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Settings for planetary health and well-being: Considerations for the theme of the 25th Global Conference of IUHPE, Abu Dhabi, 2025

Evelyne de Leeuw[1] and Mumtaz Meeran[2], for the Global Scientific Committee of the 25th World Conference of the International Union for Health Promotion and Education (IUHPE2025)

A unique and momentous opportunity

The 25th World Conference of the International Union for Health Promotion and Education to be held in 2025 (IUHPE2025) is a momentous occasion. Not only do we celebrate a jubilee in our series of world conferences in our 74th year, but this global gathering of the health promotion community and its institutions will also, for the first time, take place in a part of the world that is bounded by the Mediterranean in the North to the Sahel in the South, and from the Atlantic Ocean to the Arabian Sea: Abu Dhabi, Capital of the United Arab Emirates, will be hosting our Conference as part of the WHO Eastern Mediterranean Region.

A place on the world stage

Considered the cradle of civilisation, urbanisation and the Abrahamic faiths, the diverse countries of the region hold great significance as a historic focal point of scientific discovery and knowledge. Not only is the region making great strides in health development and innovation, it also recognises its challenges and responsibilities in a post-industrial and post-carbon-extraction world. Significant world events are taking place in the Gulf countries and their neighbours, showing commitment to global alignment and action. These range from the climate change COP28 conference to global sports events and international exhibitions.

Health pressures

Social, economic, political and health developments parallel these global challenges and responsibilities. Because of their rapid pace of development, demographic challenges include both ageing and adolescent population growth. At the same time, emergency situations ranging from the consequences of climate change to armed conflict and forced human mobility also mean that health developments are observed with keen interest by local, regional and global stakeholders. These include affected communities, non-governmental organisations and global state and industry actors. There is great urgency in identifying and implementing health and social innovations, in particular grounded in the health promotion paradigm that further builds on statements from the *Ottawa Charter* (1) to the *Geneva Charter for Well-Being* (2), the IUHPE2019 Rotorua Statement on *Waiora: Promoting Planetary Health and Sustainable Development for All* (3), the IUHPE2022 *Tiohtià:ke Statement* (4), IUHPE Position Statement on Planetary Health Promotion and Indigenous World Views and Knowledges (5) and the COP28 UAE Declaration on Climate and Health (6), and alludes to the IUHPE2023 Position Statement: *A practical vision for a health-literate world* (7) and the *WHO Shanghai Declaration on Promoting Health in the 2030 Agenda for Sustainable Development* (8).

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Health settings innovations

Innovation has been embraced by countries and communities in the region with vigour and enthusiasm. This includes a prominent focus on settings for health promotion. There is a booming healthy cities network across the region; a growing health promoting schools movement, a nascent and strong effort toward health promoting universities, and evidence-based innovations in healthy shopping malls where vulnerable populations may exercise and build health resilience in climate controlled environments. The discourse on the development and application of digital media and virtual environments for health continues to be on the agenda, in particular when it comes to the application of artificial intelligence for evidence-informed health policy and what some call 'precision prevention'.

Balancing health and social sustainability, and resilience

At the same time, communities and authorities in the region recognise the unique challenges to sustainable health development in social and physical environments that are hot and dry, and where population pressures require particular investments that are sometimes difficult to reconcile with principles of planetary health, and well-being economies. A double burden of disease and possible opportunity for health resilience, locally and globally, dictates the need to combine traditional public health interventions (vaccinations, lifestyle investments and primary health) with cutting edge work on social, political and commercial determinants of health (9). IUHPE2025 will provide an opportunity for stocktaking and inspiration, both for the region and the world.

Conference theme and sub-themes

Building on its strong legacies from recent conferences (in Geneva, Pattaya, Curitiba, Rotorua and Montreal), IUHPE2025 will embrace firm agendas of equity, planetary and eco-health, indigenous voices, community-based health development and salutogenic well-being perspectives that combine and engage systems and people perspectives on positive health.

