulin by a nurse at the hospital. The participant then explained that when they were at home, her son initially took responsibility for administering the participant's insulin, until the participant was able to self-manage:

> . . .Firstly, my son [injected the insulin to me]. "Let me do it", I said. "Try it", he said. "Pinch like this", he said. "Mom, you hold like this", he said. "Just hold a little bit", he said. . . (Betty: G1P3, PWD)

Although help from the family was often necessary, people with diabetes sometimes did not want to burden their family. As Haris stated:

> . . .My wife [helps me at home]. She sometimes makes me a potion [from herbals]. There must be support from the family [in coping with] this disease, mainly from children and wife. [However] I do not force my family to focus too much on my disease because they have their own busy [lives]. . . (Haris: G2P5, PWD)

People with diabetes were motivated to be independent in the implementation of their regime. This study found that having a family member who understood diabetes could assist people with diabetes to implement their management plan. This study also found that people living with diabetes often used herbal products to manage their disease, and sometimes did so on the advice of their family members.

Category 4: appraising the results

During the phase of implementing a diabetes management plan, people with diabetes simultaneously appraised the effect of the regimes by subjectively and objectively measuring outcomes together with their families. In this category, the involvement of families included providing feedback, observing the health status of their relative living with diabetes and providing suggestions on what to do or what not to do regarding the current treatment. They observed together what works and what did not work, as highlighted by Viola:

> . . .I searched a lot of information about medication such as what my husband has been told, [about] herbal medication. We search the information, we try [it]. . .We try it for one week or two weeks. If there is no change [The level of blood sugar is still high], then we will not continue [to take it] . . . (Viola: G2P1, FM)

Family involvement in this process was integral. Indonesian people with diabetes were supported by their families to develop the necessary knowledge and skills to appreciate, implement, maintain or modify their therapeutic care plans.

Category 5: sharing with others

Families were able to assist their relative with diabetes by discussing/sharing their health status with HCPs or with other people living with diabetes including other relatives. Jovita cares for her brother who is living with diabetes. This participant stated that she told the HCP about her brother's condition and asked for a recommendation:

> . . .He [my brother living with diabetes] finds it difficult to have a restriction in diet. It is hard to forbid him [not to eat unhealthy food containing plenty of sugar]. I also asked a physician [who said] "The point is that he [my brother] has to control his diet". I said that he [my brother] does not want to. "Then he must take his medication", the physician said. . . (Jovita: G2P11, FM).

On the other hand, the family was sometimes the recipient of information shared by the person with diabetes. In this part of the process, people with diabetes shared their experiences of learning about their disease with their families. People with diabetes hoped that the information they shared would prevent family members from developing diabetes as explained by Haris:

> . . .I am not giving them [my family members] a doctrine but an overview that we have to be prepared for any conditions. We have to learn that we must remind, [and] advise each other. With this disease I can advise my children, "you eat properly, [do not eat] carelessly. I am worried that you might have one [diabetes]". I said, "eat well, drink well, take sugar wisely, [and] do not eat it too much. You can have it [sugar], I do not forbid it". . . (Haris: G2P5, PWD)

A dietician also emphasized the importance of involving the family, because two recipients of information are better than one.

> During the hospitalization, we try to involve the patient and their family member when providing [health] education. . . .if we communicate the information to only one person, they might be forgetful. Thus we call the family to join so that their family can remind the patient, particularly in food planning. (Elita: G1P3, HCP)

Discussion

Through the process of learning about their disease, people with diabetes obtained experiential insight, which better equipped them to manage their disease. From seeking and receiving diabetes-related information to sharing experiential insight with others, engagement of the family occurred at each stage of the process.

Consistent with the existing literature (Low *et al.*, 2016), this study identified the tendency of people to seek information from people around them, including their families, once they were diagnosed. Families in this current study did not only help people with diabetes by being a source of information, but also by accompanying people with diabetes to obtain health information, for example visiting the HCP together (Peyrot *et al.*, 2015). In Indonesian culture, families sometimes provide information on symptoms and risk factors of the disease (Fles *et al.*, 2017). Families are not only involved in the treatment of diabetes, but also in the education (Meulstee *et al.*, 2015). Hence, by attending the clinic visit together, both families and people with diabetes can be taught about acute complications that may occur at home (Meulstee *et al.*, 2015).

This present study found that families could influence management decisions made by the family member with diabetes. Influences from the family to the person aim to improve their self-management and outcomes (Lee *et al.*, 2017). This is supported by Fles *et al.*'s (2017) study conducted in Indonesia and Low *et al.*'s (2016) study in Malaysia. Fles *et al.* showed how families were influential in encouraging their family member to seek a diagnosis and have treatment and Low *et al.* reported that families as a social influence can be an important factor in people's diabetes self-management, and that the level of influence exerted by the family member depends on how close of a relationship exists between them. This is significant as the intergenerational family structure is still a feature in the Indonesian context. This type of family structure promotes an environment where each family member shares responsibility for looking after and caring for each other. This is highly valued in the Indonesian culture and promotes personal wellbeing and happiness among family members (Maulana *et al.*, 2018).

Confusion was experienced by Indonesian people with diabetes in our study when they were bombarded with multiple sources of information, including from their family. As a result of information overload, some people with diabetes changed their existing diabetes regimes for the worse, which negatively impacted on their health status. These findings that

included a mixture of beneficial and harmful information from family are in contrast to other studies where family involvement was found to be only positive and to lead to better self-management of diabetes. For instance, positive care partnerships between people with diabetes and their families can be supportive (Vongmany *et al.*, 2018). Similarly, another study found that family support can be a motivating factor that encourages people with diabetes to follow their care plans to achieve stable blood glucose levels, thus reducing the potential for complications (Carolan *et al.*, 2015). This contrasting situation, where the family can influence people with diabetes to change their diabetic management regime, is a distinctive outcome of this study.

Families in this present study attempted to be helpful to people with diabetes during the implementation of therapeutic interventions. Occasionally, families felt it necessary to remind their relative with diabetes about their management plan, particularly dietary restrictions, but often, these reminders were not heeded, which the family then found disappointing. Similarly, other researchers (Knutsen *et al.*, 2017) found that people with diabetes in their study regarded the family involvement in diet to be exhausting and in some cases impacted on their relationships. While family members in this present study tried to help the person with diabetes adhere to their diet, Indonesian people in another study (Pitaloka and Hsieh, 2015) refused to have family monitor and assist with their diabetes management. Therefore, families need to be empathetic to the challenges faced by their loved one and carefully consider when and how many recommendations to provide.

This present study also found that some people with diabetes did not want to burden their families by involving them in the management of their diabetes. Another Indonesian study found that people with diabetes have difficulty complying with dietary recommendations as the family prepares the food or they accept food offered rather than offend people (Mizutani *et al.*, 2017). The findings in this present study also echo that of a study where people with diabetes were hesitant to disclose their difficulties and to reveal their feelings because they did not want to trouble other people (Park and Wenzel, 2013). A study undertaken in Indonesia revealed that the participants with diabetes found limited support from their family, thus making them decide to take responsibility for their own disease (Pitaloka and Hsieh, 2015). Educating families in communication and coping strategies is imperative to assist them to become aware of the challenges that are being experienced by people with diabetes, so the families can then assist their relative to develop coping strategies to surmount challenges associated their diabetes. If the family is unaware of the difficulties being experienced by people with diabetes, they cannot support and assist them to manage those difficulties appropriately, and then negative clinical outcomes may ensue.

Finally, although the family greatly influenced their relative living with diabetes, the influence also flowed in the other direction. People with diabetes influenced their family members as well. When one family member with diabetes gained valuable experiences from living with diabetes, they then shared those experiences with other family members. The sharing of these experiences highlighted their own successful and unsuccessful self-management of diabetes. This finding concurs with other literature that shows positive self-management behaviours and increased motivation to avoid future problems are adopted when one family member with diabetes passes on what they have learnt to another family member, who also has diabetes (Vongmany *et al.*, 2018; Pollard *et al.*, 2014). People with diabetes consequently need to take into account which information is beneficial and worth sharing, and which information is not worth sharing. This filtering process can prevent inaccurate information being disseminated to others. Lay knowledge impacting decision making of people with diabetes is unavoidable in health practice (Blaxter, 1990). Thus when providing health education, pre-existing lay knowledge should be explored by HCPs so they can anticipate what understandings they need to challenge in a culturally respectful manner, without diminishing people's values about health and lifestyle decisions. Family members

should be provided with education to better understand health concepts relevant to diabetes, but only *after* the HCP has asked about existing knowledge and beliefs, to understand the baseline knowledge of both the family and the person with diabetes.

Implications to practice/education

This study has highlighted a number of important implications for HCPs to incorporate into their practice. They are:

(1) Involve family members in education sessions from the beginning with a person's with diabetes consent to ensure the family has adequate information;

(2) Invite and encourage family attendance at clinic visits with the person's with diabetes consent;

(3) Determine through respectful questioning of both family and the person with diabetes, what gaps there are in their knowledge and then address these in small bites–one topic per visit, so as not to overwhelm the person and family member;

(4) Explore family members' beliefs and perceptions about diabetes, as well as those held by the person with diabetes. This information can be used to assess patients' needs for health education and to incorporate cultural aspects when collaborating together to develop strategies (Brooks *et al.*, 2019) such as in diabetes management;

(5) Provide support to the family as well as the person with diabetes, to assist the family unit to learn to live well with a chronic illness; and

(6) Inform the family members that appraising the person's with diabetes achievement may increase their adherence to their diabetes self-management regime.

(Brady *et al.*, 2016) state that "a person's cognitions, emotions and behavioural responses to health and illness are framed by cultural experience". Based on this concept, we need to consider cultural aspects when delivering health education to people with diabetes, and their families:

(1) HCPs need to firstly develop trust with people with diabetes and their family members. Then they need to consider and incorporate cultural aspects in the care by involving them in communication and decision making and if possible, using an interpreter to overcome any language barrier (Brooks *et al.*, 2019). Moreover, using jargon free language can also promote an accurate understanding of the information. Misunderstanding the information given by the HCP can be one issue of concern for the person and their family; specifically the impact this may have on the person's health and safety (Lee *et al.*, 2017).

(2) The HCP needs to be aware of their own bias related to their culture (Brooks *et al.*, 2019), and they also need to acquire information about the knowledge level and perceptions of the person living with diabetes and their family, regarding the effects of natural substances and traditional cultural medicines on diabetes. Families in Indonesia also support their relatives to start their disease management with traditional or alternative medication to diminish the symptoms since they are not aware of the disease (Fles *et al.*, 2017). This background information can also assist the HCP to collaborate with the person and their families to develop optimal diabetes care, by developing respectful and supportive interactions between HCPs, the person living with diabetes, and their family members (Brooks *et al.*, 2019). Family and people with diabetes have their own insights, experiences (both positive and negative),

expertise and perspectives that can stimulate alterations in taking care of their health (Prior and Campbell, 2018).

(3) In the Indonesian culture, family are highly respected and their opinions are heeded. If these opinions conflict with those of the HCP, the person with diabetes may feel uncomfortable contradicting their family members. Therefore, the HCP needs to ask questions of both the person with diabetes and their family members to ascertain their beliefs. Assessing the family member's beliefs is a crucial first step in the process of patient education. If the HCP is aware of the beliefs of the family members, they will be able to assist the person with diabetes to reason and negotiate with their family members, so they can follow the advice of the HCP.