The proposed theme for the conference, therefore, is '*Settings for Planetary Health and Well-Being*'. Explicitly, the following sub-themes (aligning with IUHPE policy and the actions undertaken by its global working groups, language networks, early career professional network and regional offices) are critical:

- demographic change and inclusion of all age groups, genders and beliefs;
- health equity and its determinants;
- health promotion financing;
- global diplomacy and emergency/pandemic preparedness in the current social and natural reality;
- health literate settings, schools, healthcare, communities and beyond;
- new settings for health (promotion) innovation;
- digital health transformation (AI, big data, digital equity, tools and stewardship);
- health and wellbeing in all policies;
- glocal (global/local) networks for health;
- one health and planetary health promotion (eco-health, human and animal health, healthy spirit);
- spirituality, faith and planetary well-being;
- precision health promotion.

We invite health promoters, communities, activists, scholars, students and policy operators to actively participate and contribute to this dialogue and exchange, and to help transform our world for the global vision for planetary health and well-being.

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Des milieux de vie favorables à la santé planétaire et au bien-être : Considérations pour le thème de la 25e Conférence mondiale de l'UIPES, à Abu Dhabi, en 2025

Evelyne de Leeuw[1] et Mumtaz Meeran[2], pour le Comité scientifique mondial de la 25e Conférence mondiale de l'Union internationale de Promotion de la Santé et d'Éducation pour la Santé (IUHPE2025)

Une opportunité unique et marquante

La 25e Conférence mondiale de l'Union internationale de Promotion de la Santé et d' Éducation pour la Santé (UIPES) qui se tiendra en 2025 (IUHPE2025) sera un événement marquant. Nous célébrerons en effet un double anniversaire puisque cette 25e Conférence mondiale aura lieu durant la 74e année de l'UIPES. De plus, ce rassemblement de la communauté mondiale des actrices et acteurs de la promotion de la santé aura lieu, pour la première fois, dans une partie du monde délimitée au nord par la Méditerranée et au sud par le Sahel, et s'étendant de l'océan Atlantique à la mer d'Arabie. Abu Dhabi, la capitale des Émirats arabes unis, accueillera ainsi notre conférence au sein de la Région de la Méditerranée orientale de l'OMS.

Une place sur la scène internationale

Considérés comme le berceau de la civilisation, de l'urbanisation, et des religions abrahamiques, les différents pays de cette région revêtent une grande importance en tant que foyer historique de découvertes et de connaissances scientifiques majeures. La région est à la pointe en matière de développement et d'innovation en santé, tout en reconnaissant aussi les défis qu'elle rencontre et ses responsabilités dans un monde post-industriel et post-carbone. Des événements significatifs se déroulent dans les pays du Golfe et leurs voisins qui démontrent un engagement envers l'action et l'harmonisation avec le reste du monde. Ceux-ci incluent la COP28 sur les changements climatiques, des événements sportifs mondiaux, et des expositions internationales.

Des pressions en termes de santé

Parallèlement à l'intégration de ces enjeux et de ces responsabilités mondiales, des développements ont lieu également dans ces régions sur le plan social, économique, politique et sanitaire. Les enjeux démographiques, qui évoluent rapidement, incluent l'accroissement de la population vieillissante et celui de la population adolescente. En même temps, des situations d'urgence liées aux conséquences du changement climatique, aux conflits armés et aux migrations humaines forcées suscitent un intérêt croissant pour le développement d'initiatives innovantes en santé de la part des parties prenantes au niveau local, régional et mondial. Celles-ci incluent les communautés affectées, les organisations non gouvernementales, et les acteurs étatiques et industriels mondiaux. Il est ainsi urgent d'identifier et de mettre en œuvre des innovations sanitaires et sociales, fondées en particulier sur le paradigme de la promotion de la santé. Celui-ci s'inscrit dans les déclarations successives, de la *Charte d'Ottawa* (1) à la *Charte de Genève pour le bien-être* (2), en passant par la Déclaration de IUHPE2019 à Rotorua, *Waiora : Promouvoir la santé planétaire et le développement durable pour tous* (3), la *Déclaration de Tiohtià:ke* de IUHPE2022 (4), le document de position de l'UIPES sur la santé planétaire et les perspectives autochtones (5), et la Déclaration de la COP28 EAU sur les changements climatiques (6), en se référant au Document de position de l'UIPES en 2023 : *Une perspective pratique pour un monde compétent en matière de santé* (7), et à la *Déclaration de Shanghai sur la promotion de la santé dans le Programme de développement durable à l'horizon 2030 de l'OMS* (8).