Noting the family dynamics at the time of the clinic visit may also prompt the HCP to provide an opportunity for each person to outline their beliefs with the HCP in private. This is important, as the high level of respect for family in the Indonesian culture may prevent either the person with diabetes, and/or their family member, from fully disclosing their pre-existing lay knowledge. Being an active listener, and being respectful of and responsive to the existing beliefs and practices of both the family and the person living with diabetes, are culturally appropriate strategies. This in turn will promote culturally effective health education, whether or not those existing beliefs and practices align with current research evidence. Involving both individuals and their family members in the care can be in the form of asking for feedback and asking about their experiences to help them improve their health status (Prior and Campbell, 2018). HCPs need to create opportunities where people with diabetes and their family feel empowered. The aim of using an empowerment approach is to assist them to make decisions that have been initially informed by comprehensive knowledge about self-diabetes management (Anderson and Funnell, 2012), for example through health education. Anderson and Funnel (2012) further suggest that people's decisions should be made autonomously. The case of a person living with a chronic condition they should be clear about their own priorities in taking care of their health.

(1) It is necessary to treat each person with diabetes as an individual who has different needs and preferences, thus HCPs should avoid generalisations. Moreover, HCPs can use various methods of health education delivery to assist people and their families to learn about diabetes and its management based on their own needs and preferences, to achieve the best possible outcomes.

Study strengths and limitations

This study is strengthened by the precise implementation of the methodological principles of grounded theory. Moreover, several distinctive findings arose from this study which had not become apparent in other existing studies. These include the process in which the family is involved regarding how people with diabetes in Indonesia learn about their disease is a unique process, which involved both linear and cyclical movements. Then, people with diabetes can manage themselves in their own way, including deciding not to follow what has been recommended to them by health professionals, and this decision can be heavily influenced by their family member(s). People with diabetes learn about their disease and/or are affected directly from the lived experiences of their relatives who also live with diabetes. Specific to Indonesian culture and societal expectations and regardless of gender, families who take care of their parents with diabetes generally are those relatives who are the eldest child and/or who live together or near their parents with diabetes. Within the Indonesian context, family members who are familiar with traditional customs were perceived to be authentic and therefore their opinions were influential and often followed.

However, the limitation of this grounded theory study is the involvement of specific groups of people and thus the transferability may not extend beyond the groups represented here. The theory grounded from the study is based on the very unique data and thus cannot necessarily be applied elsewhere in general health settings. The theory is applicable to this group of people and perhaps it may be applicable to other countries with similar demographic and cultural attributes. However, the theory that emerged from this study is expected to inform practice by its contributions to new knowledge of how people with diabetes, and their families, learn and manage their diabetic condition.

Conclusion

This study found that Indonesian families played an important role in the lives of their relatives who are living with diabetes. They assisted them with their diabetes management and participated in the process with them as they learnt about their disease, chose recommendations to follow, and acted upon their choices. This process was inclusive of five categories: Seeking and receiving information; Processing received information; Responding to recommendations; Appraising the results; and Sharing with others. The family of people living with diabetes were involved in each category of the process. The theory from the main study built a theory of "Learning, choosing, and acting: self-management of diabetes in Indonesia".

The constructed knowledge reveals the complex ways that family involvement influences the learning and self-management decisions of the person with diabetes. Therefore, what people with diabetes have learnt about their disease and the management of it, is inevitably and strongly influenced by the roles their family members play. The influences can either positively or negatively impact the way the knowledge is constructed. People with diabetes can be empowered to manage their disease as can their families as long as the family members provide proper information to the patient. The most important focus is to always recognise people's and their family's values, beliefs and levels of prior knowledge, as they make decisions and choices in self-management. Also, as the families can drive the person to either an appropriate or a detrimental path in self-managing diabetes, the family's influences should be respected, while acknowledging, supporting and advocating for the patients' autonomy in making decisions for themselves.

Further research is needed to explore how to better work with patients and families. The HCPs need to understand the roles of the family in steering the patients' decision to health beliefs and behaviours that differ from those recommended by HCPs. Another investigation is also required to explore how to better work with the creative strategies that people with diabetes and their families may devise and employ as they self-manage. These creative strategies may arise because the patients and family have different preferences regarding diabetes treatment, for example, the use of natural substances or unconventional practices. Also, the strategies that people with diabetes and their families co-develop need to appraise and value the patients' dignity and autonomy. Accordingly, HCPs can assist families by providing credible sources of information, which families can then utilize to help guide their relatives in making informed decisions. Families are the first line of support for their relatives with diabetes, and they should be included at each point along the way, as people with diabetes learn, choose and act to self-manage their diabetes for optimal wellness.

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Understanding and supporting the health literacy of young men in prison: a mixed-methods study

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Abstract

Purpose – Prisons offer a public health opportunity to access a group with multiple and complex needs and return them to the community with improved health. However, prisons are not conducive to optimal health and there are few frameworks to guide efforts. This study aims to generate insights into health literacy across a young adult prison population, specifically examining the level of limitations, barriers and characteristics associated with these limitations.

Design/methodology/approach – The study took place in a single prison in England for young adult men aged 18–21 years old. A mixed-methods design was adopted with 104 young men completing a quantitative survey and qualitative semi-structured interviews with 37 young men.

Findings – 72% ($n = 75$) of young men scored as limited in their health literacy. Barriers included structural restrictions, limited access to formal support and social and natural disruptions. No demographic characteristics or smoking intentions/behaviours predicted limited health literacy, but characteristics of the prison were predictive. Physical problems (sleep, nausea, tiredness and headaches), mental health and well-being (anxiety, depression and affect) and somatisation problems were also predictive of limitations.

Practical implications – Prison healthcare services and commissioners should undertake regular health literacy needs assessments to support developments in reducing barriers to healthcare and increasing health improvement efforts. Action also requires greater political will and investment to consider broader action on the wider determinants of (prison) health.

Originality/value – The study provides a framework to understand and guide prison health efforts and highlights attention needed at the level of governments, prison leaders and their health systems.

Keywords Prison health, Health literacy, Young adulthood, Healthy prison, Health promotion, Disease prevention, Health inequality, Public health

Paper type Research paper

Introduction

Health literacy refers to the ability of individuals to gain access to, understand and use information in ways which promote and maintain good health (Nutbeam, 1998). Health literacy has gained importance on the global health agenda (Kickbusch *et al.*, 2013) and is an evolving concept (Sørensen *et al.*, 2012) which not only describes the skills of individuals but also that of professionals, services and policy-related constraints/facilitators set by the institutions (Rudd, 2015). Many people experience limitations in their health literacy, and one large European study of 8,000 people found that 1 in 2 people (47%) experience limited health literacy, which is related to a number of worsening health outcomes (Sørensen *et al.*, 2015). Health literacy is now established as a determinant of health and one which is modifiable,

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thereby holding potential to reduce health inequalities (Batterham *et al.*, 2016). Eliminating health literacy barriers is posited as the "essential ingredient" in the effort to increase health equity and reduce health inequalities (Kickbusch *et al.*, 2013).

Over the past few decades, health literacy research has occurred in diverse contexts, but few studies have focused on prisons as a context for supporting health literacy. The case for prisons is compelling; the prison population is made up of some of the most marginalised, socially disadvantaged, socially excluded sections of society with multiple and complex needs (Senior and Shaw, 2007) including high rates of mental health issues (Fazel and Danesh, 2002), chronic health conditions (Herbert *et al.*, 2012), substance abuse (Brunton-Smith and Hopkins, 2013; Light *et al.*, 2013) and communicable diseases, such as tuberculosis, hepatitis C and HIV (Dolan *et al.*, 2016). The population group is large with a record number of people residing within prison establishments worldwide (Walmsley, 2018) with just under 83,000 prisoners detained across some 118 prisons in England and Wales (Her Majesty's Prison and Probation Service, 2019). Prisons offer an ideal opportunity to improve population health through returning prisoners back to their communities with better health than when they entered (World Health Organization, 2007).

Young adult men (aged 18–21 years) in prison are a particularly high-need group within the prison population with additional increased vulnerabilities relating to histories of social exclusions, low educational attainment, violence, bereavement, abuse, neglect and time spent in local authority care (Bradley, 2009; Harris, 2015; House of Commons Justice Committee, 2016). These young people have been excluded from some of the valuable life experiences and learning opportunities such as formal education, positive peer learning and navigating health systems which are important to support transition into healthy adulthoods. Clearly, there is a value in (re)-engaging with young adults who are detained in prison to support healthy lives and a generation-level reduction of negative health outcomes.

Translating public health intentions into action is challenging, with the paradox that prisoners enter custodial settings with a range of complex health needs; yet prisons present a number of barriers to health improvement and exposes them to further risks to their health (Burgess-Allen *et al.*). Incidence of infectious diseases such as tuberculosis, hepatitis C and HIV are much higher than in the general population (Dolan *et al.*, 2016), with increased risks of COVID-19 (Kinner *et al.*, 2020; Mehay *et al.*, 2020), with poor environmental cleanliness, personal hygiene and close living conditions conducive to increased transition. Structurally, prisoners face barriers to accessing and engaging with prison-based and community-based health services (Herbert *et al.*, 2012) as well as limited exposure to a variety of healthy food, physical activity and fresh air, green and blue spaces (Jewkes *et al.*, 2019). Access, quality and provision of healthcare and health promotion varies across prisons both in England and Wales and globally (MacDonald *et al.*, 2013; Woodall *et al.*, 2014). Psychologically, living in close proximity with others, places prisoners under considerable pressures relating to the loss of freedom and isolation from friends and family (de Viggiani, 2007) where violence and bullying are rife (Jewkes, 2005; de Viggiani, 2003) with high levels of self-harm and suicide (HM Chief Inspector of Prisons, 2018; Sirdifield *et al.*, 2020) at rates three times higher than the general population (Fazel *et al.*, 2011). The psychological "soft power" of the modern prison also suggests that prisons present additional new pains, with the expectations to engage and manage indeterminacy, psychological assessments and self-government (Crewe, 2007, 2011; Crewe *et al.*, 2014). As such, young men report the challenges of living well in prison and needing to navigate and adopt a range of tactics to preserve their mental well-being (Mehay *et al.*, 2019).

Prisons are therefore regarded as unhealthy places (de Viggiani, 2007) which can be a "health depleting experience" for many rather than supporting health (Burgess-Allen *et al.*, 2006, p. 300). Health improvement efforts in prison must therefore consider the social and structural reality of prison (de Viggiani, 2007; Woodall *et al.*, 2014) whilst recognising that

people in prison are entitled to an equivalent standard of healthcare to that which they would receive in the community (Niveau, 2007). Although prisons are expected to undertake regular health needs assessments, there are no theoretically informed assessments which appropriately covers health needs across a range of health domains (i.e. health promotion, health service engagement and disease prevention). Health literacy, as an established determinant of health, provides a useful framework to assess needs and guide health improvement efforts in prison. This study aims to generate insights into health literacy across a young adult prison population. The study aims to:

(1) determine the levels of health literacy across a young adult prison population

(2) identify characteristics of young men with limitations in their heath literacy

(3) explore young men's experiences of the barriers to health literacy within the prison context

Methodology

Design

A mixed-methods design was adopted through using quantitative and qualitative data and integrating findings (Kaur *et al.*, 2019). We utilised data from a quantitative survey to establish the levels of health literacy limitations and the association with key demographic and health characteristics. Qualitative data from semi-structured interviews were used to add insights by exploring barriers to health literacy in prison. We integrated the qualitative data with the quantitative data within a health literacy framework and present the overall integrated findings.

Research setting

Of the 83,000 prisoners in England and Wales (Her Majesty's Prison and Probation Service, 2019), approximately 10% of these are young adult men. The present study was conducted in a single English prison which detained approximately 390 sentenced young adult men aged 18–21 years old. At the time of the research, the most recent independent prison inspection rated the performance of the prison as either poor or not sufficiently good against pre-set healthy prison outcomes (safety, respect, purposeful activity and rehabilitation and release planning).

Participants

Young men in this study were aged 18–21 years old and were residing in one of the general population wings or segregation unit. Those in the induction wing were excluded due to the lack of time and experience spent in the prison (usually only up to 2 weeks). Young men were also excluded from the research if they had a current active and unmanaged mental health disorder and if they had very limited understanding and ability to communicate in written or verbal English.

Ethical considerations

Prisoners are a vulnerable group, and there are very specific ethical issues to be considered (King and Wincup, 2008), relating to the ability to give informed consent and risks associated with vocalising viewpoints about services and care within these highly coercive and controlled environments (Freudenberg, 2007; Klockars, 1974). As well as being granted the necessary University ethical approval, and ethics approval gained from the National Offender Management Service (NOMS) (now Her Majesty's Prison and Probation Service), the

researcher was required to inform the prison of any disclosure of offences which can be adjudicated against (i.e. disobeying lawful orders, failing a mandatory drug test or having an unauthorised item, such as a mobile phone) or any concerns relating to harms to self or others or absconding. Young men involved in the study were reassured about their anonymity and confidentiality but were encouraged to discuss any concerns around these boundaries of confidentiality and the potential implications.

Part 1: Quantitative data

Measures. Quantitative data were collected using a series of existing measures which were adapted for this population where necessary. Measures were identified through individual discussions with 12 young men in the prison, where the researcher adapted a measure of health literacy with young men and selected potential measures relating to health behaviours and psychosocial health which young men deemed as most relevant and important to their health and well-being. The measures include the following:

(1) *Demographic and prisoner characteristics:* Participants ethnicity, age, language, educational attainment and sentencing details (sentence length, time spent in the prison and prisoner status on the Incentive and Earned Privileges Scheme [1] (IEPS)).

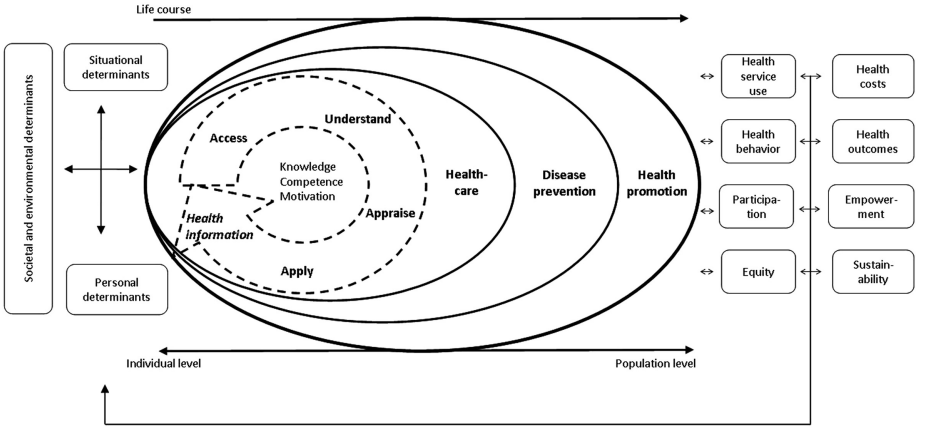
(2) *Health literacy:* an adapted version of the European Health Literacy Survey (HLS-EU-Q47) (a full explanation of the development follows in the next section).

(3) *Physical health:* the Patient Health Questionnaire-15 (PHQ-15) is used to assess physical health where respondents are asked to rate if they had been bothered by 13 of the 15 items, such as sleep problems, pain and nausea (two items removed as refer to sexual pain and menstrual pain, which are not relevant to our sample). The PHQ-15 is also used to assess the presence of somatization and somatoform disorders (Kroenke *et al.*, 2002) which refers to any mental disorder that manifests as physical symptoms.

(4) *Smoking behaviours:* the Global Adult Tobacco Survey (GATS) (World Health Organisation, 2015) was included to measure tobacco use and intentions to quit. Prisons across England and Wales were moving to become "smoke-free", but this had not been implemented in this prison at the time of the research fieldwork. Nor had electronic cigarettes or "vapes" been introduced or popularised in the prison.

(5) *Psychological health:* the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983) was administered as a measure of anxiety (HAD-A) and depression (HAD-D) and the Scale of Positive and Negative Experience (SPANE) (Diener *et al.*, 2009) to assess positive (SPANE-P), negative (SPANE-N) and overall affect (difference in negative affect and positive affect score, where the overall affect score can vary from −24 (unhappiest possible) to 24 (highest affect balance possible)).

Adapting a measure of prison health literacy. Health literacy was measured using an adapted version of the *European Health Literacy Survey (HLS-EU-Q47)*. The original HLS-EU-Q47 survey was informed by a comprehensive, conceptual model of health literacy (Sørensen *et al.*, 2012). The model of health literacy includes four stages of information processing (accessing, understanding, appraisal and applying) to generate knowledge and skills which enable a person to navigate the three domains of the health continuum: being ill or as a patient in the healthcare setting, as a person at risk of disease in the disease prevention system and as a citizen in relation to the health promotion efforts (see Figure 1). Going through this process equips people to take control over their health and reflects the interactive or relational nature of health literacy by measuring the fit of personal competences with contextual or situational demands of social systems (see Figure 2).



Source(s): From Sørensen *et al*. (2012, p. 9)

Figure 1.
Conceptual model of health literacy

	Access	Understand	Appraise	Apply
Health care	Ability to access information on medical or clinical issues	Ability to understand medical information and derive meaning	Ability to interpret and evaluate medical information	Ability to make informed decisions on medical issues
Disease prevention	Ability to access information on risk factors for health	Ability to understand information on risk factors and derive meaning	Ability to interpret and evaluate information on risk factors for health	Ability to make informed decisions on risk factors for health
Health promotion	Ability to update oneself on determinants of health in the social and physical environment	Ability to understand information on determinants of health in the social and physical environment and derive meaning	Ability to interpret and evaluate information on health determinants in the social and physical environment	Ability to make informed decisions on health determinants in the social and physical environment

Source(s): From Sørensen *et al*. (2012, p. 10)

Figure 2.
Brief description of health literacy subdomains

The HLS-EU-Q47 consists of 47 statements relating to various skills and opportunities and includes statements such as "understanding what the doctor or nurse says to you", "understanding why you need vaccinations" and "joining a sport or exercise club" (see Figure 2 for description of information processes stages and sub-domains). For each item, respondents rated the perceived difficulty of a given task on a four-category Likert scale (i.e. very easy, easy, difficult and very difficult). Collectively, the items provide an overall score of health literacy as well as individual sub-scores for each of the three domains. Psychometric properties of the HLS-EU-Q47 have been established from administration across eight countries (Austria, Bulgaria, Germany, Greece, Ireland, the Netherlands, Poland and Spain, n = 8,000 total sample). The study confirmed appropriate cut-off points to establish limitations as well as confirmed association with a number of poor health outcomes.

Starting from this conceptual model of health literacy (Sørensen *et al.*, 2012), the HLS-EU-Q47 was examined and pre-tested for face validity with young men in prison using a think-aloud method. 12 young men volunteered to complete the HLS-EU-Q47 and were asked to describe their thoughts as they are completing items on the measures to monitor their comprehension and how they may construct meaning from the text. Where items were questioned, the researcher and young men discussed possible alternative wording and adaptations. An adapted version based on the process with young men was then presented to four prison healthcare staff members for an overall check of the relevance to prison health and healthcare. The HLS-EU-Q47 was subjected to overall minor amendments from the original to increase applicability to the prison context (i.e. reference to prison-based healthcare staff and services). The adapted HLS-EU-Q47 prison survey followed the same scoring method as outlined by the original authors. During this testing phase, we also explored young men's views on the study procedure, including how best to recruit young men for both quantitative and qualitative elements and the willingness of young men to speak with a female researcher.Young men confirmed the acceptability of a female researcher and were able to inform and guide appropriate study procedures to support recruitment. The 12 young men taking part in this initial testing were excluded from the main study.

Procedure. A sampling framework was used to ensure that young men of different ethnicities were invited to take part in the survey to gain a representative sample. The survey was completed with all consenting young men as an individual, paper-assisted, face-to-face structured interview with the researcher. Interviews were conducted in a prison room on the prison wing and lasted approximately one hour.

Sample size. Using an online sample size calculator, a sample size of 105 young men was required to ensure enough statistical power to identify distributions of limitations and any associations with health outcomes based on findings from the large European survey of health literacy (Sørensen *et al.*, 2015).

Part 2: Qualitative data

Measures. A topic guide was developed to guide semi-structured interviews. Questions included: *How does being here affect your general health and well-being? How do you keep yourself healthy here? Can you tell me about your experience of health care here? Who normally supports you in your health? What difficulties do you experience*? The interviews were not audio recorded due to security constraints within the prison, where electronic recording devices were prohibited. Written notes were taken by the researcher during the interviews instead and later coded and analysed.

Procedure. Participants were recruited for semi-structured interviews by the researcher through face-to-face contact with young men on the wings using a "wherever/whenever" approach. An information sheet was used to introduce the study which the young men had the option of taking away to read later or reading right there with the researcher or other representatives. Interviews were conducted in a prison room on the prison wing and lasted approximately one hour.

Analyses

All quantitative data analyses were conducted in SPSS (version 21). Analyses focused on the three domains of the health literacy continuum (being ill or as a patient in the healthcare setting, as a person at risk of disease in the disease prevention system and as a citizen in relation to the health promotion efforts). Scores for overall health literacy and for each of the three subdomains are totalled and transformed to a unified metric with a minimum of 0 and a maximum of 50, where 0 represents the least possible and 50 the best possible health literacy score. Thresholds for identifying limited health literacy were set in line with the original

authors of the HLS-EU-Q47 and include "inadequate" (0–25), "problematic" (>25–33), "sufficient" (>33–42) and "excellent" (>42–50) health literacy. To detect vulnerable groups, the "inadequate" and "problematic" levels were combined to a single level, called "limited health literacy" (0–33). Mean (with standard deviations) and percentage distributions are calculated for levels of health literacy. Initial exploratory univariate analysis was conducted to identify demographic and health-related characteristics associated with health literacy. Those characteristics where there were significantly higher proportions of limited than adequate health literacy were entered into a multivariable linear regression model and logistic regression was used with the total sample to model predictors of limited health literacy. The results are presented as odds ratios (OR) with 95% confidence intervals (CI) and p-value. In all analyses, a p-value of <0.05 was considered statistically significant (indicated with * at $p < 0.05$ and ** at $p < 0.01$), and all analyses were two-sided. Effect sizes for statistically significant findings are reported as CI (continuous) and phi coefficient (categorical).

Written notes from qualitative semi-structured interviews were transcribed and analysed in NVivo (version 10). A thematic analysis was conducted to explore the barriers to health literacy (Ritchie *et al.*, 2003). This involved the first author gaining in-depth familiarity with the transcripts followed by a process of coding and indexing in line with health literacy subdomains. Coding and themes were discussed with the co-authors: a pragmatic version of double coding. Interview transcripts were then revisited where codes were double-checked with the interview data. Relevant quotations were then selected based on their frequency, richness and ability to reflect the main points within each them. Pseudonyms are applied to protect the identity of participants.

A visual joint display is developed with data and insights integrated and further developed within an overall health literacy framework.

Findings

Quantitative findings

Sample. Overall, 110 young men were approached to take part in the survey, of which six declined, leaving a final sample size of 104. The participants' were representative of the wider prison population in relation to demographic and prison characteristics. Two-thirds ($n = 67$, 64%) of the survey participants self-identified as belonging to a Black, Asian or other minority ethnic group with a mean age of 19 years. English was a first language for 90% of the participants' ($n = 94$). Most ($n = 69$, 66%) reported achieving a school level qualification or higher (e.g. GCSE, A Level). Participants were serving a mean sentence of three years and five months, with sentence lengths ranging from six months up to 12 years. Participants had spent a mean time of 6 months at the prison (ranging from one week up to two years). Most participants in the survey sample ($n = 62$, 60%) were "standard" level, with 31% ($n = 29$) "enhanced" level and 8% basic ($n = 8$) on the prisons IEPS [1].

Participants reported a range of health characteristics; half ($n = 55$, 53%) reported experiencing more than one somatic symptom, with trouble sleeping ($n = 57$, 55%), back pain ($n = 53$, 51%) and feeling tired or having little energy ($n = 51$, 49%) the most bothersome. As measured by the HAD-A and HAD-D, 39% ($n = 41$) and 32% ($n = 33$) scored within a mild, moderate or severe state for anxiety or depression ("caseness"), respectively. Participants also scored a mean of 20 (of 24) on the positive SPANE sub-scale, 15 on the negative SPANE sub-scale with a mean overall affect of −5 (with scores ranging from −24 to 24). Most participants ($n = 70$, 67%) reported that they were current smokers.

Levels of health literacy in the young adult prison population. Mean scores on the adapted HLS-EU-Q47 prison survey are outlined in Table 1. As outlined in Figure 3, 72% ($n = 75$) of young men scored within a range indicating limitations in health literacy (30% as

"inadequate" and 42% "problematic") and 28% ($n = 29$) as adequate health literacy (23% as "sufficient" and 5% as "excellent"). High levels of limitations were reported across all three domains of health literacy, with the greatest limitations reported in relation to health promotion ($n = 80$, 77%), followed by disease prevention ($n = 76$, 73%) and healthcare contexts ($n = 61$, 59%).

Characteristics of young men with limitations in health literacy. Overall health literacy. No demographic characteristic predicted if young men scored within limitations in health literacy. Young men with limitations in health literacy however tended to be on a lower IEPS status and report higher scores of depression and negative affect, lower positive affect scores and more problems with sleep, nausea and tiredness with an indication of a somatisation disorder (χ^2 (12, $n = 101$) = 29.76, $p = 0.00$). As shown in Table 2, increased anxiety (HAD-A) and lower feelings of positive affect (SPANE-P) made a uniquely statistically significant contribution predicting limitations, with anxiety recording an OR of 1.26 [CI 1.01–1.58]. This indicates that for each increase of 4.1 on the HAD-A, respondents were also 1.26 times more likely to report limitations in health literacy. Positive affect scores (SPANE-P) also made a unique predictor of limitations, recording an OR of 0.79 [CI 0.63–0.99]. The OR of 0.79 for SPANE-P is less than 1, indicating that for each increase of 4.7 on SPANE-P scores, respondents were 1.26 times less likely to report limitations in health literacy.

Being ill in a healthcare context. No demographic characteristics predicted if young men scored within limitations in health literacy.Young men with limitations in health literacy as related to being ill in a healthcare context tended to have spent more time in the prison with increased scores in anxiety and depression and more problems relating to headaches and nausea (χ^2 (7) = 31.28, $p = 0.00$). As shown in Table 3, time in the prison was the strongest predictor of limitations where young men serving between 6 months and 1 year were over 12 times more likely to report limitations in health literacy (OR: 12.62 [CI 2.33–68.41]).

Table 1.
Mean scores on adapted HLS-EU-Q47 prison survey

	N	Min	Max	Mean	SD
OVERALL (raw scores)	104	77	187	129.83	20.73
OVERALL (metric scores)	104	10.64	49.65	29.37	7.35
HEALTH DIMENSIONS					
Health care	104	12.5	50	32.42	6.92
Disease prevention	104	5.56	50	28.78	8.72
Health promotion	104	4.17	50	26.87	9.28

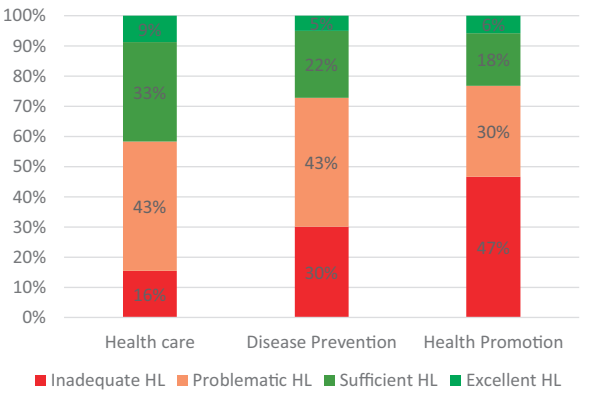


Figure 3.
Prevalence of limited health literacy by domains

	B	S.E.	Wald	Df	Sig.	OR	95% CI for OR Lower	Upper
IEPS (basic)			2.38	2.00	0.30			
IEPS (standard)	−0.16	1.28	0.02	1.00	0.90	0.85	0.07	10.42
IEPS (enhanced)	−1.04	1.32	0.62	1.00	0.43	0.35	0.03	4.73
Sleep problems	0.28	0.63	0.20	1.00	0.65	1.32	0.39	4.52
Nausea	1.05	1.03	1.03	1.00	0.31	2.85	0.38	21.39
Feeling tired	−0.11	0.66	0.03	1.00	0.86	0.89	0.25	3.24
Somatisation disorder (none)			3.61	3.00	0.31			
Somatisation disorder (mild)	1.06	0.75	2.03	1.00	0.15	2.89	0.67	12.48
Somatisation disorder (moderate)	1.58	1.38	1.32	1.00	0.25	4.86	0.33	72.22
Somatisation disorder (severe)	−0.32	1.37	0.06	1.00	0.81	0.72	0.05	10.62
HAD-A score	0.23	0.12	4.09	1.00	0.04*	1.26	1.01	1.58
HAD-D score	−0.09	0.14	0.37	1.00	0.54	0.92	0.70	1.21
SPANE-P score	−0.23	0.12	4.00	1.00	0.05*	0.79	0.63	1.00
SPANE-N score	−0.23	0.13	3.10	1.00	0.08	0.79	0.61	1.03
Constant	7.96	3.98	4.01	1.00	0.05	2865.05		

Table 2. Logistic regression model: overall health literacy

	B	S.E.	Wald	df	Sig.	OR	95% CI for OR Lower	Upper
Symptoms of headaches	0.63	0.58	1.20	1.00	0.27	1.89	0.61	5.87
Symptoms of nausea	0.90	0.69	1.71	1.00	0.19	2.45	0.64	9.38
Time served at YOI (<1 month)			11.92	3.00	0.01**			
Time served at YOI (2–6 months)	1.28	0.64	4.04	1.00	0.04*	3.61	1.03	12.63
Time served at YOI (6 months - 1 year)	2.54	0.86	8.65	1.00	0.00**	12.62	2.33	68.41
Time served at YOI (1–2 years)	−0.20	0.92	0.05	1.00	0.83	0.82	0.14	4.92
HAD-A score	0.07	0.08	0.66	1.00	0.42	1.07	0.91	1.25
HAD-D score	0.14	0.09	2.40	1.00	0.12	1.16	0.96	1.39
Constant	−2.40	0.75	10.30	1.00	0.00	0.09		

Table 3. Logistic regression model: health literacy within a healthcare context

Risk of disease and prevention. No demographic characteristic predicted if young men scored within limitations in health literacy.Young men with limitations in health literacy as related to risk of disease and prevention tended to have increased anxiety and depression with more problems relating to sleep (χ^2 (4) = 12.24, p = 0.02). As shown in Table 4, none were individually predictive of these limitations.

Health promotion efforts. No demographic characteristic predicted if young men scored within limitations in health literacy.Young men with limitations in health literacy as related to health promotion efforts tended to be on a lower IEPS status and also scores with increased negative effect, depression and anxiety with lower positive affect (χ^2 (7) = 20.54, p = 0.01). As shown in Table 5, lower positive affect was the strongest predictor of limitations where young men were 1.26 times less likely to report limitations with increased positive affect (OR: 0.79 [CI 0.64–0.99]).

Qualitative findings

Six themes were elicited from qualitative data as related to the barriers to health literacy. These included the following: *captive anxiety*, *system-centred healthcare, cleanliness and hygiene, violence, authoritative paternalism* and *disrupted connections*. The themes are described further:

Captive anxiety. Young men reflected on "*captive anxiety*", where their health concerns and anxieties were exacerbated by long periods of time on "bang-up" (time locked in their cell). Most young men described a bleak picture of life in the prison which was largely uneventful and unproductive. Many reported spending up to 23 hours a day "bang-up", with weekends particularly challenging with little to no activities on offer. Most young men spoke of this time as challenging with many health anxieties. Harry (participant 4), for example, reflected:

> . . .I had a lump under my arm and I was scared because at night you have nothing to think about. I asked the nurse and he gave me paracetamol. I cannot ask my mum because she is not here but I thought it was cancer (participant 4)

For young men like Harry, they describe how "bang-up" led to high levels of health anxieties, with little support available from family or healthcare. Others reflected similar experiences and noted that parental figures were often a source of support, but in prison they had to manage these anxieties alone.

System-centred healthcare. Young men reflected on their experience engaging with prison healthcare, which was viewed as *system-centred healthcare.* In this regard, young men described the process of engaging with health information, requesting an appointment and the interactions with healthcare staff as more focussed on the systems needs rather than their own needs. Young men described the lack of health information on ways to prevent and self-manage their own health and relayed their frustrations as posters being placed in areas which were inaccessible to them (i.e. corridor areas which were out of reach to them). The health leaflets on offer were described as lacking relevance to their context in prison and the lived experience of the challenges they faced in managing their own health needs.

If requiring support for their health, young men were expected to request an appointment with prison healthcare through a paper-based "app" system which involved completing a short form and posting in a box on the wing (which was picked up by healthcare staff once a day). All young men described their frustrations with the app system viewing it as

Table 4.
Logistic regression model: health literacy related to risk of disease and prevention

	B	S.E.	Wald	df	Sig.	OR	95% CI for OR Lower	Upper
Symptoms of sleep problems	0.68	0.51	1.76	1	0.19	1.97	0.72	5.40
HAD-A scores	0.06	0.09	0.43	1	0.51	1.06	0.89	1.25
HAD-D scores	0.09	0.11	0.71	1	0.40	1.09	0.89	1.35
SPANE overall affect scores	0.02	0.04	0.23	1	0.63	1.02	0.94	1.12
Constant	−0.09	0.87	0.01	1	0.92	0.92		

Table 5.
Logistic regression model: health literacy related to health promotion

	B	S.E.	Wald	Df	Sig.	OR	95% CI for OR Lower	Upper
IEPS (basic)			5.84	2.00	0.05			
IEPS (standard)	0.33	1.21	0.07	1.00	0.78	1.39	0.13	15.02
IEPS(enhanced)	−1.11	1.25	0.79	1.00	0.37	0.33	0.03	3.83
Symptoms of sleep problems	0.82	0.59	1.94	1.00	0.16	2.27	0.72	7.18
HAD-A scores	0.15	0.11	1.90	1.00	0.17	1.16	0.94	1.44
HAD-D scores	−0.15	0.13	1.31	1.00	0.25	0.86	0.67	1.11
SPANE-P scores	−0.23	0.11	4.24	1.00	0.04*	0.79	0.64	0.99
SPANE-N scores	−0.11	0.13	0.73	1.00	0.39	0.90	0.70	1.15
Constant	7.34	3.94	3.48	1.00	0.06	1541.35		

untrustworthy and unresponsive to their needs. Young men responded that the apps would often go unanswered either through going missing or being deliberately ignored by staff, so often felt they had to submit several apps to be sure at least one would get to healthcare. The process of seeing a nurse first who would assess and triage their needs was seen as unresponsive to their needs since this was seen as too slow, particularly during episodes of ill health. For example, Emmanuel (participant 9) reflected his frustration in that:

> . . .you put in a sick app and they see you 24 hours later but if you are in excruciating pain then you have to still wait (participant 9)

These frustrations were further compounded when seeing health professionals entering the wings where they reside to collect apps and conduct other structured appointments when they might be feeling particularly unwell and wanting support. Young men had a preference for more regular "drop-in" sessions which would be more accessible and responsive to their needs.

Furthermore, contact with healthcare staff was also described as more system-centred, with little shared decision-making or personalised care where young men could discuss their own concerns fully and utilise the opportunity to understand the causes and possible preventative action of ill health. Fred (participant 12), for example, described a recent encounter with a primary care health professional who dealt with his health issue efficiently, but Fred was left not fully understanding his health condition:

> . . .it's like he's done the working out but does not show you how he did it – just the end result (participant 12)

Many felt that more consultation and collaboration would provide them with a sense of control over their health as well as the tools to prevent future problems. Furthermore, some young men expressed the system-centred focus of healthcare meant their own needs were often neglected. Harinder (participant 31), for example, reflects on the experience of being viciously attacked in prison by a group of other prisoners. The attack left him with visible scars on his face which caused him great distress as it was a visible reminder of the attack, and this also affected his confidence. He explains his encounter with healthcare where;

> . . .I went to healthcare as I wanted some cream and oils for my scars. They just came and were worried about my asthma. But the scar thing really bothered me. I hate myself when I look in the mirror (participant 31)

For Harinder and others, healthcare was seen to be more focussed on priorities set by them rather than meeting his own needs. It was a missed opportunity to provide him with reassurance and support. This perceived lack of support and reassurance from healthcare was echoed throughout many of the interviews with young men.

Cleanliness and hygiene. Young men reflected that keeping a high standard of *cleanliness and hygiene* in prison was severely limited by the lack of resources, opportunities and knowledge. Cleaning regimes were not seen as regular enough, and young men described occasions where facilities have failed with too little action (i.e. overflowing toilets). Young men queried the appropriateness of prisoners cleaning the physical space with little knowledge (and motivation) to maintain high standards of hygiene. As such, young men felt there were high risks of diseases and infections which were hard to mitigate since much of the measures were out of their control.

Young men also reflected on similar challenges in maintaining their *personal hygiene.* The young men described a lack of opportunities within the prison regime to keep themselves clean and hygienic where, for instance, Ricardo (participant 23) reflects that:

> . . .personal hygiene is really important to me and it's really bad in here for that. . .cell cleaning here happens once every 2 weeks–2 weeks! Can you imagine how dirty this place gets in 2 weeks! I do not get it as I think I should get a shower everyday too (participant 23)

Many young men echoed Ricardo's frustrations where they were not provided with enough opportunities or ability to control the cleanliness of themselves and their physical surroundings.

Violence. All the young men spoke at length about the prison social environment and the daily risk of actual *violence* to themselves. Young men spoke of the high levels of violence in the prison and the conflicts they were faced with, which directly affected both their physical health as well as the toll on their mental health in staying alert, navigating risks and dealing with the emotional aftermath of altercations. For example, Javon (participant 17) described his involvement in a gang where he says:

> . . .you just do not want to be weak in here. I got a lot of issues like gang dramas. So I get strong really for my own safety. I do not look for drama but I am ready for it if it comes to me. . . it's called "staying on point". You can never be relaxed or let your guard down. You're always anxious (participant 17)

Javon here speaks of the constant vigilance to "stay on point" and managing these risks and navigating the precariousness of the social environment – which did not allow consideration of wider health promotion efforts whilst in prison.

Authoritative paternalism. The social context was largely viewed as violent, but young men reflected on the challenges of an *authoritative paternalism* approach adopted by the prison. Here, their behaviours were subject to greater controls and restrictions compared with adult prisons, due to the challenges of violence and the perceived risks presented by nature of their age. Young men were acutely aware that they were often seen and labelled as risky with increased levels of volatility meaning that the prison regime was set up to reduce these risks by restricting their behaviours. Many of the young men had spent part of their sentence in an adult prison and were able to compare the different approaches from adult prisons to what they often described as "kiddy" prisons. Although the young men acknowledge the challenges of the prison environment in managing risks of violence, they all felt infantilized by the prison restrictions imposed on them, which did not provide the information, guidance or opportunity to make adult choices for their own health. Ali (participant 26) for example reflects on his previous experience in prison and being released where he explains;

> being in prison takes away your independence and you do not do anything for yourself. . .from being very independent and then coming here and your independence being taken away – and then going out again – it's hard! (participant 26)

Some of the frustrations of these restrictions focussed on food choices provided in meals as well as additional food items to purchase, which were deemed too restrictive compared with adult prisons. Ricardo (participant 23) expressed his frustration and explained;

> . . .in adult jails, you're given more responsibilities and you're given more opportunities. . .On my wing it was really good. We even had a kitchen area where we could use a microwave and stuff and make our own food. We used to cook together and hang out there. It was proper homely. We all ended up looking out for each other there and the adults looked after the younger ones and kept some of us in check too. And they did not tolerate bullying at all. It was like a community and we helped each other and it was a good place to be (participant 23)

Here Ricardo contrasts this to his life at the current "kiddy" prison to the adult prison he was in previously and reflects on the different approach in both taking control over food choices as well as the opportunity to create homely environments and develop supportive networks.

For many, the rationale for placing restrictions on food choices were viewed as unreasonable since they rarely had the effect of reducing risks of harm. Martin (participant 24), for example, highlights;

> . . .you cannot have tins in case you use it to cut someone or put it in a sock to hit someone but you could use your belt or a snooker ball! It does not make sense. Other jails you get rice, peas, seasoning but here you cannot do none of that. The healthiest thing in the prison ends up being water! (participant 24)

Young men also spoke of the additional restrictions over their movements compared with adult prisons, which meant they spent long periods of time locked in their cell. This is turn led to increased unhealthy behaviours such as smoking and drug use. Jason (participant 15) notes that:

> I smoke way more in here because of boredom, being homesick, and loads of different reasons. Smoking is my only coping mechanism (participant 15)

Some young men engaged in illegal drug use to manage boredom and "bang-up" time since these offered a chance of "escapism". They were keen for a shift from authoritative paternalistic approaches to one which kept them safe but supported them to make better and healthier choices for themselves.

Disrupted connections. Young men reflected on broad issues associated with their experience of imprisonment, including *disrupted connections* with the social world and nature. Young men spoke of the extreme challenges in being disconnected with family and the challenges in navigating the prison system without a significant other guiding them or providing space to "be themselves". Javon, for example states:

> . . .here, you are so concerned with just dealing with prison, even though you know you should be positive, you sometimes think I might as well be the person they think I am. But I speak to my mum and try and get myself back on track. It's just she does not see me the way others see me. She does not see me as a crook, she sees me as her bambino. She helps to keep me positive and encourages me to change it up. . .but it gets hard and you sometimes can't be bothered and you think fuck it so what! It feels the easier option is to be what they want you to be (participant 17)

Young men also reflected on the challenges of being away from nature and described the prison environment as stifling and oppressive, particularly referring to the air as thick and heavy and the environment noisy with constant echoes of talking, shouting and music. Many young men described this overall environment as effecting their general health and well-being and their inability to influence or change this. Young men reflected that this was prison and that these conditions were expected but that they did have detrimental effects on their health.

Integration and framework for prison health literacy

The overall findings from quantitative and qualitative data are integrated in an overall framework of prison health literacy (see Figure 4). Three overarching themes relating to barriers to health literacy were elicited through grouping the qualitative themes and related survey data (i.e. IEPS status). The overarching themes of the barriers included: *structural restrictions, limited access to formal support* and *social and natural disruptions.* These barriers were linked to the high levels of limitations reported from the survey across the young adult prison population sample (72% overall, 61–77% across the three domains of health literacy).As identified from the survey findings, those reporting limitations in their health literacy tended to report increased levels of headaches, nausea, sleep, tiredness, reduced mental well-being and increased somatisation problems.

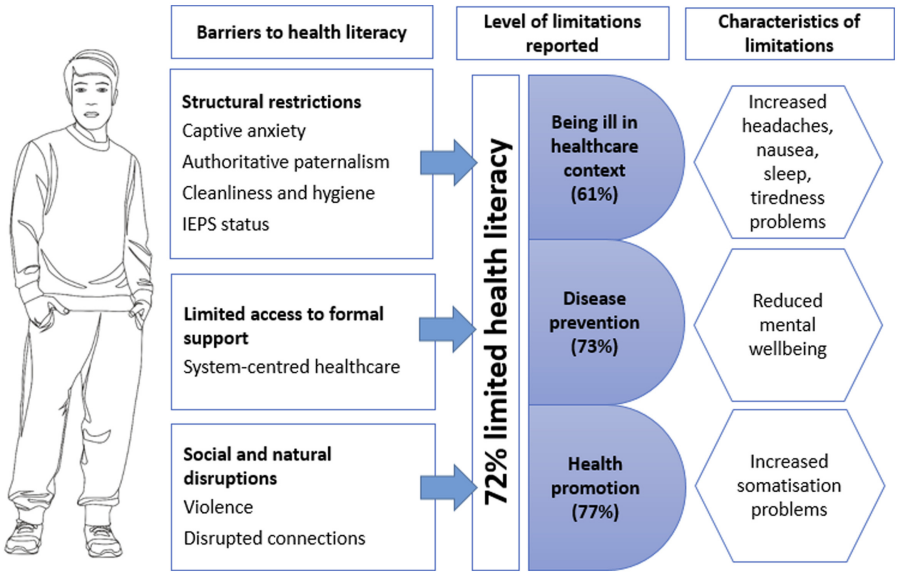


Figure 4.
Final framework of prison health literacy

Discussion

Main findings of the study

Health literacy describes the skills of individuals as well as the skills of professionals and policy-related constraints/facilitators set by the institutions (Nutbeam, 1998; Rudd, 2015). The present study aimed to generate insights into health literacy across a young adult prison population, specifically examining the level of limitations, barriers and characteristics associated with these limitations. The integrated data form an overall framework of prison health literacy (see Figure 4) and demonstrates the high levels of limitations in health literacy across this representative prison sample, with 72% ($n = 75$) of young men scoring as limited in their health literacy. Barriers to health literacy included structural restrictions, limitations to access to formal support and social and natural disruptions. No demographic characteristics or smoking intentions/behaviours were predicted if young men scored within limitations in health literacy but a lower IEPS status and longer time in the prison were predictive of limitations. In addition, physical problems (sleep, nausea, tiredness and headaches), mental health and well-being (anxiety, depression and affect) and somatisation problems were predictive of limitations in health literacy.

This study extends the evidence base on health literacy by examining health literacy in a marginalised, socially disadvantaged, socially excluded section of society with multiple and complex needs (Senior and Shaw, 2007). This study found that 72% of young adult men reported limited health literacy whilst in prison (in contrast to estimates of nearly half in a large European community sample), and these limitations are associated with common health characteristics such as physical problems and poor mental health and well-being. The lack of association between health literacy and smoking behaviours are likely to interact with mental well-being, which may have a greater impact on behaviours than health literacy alone.

Consistent with findings from other studies, this study confirms the structural and social barriers to achieving some of the public health ambitions for prison health (de Viggiani, 2007; Woodall *et al.*, 2014). This study highlights the additional level of restrictions (and frustrations) for young men in what they refer to as "kiddy prisons". Long periods of "bang-up", high levels

of restrictions, limited access to support and the disruptions with social connections and nature meant there were few opportunities to learn and develop greater mastery over their health whilst in prison. Many of the young men reflected on contradictory nature of these conditions; that they were often in place for their own safety as young adult yet instead they were damaging to their health. Alongside the harsh restrictions, they were also expected to engage and take charge of aspects of their lives in prison (i.e. reaching out to healthcare, engaging in health promotion activities), yet experienced barriers in doing so – an indication of the exercising of "soft power", which presents additional struggles and pains (Crewe, 2007, 2011; Crewe *et al.*, 2014). This would likely stall any transition to healthy and health-literate adulthood.

Limitations

The study is limited to a single English prison, and since health literacy is context-specific, future research should examine if the findings are replicated in other prison contexts. The study used a cross-sectional design, therefore the findings can only reflect associations rather than causation of health literacy with key characteristics. Furthermore, as an exploratory study, we were unable to collate and account for the full range of confounders which may support interpretation of findings. Future research should explore the psychometric properties of the prison health literacy questionnaire and examine broader health and prison characteristics to gain a fuller profile of limitations of health literacy.

Practical implications

The findings point to a number of implications for practice and policy which prisons can action to create more health-literate environments. Prison healthcare services and commissioners should undertake regular health literacy needs assessments to support development of health-literate environments which reduce barriers to healthcare. Key features should include: informal drop-in sessions, use of technology for appointment requests, developing peer-based approaches, staff training in collaborative care in triage and consultation, offering greater choices and guidance around food, improved access to quality purposeful activities and reducing time in "bang-up". Prisons should consider creating "health literate" wings to allow greater guidance and development of health literacy within their population groups. Clearly some of these actions require greater political will and investment to consider the broader action requires on the wider determinants of (prison) health to ensure an environment which is both safe, healthy and enables health literacy.

Originality/value

This is the first study known to the authors which examines health literacy in a prison population.The initial engagement and testing of the study procedures and measures with young men in the prison meant there was a high level of engagement and recruitment in the study to allow a thorough exploration of health literacy. The findings highlight that health literacy is a dynamic construct which concerns the interaction of individual, social and structural factors. Efforts to strengthen health literacy should not be framed as the sole responsibility of individuals, but equal attention must be given to ensure that governments, prison leaders and their health systems present clear, accurate, appropriate and accessible information and support for young men when in prison. These objectives have become pertinent in light of the current COVID-19 global pandemic, where prisons have been a cause of concern for public health as key vectors in the transmission and spread of infectious diseases (Kinner *et al.*, 2020; Mehay *et al.*, 2020). The case for prison health should not only be heightened during crisis points, like that during the COVID-19 epidemic, but requires

long-term investment and consideration. Health literacy deficit and inequality in the young adult prison population need to be addressed by prison and health planners and policymakers if the ambitions in public health strategies to address larger health disparities are to be fully realised.

Note

1. All prisoners in England and Wales are automatically allocated to a "standard" level status on the Incentive and Earned Privileges Scheme (IEPS) which can be raised to "enhanced" (meaning additional privileges) if demonstrating good and compliant behaviour. Conversely, prisoners can be allocated "basic" as a punishment level for those who do not comply with prison regulations and protocols (meaning some removal of privileges).

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Sexual and reproductive health self-care: a theory-based intervention

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Abstract

Purpose – This study, a theory-based interventional study, aims to promote self-care behaviors regarding sexual and reproductive health in adolescents (female) in Karaj, Iran.

Design/methodology/approach – This study was conducted on 90 female students of the Alborz University of Medical Sciences in Iran. For selecting subjects, the researchers went to two girls' dormitories on working days and tried to observe the proportion of students with different fields. Initially, 200 eligible female students were identified in the dormitories of Alborz University of Medical Sciences. Based on the sample size estimation, 100 research units were divided into two groups of receiving counseling (intervention group) and not receiving counseling (control group) by four-digit block randomization. Sexual and reproductive health self-care questionnaire was used as a tool for data collection before, after and one month after intervention. Data were analyzed by using X^2 and ANOVA tests using SPSS (16).

Findings – Both groups were homogeneous in terms of demographic characteristics before the intervention. The results of the study indicated that after education, sexual and reproductive knowledge ($p < 0.001$), self-care of sexual health ($p < 0.001$), self-care of menstrual and genital health ($p < 0.001$) increased significantly. But, regarding parents' communications ($p = 0.11$), conversation barriers with parents ($p = 0.83$), interaction with ($p = 0.79$) and the perceptions of sexual risk behaviors relationships ($p = 0.61$) differences are not significant.

Research limitations/implications – Failure of parents to participate in this study and the implementation of this study only on the female sex were main limitations of the present study.

Practical implications – Theory-based education can improve sexual and reproductive health in adolescents' girls.

Originality/value – All Authors declare the manuscript entitled "Sexual and reproductive health self-care: a theory-based intervention" is original work of the author. All data, tables, figures, etc. used in the manuscript are prepared originally by authors; otherwise, the sources are cited and reprint permission is attached.

Keywords Protection motivation theory, Sexual and reproductive health, Self-care, Adolescents

Paper type Research paper

Background

Sexual and reproductive health (SRH) is regarded as a pervasive and prevalent concern particularly during adolescence at a global level, as this age group has specific sexual health needs, covering a wide range of knowledge deficiencies, social stigmas, policies on contraception and abortion and judgmental attitudes (Salam *et al.*, 2016).

Conflict of interest: The authors declare that there is no conflict of interest regarding the publication of this article.

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According to the United Nations Population Fund (UNFPA), teenage years can be broadly categorized into three stages of early (11–13 years of age), middle (14–18 years of age) and late adolescence (19–21 years of age) (UNFPA, 2010).

Besides, statistics indicate that ten million cases of sexually transmitted diseases (STDs) occur annually among adolescents in the USA. In addition, there are reports on 40% of new human immunodeficiency virus (HIV) infections every year in this age group (Shannon and Klausner, 2018; Wilson *et al.*, 2010). As acknowledged in a study, 50% of stray women referring to rehabilitation centers aged between 15 and 19. In this sense, unwanted pregnancies are among other sexual concerns in juveniles (WHO, 2010). However, there are no accurate statistics on sexual health issues in this age group in Iran (Farahani *et al.*, 2016).

With reference to their culture and religion, Iranians respect marriage as the only way to meet sexual ideals. Nevertheless, cultural change has led to a rising trend in high-risk sexual behaviors among adolescents (Azadarmaki *et al.*, 2012). The prevalence rate of unsafe sex has also caused the third wave of HIV/acquired immunodeficiency syndrome (AIDS) infections in Iran (Danial *et al.*, 2017). Global statistics have correspondingly revealed that 37 million people have been infected with HIV until 2016, including young adults and adolescents as a significant proportion (Abdol Karim, 2017). There are similarly many dangers to neglecting SRH in pregnant women. In this regard, adolescent pregnancy is mainly associated with a large number of physical, psychological and economic problems in this age group, resulting in long-term consequences for individuals, families and society (Morris and Rushwan, 2015).

SRH needs of adolescents are often underestimated for reasons such as social stigmas, deficiencies of knowledge, misunderstandings and the laws governing society (Ismail *et al.*, 2015). Moreover, the vast majority of Iranians unreasonably believe that HIV/AIDS education promotes high-risk behaviors, so sex education on HIV/AIDS transmission and prevention has been socially forbidden (Salehi *et al.*, 2008). Achieving adolescent SRH needs in the field of self-care accordingly requires implementing appropriate behavioral and educational interventions against STDs, sexual activities and contraception methods (Salam *et al.*, 2016).

As defined by the World Health Organization (WHO), self-care refers to "the ability of individuals, families, and communities to promote health, prevent disease, maintain health, and cope with illness and disability with or without the support of a health-care provider" (WHO, 2020). On the other hand, easy access to invalid, unreliable information sources, the internet sites and provocative television shows have made SRH and its related concerns a difficult issue to consider among adolescents and young people (Farmahini Farahani and Maleki, 2012).

The review of the literature on this subject matter demonstrates that providing information on SRH can have positive effects on adolescent attitudes and self-care (Plourde *et al.*, 2016). According to the published guidelines, theory-based educational interventions are operational and bring about changes toward having a better and healthy lifestyle (Salehi and Haidari, 2011). Such interventions can further explain behaviors and identify confounding factors (Davis *et al.*, 2015). As well, numerous studies have confirmed the effects of educational programs designed based on the theories of social behavior on SRH (Wamoyi *et al.*, 2014). In this sense, the protection motivation theory (PMT), also known as the fear appeal theory, is being widely practiced in behavior change programs (Madeni *et al.*, 2011; Havaei *et al.*, 2019). The PMT-based educational interventions have similarly shown to improve self-care behaviors for SRH in a significant manner (Madeni *et al.*, 2011). This theory, developed by Rogers in 1975, consists of five sub-components, i.e. perceived susceptibility, perceived severity, response cost, response efficacy and self-efficacy, and it assumes that acceptance of protective factors and risk-taking behaviors is derived from personal values and beliefs (El Dib *et al.*, 2008).

In a study on the effects of health education based on fear appeal, approximately 75% of the participants had reported their exclusive engagement in safer sex behaviors at the baseline. While the percentage of the individuals practicing such behaviors had significantly upgraded to 83% in the ones exposed to gay-sensitive materials at the follow-up, the prevalence rate of safer sex among those who had experienced the fear-based program had dramatically reduced to 47%. These findings, substantiated by previous research on the impacts of fear appeal, had highlighted the dangers of exploiting such programs to change the behavior of those most at risk (Simpson Rosser, 1992).

Despite the implementation of the PMT-based models in teaching the use of condoms and reducing high-risk sexual behaviors as well as reproductive health in adolescents in various surveys (Madeni *et al.*, 2011; Havaei *et al.*, 2019; Chambers *et al.*, 2016), there was no study, to the best of authors' knowledge, on the effects of the PMT-based educational programs on SRH among adolescents in Iran.

Proper sex education is, thus, one of the basic human rights, having positive impacts on the quality of sexual activities. In accordance with the literature review, sex education not only has no negative effects but also delays inappropriate sexual behaviors and decreases the number of sexual partners (Bleakley *et al.*, 2009). With reference to Omoni (2019),"what is considered abnormal or inappropriate is a deviation from what the society values." Such deviant sexual behaviors had been, thus, prevalent among the youth and practiced by the students of Delta State University in the USA The given behaviors included committing indecent assaults (namely, touching breasts or buttocks), cuddling, joining in a rape and having pre-marital sex. Moreover, watching pornographic films (pornos), sharing nude photos, engaging in incest, having multiple sex partners, doing oral sex, web-dating, involving in sex with older people (i.e. sugar daddy/mummy), sticking to offensive dress codes, peeping, masturbating, doing exhibitionism and voyeurism and using objects to satisfy sexual urges had been cited as other deviations (Omani and Onoyase, 2019). The ability to differentiate normal from abnormal sexual behaviors among adolescents could be, thus, more challenging (Efrati, 2019).

Considering the variations in puberty and menstruation, as well as the possibility of exposure to high-risk sexual behaviors, female adolescents should be able to take care of their own SRH in terms of puberty and menstruation, to prevent risky behaviors and to seek treatments for SRH complaints such as dysmenorrhea and genital tract infections (Alimoradi *et al.*, 2017).Therefore, the present study included interventions aimed at improving self-care behaviors associated with SRH in adolescents using the PMT-based model.

Materials and methods

Study design

This controlled interventional study was conducted in 2019 on female students at Alborz University of Medical Sciences, Alborz, Iran.

Inclusion criteria

The inclusion criteria were female adolescents with Iranian nationality, who were single and aged under 21 years old.

Exclusion criteria

The exclusion criteria were failure to attend two intervention sessions and a history of mental illnesses (e.g. attention deficit disorder [ADD]) confirmed by a physician. As many students may face problems after starting university for various reasons such as depression, panic attacks and academic failure, such cases as a disruptive factor were removed from the present study.

Sample size

The sample size was calculated according to the study by Khodakarami and Aligholi (2011), assuming the equality of variances in two groups and the mean difference of 0.5 between them with the type I error of 0.05 and the test power of 80, through the following equation:

$$n = \frac{\left(s_1^2 + s_2^2\right)\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2}{\left(\bar{x}_1 - \bar{x}_2\right)^2}$$

$s_1 = 0.8$, $s_2 = 0.8$, $\bar{x}_1$–$\bar{x}_2 = 0.5$, $\alpha = 0.05$ and $\beta = 0.2$

Upon obtaining the approval from the relevant authorities at Alborz University of Medical Sciences, Alborz, Iran, the researchers referred to two dormitories for girls on working days and tried to observe the proportion of students with different fields (namely, medicine, paramedics, dentistry, health and nursing) in the samples according to the number of students in each field.

Sampling methods

After explaining the research objectives, verbal and written informed consent for participation was obtained. Initially, a total number of 200 eligible female students residing in the dormitories affiliated to Alborz University of Medical Sciences were identified. Based on the sample size estimation, 100 study samples were divided into two groups: intervention group, receiving counseling, and control group, not receiving counseling, using block randomization with a block size of four (Figure 1).

Block randomization

The samples were randomly put into two groups: intervention, receiving counseling, and control group (without any interventions), via the four-sized randomized blocks. There were accordingly six possibilities for their inclusion in the blocks (namely, BABA, BBAA, ABBA, AABB, ABAB and BAAB). At the onset of the study, the BABA block was selected and four participants were placed there so that A and B belonged to the intervention and control groups, respectively. Once the first block was completed, other blocks were done in a retrospective order.

Instrument

The data collection instrument exercised in this study included a 21-item multi-section questionnaire containing demographic characteristics (namely, age, level of education, number of siblings, birth order, status of living with parents, access to social networks and history of watching pornos) and the sexual and reproductive self-care scale (SRSCS) for female adolescents.

Sexual and reproductive self-care scale

The SRSCS, developed by Alimoradi in 2017, comprised of 74 items within seven domains of family–adolescent interactions, perceptions of sexual risk behaviors, empowering factors in reproductive and sexual self-care, perceptions and behaviors of interactions with the opposite sex, barriers to parent–adolescent communication, reproductive and sexual knowledge and reproductive and menstrual self-care among female adolescents. To measure the Cronbach's alpha coefficient, the internal consistency of the extracted factors was also calculated, varying between 0.7 and 0.9, and it was 0.895 for the whole instrument. Employing the test-retest method, the instrument had the desirable reliability and the intracluster correlation

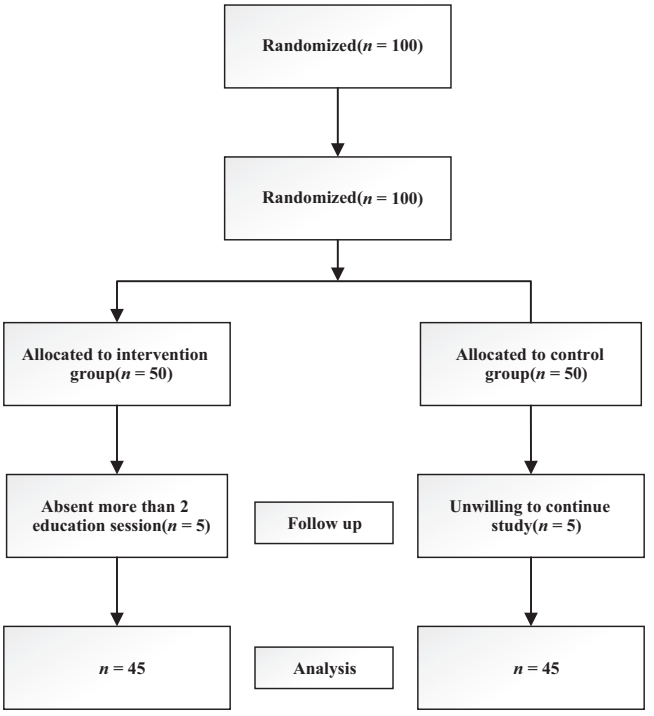

Figure 1.
Consort flowchart of study

coefficient (ICC) was from 0.65 to 0.99 for the extracted factors and 0.913 for the entire instrument. Overall, the results, based on evaluating the psychometric properties of this instrument, revealed that the SRSCS for female adolescents had acceptable validity and reliability (Alimoradi *et al.*, 2017).

After obtaining permission from the main designer, the content validity of this tool was examined quantitatively and qualitatively by ten faculty members of Alborz University of Medical Sciences, specialized in the field of reproductive health education. The revised SRSCS for female adolescents accordingly contained 52 items within seven domains, including family–adolescent interactions (five items related to parent–adolescent communication, scores 5–30), perceptions of sexual risk behaviors(three items about acceptable level of relationship with the opposite sex, scores 3–18), empowering factors in reproductive and sexual self-care (six items associated with knowledge of contraception and information about reproductive health services, scores 6–36), perceptions and behaviors of interactions with the opposite sex (seven items concerned with advantages and disadvantages of communication with the opposite sex, scores 7–42), barriers to parent–adolescent communication (five items related to fear expression, cultural issues and levels of education in family, scores 5–30), reproductive and sexual knowledge (20 items associated with measuring knowledge about symptoms of STDs and ways to transmit and prevent them, scores 20–120) and reproductive and menstrual self-care (11 items about menstrual problems such as normal menstrual cycle, dysmenorrhea and health-related issues, scores 11–66). This research instrument was also scored based on a six-point Likert-type scale (i.e. strongly disagree, disagree, slightly disagree, slightly agree, agree, strongly agree). In the positive items, the minimum score of each item, 1, was for the "strongly disagree" option and the maximum score of each item, 6, was for the "strongly agree" one. In negative items, the minimum, 1, and the maximum, 6,

scores of each item were for the "strongly agree"and the "strongly disagree" options, respectively.

Interventions

To meet the research objectives, the individuals in both groups first completed the SRSCS as a self-report. Following the allocation of the participants into two intervention and control groups, the PTR-based educational program was implemented in five group-training sessions. For this purpose, the members of the intervention group were first divided into five groups of nine to receive education, and then, five education sessions were presented for each group. In total, 25 educational sessions were held in small groups. The educational content was provided to the participants by the researcher. Each educational session also consisted of nine people and took about 90 min with questions-answers and group discussions. For each group, five training and counseling sessions were further held twice a week based on the guidelines developed by the WHO (Leerlooijer *et al.*, 2008).

The *first session* reflected on topics such as delineating research objectives, introducing valid sources of SRH information, examining barriers to communication with parents on SRH issues and parent–adolescent interactions and suggesting appropriate strategies by adolescents and researchers to improve relationships. Moreover, defining self-care, describing SRH, talking about anatomy and physiology of the human body and how to maintain reproductive and menstrual health, putting normal and abnormal menstruation in plain words, analyzing ways to reduce menstrual pain, as well ascharacterizing pre-menstrual syndrome were among other topics in this session. Within the domain of perceived susceptibility, this session also focused on explaining the likelihood of unwanted pregnancies, if left untreated, through percentages and figures, unwanted pregnancy complications, pregnancy physiology, early pregnancy complications, abortion and bleeding complications, contraception methods and cases of contraception failure. Furthermore, STDs were defined and clarified, consequences of high-risk sexual behaviors and their resulting complications were delineated, contraception strategies were underlined, sexual deviations in society were addressed and prevalence rates of routes of HIV transmission and related diseases were reported.

The content of the *second session* encompassed the domain of perceived severity, putting much emphasis on the severity of high-risk sexual behaviors, violence against adolescents and sexual assaults, ways to prevent STDs and subsequent actions, emotional and social risks of accepting or rejecting sex and practical examples of existing ones.

The *third session* underlining the domain of response cost involved understanding internal/external rewards, explaining SRH as well as its benefits and effects on the body and mind, elucidating differences in sexual expectations and behaviors among girls and boys, benefits of safe and wanted pregnancies, safe sex, self-control and loyalty and describing advantages of "Saying No!" to sexual risk behaviors from students' perspectives. Besides, this session reflected on teaching ways to have intimate relationships with each other without having sex, teaching sexual desire control methods, illuminating reasons for sexual risk behaviors from the point of view of students and researchers, listing and writing about factors causing females to be pressured to have sex and declaring reasons why others ask females to have sex.

The content of the *fourth session* embraced the domain of response efficacy, namely, teaching precise negotiation skills with a sexual partner about rejecting sex, teaching other ways to communicate and to be intimate, controlling sexual desire, preventing HIV infections and ways to reduce risks of HIV transmission and teaching precise sexual negotiation skills on use of condoms through mutual role-plays.

As well, the *fifth session* included understanding self-efficacy, addressing questions-answers about self-control skills, the skill of "Saying NO!", the skill of using contraception

methods and prevention of HIV infections, the skill of controlling high-risk behaviors, writing about ability to perform self-care behaviors in the field of SRH and summarizing previous sessions.

The educational content of these sessions were prepared with reference to the PMT constructs (i.e. perceived susceptibility, perceived severity, response cost, response efficacy and self-efficacy) by the members of the research team consisting of professors in the field of hygiene education, health promotion and reproductive health. In addition, this content was provided to expert members outside the research team for further comments and completion, which was then finalized by items based on the suggested points or revised in some sections appropriately. All the study samples re-completed the SRSCS following the educational intervention and one month later.

Ethical considerations

To observe ethical considerations, the control group received a counseling package on the topics discussed upon the completion of the research. The present study was also approved by the Vice Chancellor's Office for Research and the Ethics Committee at Alborz University of Medical Sciences, Karaj, Iran, and was then listed on the Iranian Registry of Clinical Trials (IRCT). At the baseline, the research objectives were explained to the participants, and they were ensured with regard to the confidentiality of all information. An informed consent was additionally obtained from all participants, and the researcher tried to respect all rights of the study samples.

Statistical analysis

The data were analyzed using descriptive and analytical methods (i.e. independent-samples *t*-test, chi-square test, Pearson correlation coefficient [Pearson's *r*] and repeated measures analysis of variance [ANOVA]) using the SPSS Statistics software (version 16) at a significance level of 0.05.

Results

The mean age of the study participants in both intervention and control groups (mean ± SD [SD]) was, respectively, by 20.11 ± 0.71 and 20.02 ± 0.83 years old, and there was no statistically significant difference between the two groups ($p = 0.593$). Other demographic characteristics of the participants are depicted in Table 1. Prior to data analysis, their normality was also checked through the Kolmogorov–Smirnov test, indicating that the data had normal distribution. No statistically significant difference was observed in the demographic variables between the two groups (Table 1).

As well, the results of the repeated measures ANOVA showed statistically significant differences in the mean score of the domains of empowering factors in reproductive and sexual self-care, reproductive and sexual knowledge, reproductive and menstrual self-care and perceptions of sexual risk behaviors examined in the intervention group, immediately and one month after the educational intervention, compared with those before intervention and in the control group (Table 2). Besides, there was no significant difference in the domains of barriers to parent–adolescent communication, family–adolescent interactions and perceptions and behaviors of interactions with the opposite sex between the two groups before and after the intervention ($p > 0.05$). As the significance level of Mauchly's test of sphericity was greater than 0.05, the results of repeated measures ANOVA, assuming sphericity, denoted a change in the scores of SRSCS over time (250.9 ± 9) before the intervention and 261.11 ± 8.1 immediately after it in the intervention group.

With reference to the study results, both groups had no significant differences in terms of the scores of SRSCS and its domains before the educational intervention ($p > 0.05$), but such scores had increased among adolescents in a significant manner immediately and one month after the intervention ($p < 0.001$), and the effect size (ES) of the education was by 11.02.

Variables	Intervention (*N*(%))	Control (*N*(%))	*p*
Age (mean ± SD)	20.11 ± 0.71	20.02 ± 0.83	0.59
Semester			0.58
1	1(2.2)	7(15.5)	
2	12(26.6)	12(26.6)	
3	13(28.8)	14(31.1)	
4	12(26.6)	12(26.6)	
Major			
Nursing	6(13.3)	7(15.5)	0.62
Health	13(28/8)	15(33/3)	
Paramedicine	11(24/4)	11(24/4)	
Dentist	6(13.3)	6(13.3)	
Pharmacology	5(11.1)	11(24/4)	
Mother age (mean ± SD)	46.42 ± 4.73	46.51 ± 5.60	
Father age (mean ± SD)	50.16 ± 3.79	51.04 ± 5.48	
Mother educational level			0.571
12>	11(24/4)	12(26/6)	
12	21(46.7)	23(51.1)	
12<	13(30)	10(22.2)	
Father educational level			0.75
12>	11(24/4)	15 (33/3)	
12	16(35.6)	14(31/1)	
12<	18(40)	16(35.6)	
Number of siblings			0.37
1–2	30(66/6)	23(51/1)	
≥3	15(33/3)	22(48/8)	
Birth order			
1–2	36(80)	32(71/1)	0.17
≥3	9(20)	13(28/8)	
Life situation with parents			
With both parents	42(93.3)	41(91.1)	0.36
With a parent	3(6.66)	4(8.8)	
Access to social network			
Yes	42(93.3)	45(100)	0.08
No	3(6.66)	0(0)	
Watching satellite			
Yes	24(53.3)	18(40)	0.21
No	21(46.6)	27(60)	
TV watching			
Yes	8(17.77)	10(22.22)	0.59
No	37(82.22)	35(77.77)	
Porno movie			0.51
Yes	29(46.4)	26(57.7)	
No	16(42.2)	19(42.2)	

Table 1.
Demographic characteristics of adolescents in two groups

The educational intervention also had a positive effect on the domains of empowering factors in reproductive and sexual self-care ($p < 0.001$, ES = 3.05), reproductive and sexual knowledge ($p < 0.001$, ES = 4.34), reproductive and menstrual self-care ($p < 0.001$, ES = 3.44) and perceptions of sexual risk behaviors ($p < 0.001$, ES = 2.85), but no significant difference

Variables	*G*	Before inter mean ± SD (n = 50)	After inter mean ± SD (n = 45)	One-month after mean ± SD (n = 45)	Mauchly test	Repeated measures		Eta		Power		Reciprocal effect		Wilks lambda	
						Inter *G*	Bet *G*	Inter *G*	Bet *G*	Inter *G*	Bet *G*	Inter *G*	Bet *G*	Inter *G*	Bet *G*
Adolescent–family interaction	Inter	23.3 ± 2.53	23.3 ± 0.84	23.2 ± 26.7	0.001	F = 2.22 p = 0.113	F = 1.36 p = 0.252	0.025	0.015	0.17	0.001	0.41	0.27	0.054	0.21
	Cont	22.71 ± 2.64	22.73 ± 2.56	22.57 ± 2.51											
Barriers to parent–adolescent communication	Inter	10 ± 1.2	10.9 ± 1.4	10.1 ± 7.2	0.091	F = 1.23 p = 0.837	F = 1.1 p = 0.453	0.025	0.014	0.015	0.001	0.47	0.27	0.055	0.19
	Cont	10.1 ± 5.6	10.1 ± 4.3	10.1 ± 4.8											
Interaction with the opposite sex	Inter	36.88 ± 3.97	37.4 ± 11.05	37.3 ± 86.34	0.091	F = 1.23 p = 0.837	F = 1.1 p = 0.453	0.025	0.014	0.015	0.001	0.47	0.27	0.055	0.19
	Cont	35.4 ± 97.11	36.4 ± 26.14	36.4 ± 22.39											
Sexual health self-care	Inter	29.2 ± 17.14	32.3 ± 24.84	31.1 ± 8.92	0.833	F = 22.31 p < 0.001	F = 22.31 p < 0.001	0.18	0.2	0.001	0.001	1	1	0.001	0.001
	Cont	28.2 ± 24.76	27.5 ± 6.94	28.7 ± 28.78											
Reproductive and sexual knowledge	Inter	97.26 ± 5.92	101.5 ± 6.19	101.5 ± 28.15	0.963	F = 15.73 p < 0.001	F = 17.77 p < 0.001	0.24	0.17	0.001	0.001	1	1	0.001	0.001
	Cont	94.7 ± 44.04	96.6 ± 44.93	96.6 ± 15.66											
Self-care reproductive and menstrual hygiene	Inter	52/64 ± 5/16	55.3 ± 8.62	56.4 ± 28.2	0.823	F = 18.51 p < 0.001	F = 21.64 p < 0.001	0.92	0.17	0.008	0.001	1	1	0.001	0.001
	Cont	52/5 ± 8/39	52/5 ± 4.43	51.5 ± 93/45											
Perception of premarital sex	Inter	11.1 ± 8.14	13.1 ± 95.1	11.1 ± 5.27	0.933	F = 32.69 p = 0.61	F = 34.68 p = 0.29	0.005	0.12	0.001	0.001	0.12	0.22	0.001	0.001
	Cont	11.1 ± 91.36	11.9 ± 77.55	11.6 ± 93.4											
SRH self-care	Inter	250.9 ± 12	261/11 ± 8.1	262.1 ± 4.8	0/947	F = 32.69 p < 0/001	F = 34.68 p < 0.001	0.82	0.29	0.001	0.001	1	1	0.001	0.001
	Cont	247.3 ± 12/9	247.9 ± 12.9	247.8 ± 12.7											

Note(s): Inter: intervention; Cont: control; Bet: between; *G*: group

Table 2.
Repeated measures ANOVA test results of self-care for SRH of adolescents during before, immediately and one month after the intervention in two groups

was observed in the domains of family–adolescent interactions ($p = 0.252$), barriers to parent–adolescent communication ($p = 0.453$) and perceptions and behaviors of interactions with the opposite sex ($p = 0.264$) between the two groups, following the educational intervention.

Discussion

This controlled interventional study was conducted to investigate the effectiveness of using the PMT-based model for self-care behavior education in adolescents. According to the results of this study, the PMT-based educational intervention could improve self-care behaviors for SRH in this age group. Accordingly, the mean scores of self-care in the domains of empowering factors in reproductive and sexual self-care, reproductive and sexual knowledge, reproductive and menstrual self-care and perceptions of sexual risk behaviors in the intervention group had increased significantly after education compared with those in the control group.

In line with the results of this study, Madeni had realized that the given theory could leave a favorable effect on safe sexual behaviors in adolescents (Madeni *et al.*, 2011; Havaei *et al.*, 2019). According to this theory, fear aroused in this respect could play an important role in adopting appropriate sexual behaviors. For that reason, part of the educational content of the present study was prepared based on perceived susceptibility and severity constructs, to increase the chance of assuming health-related behaviors (Shojae zadeh *et al.*, 2011). Using statistics, the adolescents were further encouraged to see themselves at the risk of inappropriate sexual consequences. Similarly, they could understand the severity of the consequences of such sexual activities through brainstorming and discussions.

Based on the results of the present study, education was able to improve the domains of self-care for SRH in adolescents in a significant manner. It should be noted that self-care is an integral part of primary health care (PHC) and covers all dimensions of health. This is especially important when it comes to culture, politics, gender and power. Obviously, this issue becomes even more significant in self-care for SRH because many people cannot decide about their own bodies, particularly those with knowledge deficiencies (Narasimhan *et al.*, 2019). The results of a systematic review in this respect had further revealed that SRH-oriented interventions for adolescents, including education, counseling and methods of contraception, could be effective in using contraceptives and reducing unwanted pregnancies (Salam *et al.*, 2016). In a survey by Coffman *et al.* on adolescent SRH, the findings had further indicated that educational interventions had no effects on behaviors in this age group, which was not consistent with the results of the present study (Kaufman *et al.*, 2014).

The PMT-based education could also enhance the mean scores of reproductive and sexual knowledge in a significant manner. Obviously, this type of knowledge could boost SRH, reduce STDs, diminish the incidence of unwanted pregnancies and unsafe abortions and moderate the incidence of antiviral prophylactic treatments (Narasimhan *et al.*, 2019). In line with the results of this study, Madeni had reported that sex education could improve adolescents' SRH knowledge and behaviors, as well as associated decisions, even though their attitudes had remained unchanged after it (Madeni *et al.*, 2011).

The results of this study similarly showed that the PMT-based education was effective in reproductive and menstrual self-care. The response of adolescent females as a high-risk group to menstruation could, thus, depend on their knowledge in this regard. Their way of learning about menstruation and health status could accordingly determine how they would act in response to these issues. It should be noted that although menstruation is a normal process, misconceptions sometimes lead to adverse consequences. Therefore, proper functioning of women in terms of menstrual health plays a decisive role in increasing their susceptibility to genital tract infections. Women with better knowledge of menstrual health are more likely to be informed in this regard and less exposed to such infections (Akbari *et al.*, 2014).

Based on the results of this study, the educational intervention concerned increased the scores of perceptions of sexual risk behaviors in the intervention group compared with those in the control group. Binding relationships within marriage contrary to Islamic laws and customary friendship with the opposite sex and sexual risk behaviors, no need for friendship with the opposite sex as a prelude to marriage and instability of friendship with the opposite sex are accordingly norms delivered to adolescents by parents, school teachers, friends and peers in the sociocultural context, which are effective in shaping their sexual behaviors. In this sense, Alimoradi *et al.* had reported the importance of perceptions of sexual risk behaviors and had noted that messages conveyed by important people including parents, friends and schoolteachers to adolescents could have a leading role in the perceived risks of sexual health behaviors (Alimoradi *et al.*, 2017). Correspondingly, Mirzaei believed that sexual risk behaviors among adolescents could increase the risk of STDs despite religious and social restrictions (Bahrami *et al.*, 2016).

The results of this study established that the educational intervention implemented did not have a significant effect on family–adolescent interactions and failed to moderate barriers to adolescent–parent communication. Such findings were expected, given that parents were part of the parent–adolescent relationship, who were absent in the present study. According to the study findings, the desired family–adolescent interactions could be achieved through reinforcing parent–adolescent communication, helping adolescents make right and independent decisions, enhancing parental authority along with friendship with adolescents and boosting parental supervisions. The blames declared by parents and even their fears could be, thus, among barriers to adolescent–parent communication with regard to sexual issues (Alimoradi *et al.*, 2017). It seems that parents need to become aware of the importance of this issue and gain skills and knowledge needed to communicate with their adolescents and pass on right information and values to them. In the absence of proper adolescent–parent communication, the role of other sources of information becomes more prominent.

Nevertheless, no significant changes were observed after the intervention in the domain of perceptions and behaviors of interactions with the opposite sex. In this resepct, Merghati Khoie *et al.* had reported that interactions with the opposite sex in adolescents could be influenced by friends and peers. They had also stated that the knowledge of adolescents and young adults about the criteria for picking friends could play an important role in preventing them from engaging in sexual risk behaviors (Merghati Khoie *et al.*, 2016).

Regarding the domains of barriers to adolescent–parent communication, family–adolescent interactions and perceptions and behaviors of interactions with the opposite sex, on which the educational intervention concerned did not have a significant effect, it was concluded that such interventions were based on the PMT as one of the theories about individual behavior change and did not include those around, so achieving such results seemed to be logical. Aslani *et al.* had further shown that students had recognized many barriers to SRH (Aslani and Khosravi, 2016).

Likewise, the study results revealed that all members in the intervention group, and 93.3% of those in the control group had access to social networks, and even 57.7 and 46.4% of the cases in the intervention and control groups had, respectively, watched pornos. Consistent with this study, the findings of a survey had demonstrated that the vast majority of students had underlined university and the internet as the main sources of their information (Pourmarzi *et al.*, 2012). Based on the findings of this investigation, the bulk of the participants in both groups had watched pornos, which was in line with the findings of other studies (Farahani and Maleki, 2011).

Regarding parental education, the results of the present study showed that 24.4% of the parents in the intervention group had a level of education below high-school diploma, 41.1% of them had high school diploma, and 34.4% of the cases were holding university degrees.

On the other hand, 30% of the parents in the control group had a level of education below high-school diploma, 41.1% of them were holding high-school diploma and 28.8% of the cases had higher education degrees. There was accordingly no significant difference in the level of parental education between both groups. However, studies had not confirmed the role of parental education in adolescents' knowledge of SRH (Aslani and Khosravi, 2016) and believed that this age group could often obtain their information from friends, the internet and social networks (Afshary *et al.*, 2016).

Conclusion

The PMT-based educational intervention may, thus, improve SRH in female adolescents, which can have a significant impact on self-care for SRH, reproductive and sexual knowledge, reproductive and menstrual self-care and perceptions of sexual risk behaviors. Therefore, it is recommended to apply this theory as an interventional framework to teach SRH issues to adolescents.

Strength and limitation

The theory-based design of this study was one of its strengths. However, parents' failure to partake in this study and its implementation only on females were among the main limitations. Information exchange between the study samples was also highlighted as another limitation of this study.

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