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Des innovations en termes de milieux de vie favorables à la santé

Les pays et les communautés de cette région ont embrassé l'innovation avec vigueur et enthousiasme. Cela se traduit par des efforts particuliers pour des milieux de vie favorables à la santé. Il existe un réseau de Villes en Santé florissant à travers la région, un mouvement grandissant d'Écoles promotrices de santé, un fort soutien au développement d'Universités promotrices de santé, et des innovations fondées sur les données probantes pour des Centres commerciaux promoteurs de santé, où les populations en situation de vulnérabilité peuvent faire de l'exercice et développer leur résilience en santé dans des environnements climatisés. Les débats sur le développement et l'application des médias numériques et des environnements virtuels pour la santé restent à l'ordre du jour, en particulier lorsqu'il s'agit de recourir à l' intelligence artificielle pour soutenir des politiques de santé fondées sur les preuves et pour ce que certains appellent la « prévention de précision ».

Équilibrer la durabilité sanitaire et sociale, et la résilience

En même temps, les communautés et les autorités de la région reconnaissent les enjeux particuliers liés à une santé durable dans des environnements physiques chauds et arides, et où les pressions démographiques nécessitent des investissements qui sont parfois difficiles à aligner avec les principes de la santé planétaire et des économies du bien-être. Le double fardeau des maladies et de création d'opportunité de résilience en santé, à l'échelle locale et mondiale, impose de combiner les interventions de santé publique traditionnelles (vaccination ; investissements dans les styles de vie ; soins de santé primaire) avec un travail novateur sur les déterminants sociaux, politiques et commerciaux de la santé (9). IUHPE2025 nous donnera l'opportunité de faire un état des lieux de ces défis et de ces innovations, et de nous en inspirer, à la fois au niveau régional et au niveau mondial.

Le thème et les sous-thèmes de la conférence

En s'appuyant sur l'héritage solide des dernières conférences mondiales (à Genève, à Pattaya, à Curitiba, à Rotorua et à Montréal), IUHPE2025 adoptera des intentions ambitieuses en termes d'équité, de santé planétaire et d'écosanté, d'inclusion des voix autochtones, de renforcement de la santé communautaire, et de perspectives salutogènes de promotion du bien-être qui associeront et engageront les perspectives systémiques et celles individuelles pour la santé positive.

Le thème proposé pour la conférence est donc « *Des milieux de vie favorables à la santé planétaire et au bien-être* ». De manière explicite, les sous-thèmes suivants (alignés sur les politiques de l'UIPES et les actions entreprises par ses Groupes de travail mondiaux, ses réseaux linguistiques, son réseau de jeunes professionnels et ses bureaux régionaux) sont centraux :

- Changement démographique et inclusion de tous les groupes d'âge, de tous les genres et de toutes les croyances.
- Équité en santé et ses déterminants.
- Financement de la promotion de la santé.
- Diplomatie mondiale et préparation aux situations d'urgence/de pandémie dans la réalité sociale et naturelle actuelle.
- Milieux de vie favorables à la santé – écoles, services de soins de santé, communautés, etc.
- Nouveaux milieux de vie pour l'innovation en (promotion de la) santé.
- Transformation numérique en santé (IA, données massives, équité numérique, outils et gestion).
- Santé et bien-être dans toutes les politiques.
- Réseaux glocaux (mondiaux/locaux) pour la santé.
- Promotion de la santé planétaire et Une seule santé (écosanté, santé humaine et animale, esprit en santé).
- Spiritualité, foi et bien-être planétaire.
- Promotion de la santé et prévention de précision.

Nous invitons les promotrices et promoteurs de santé, les communautés, les activistes, les universitaires, les étudiantes et les étudiants, et les responsables politiques à participer activement à ce dialogue et à cet échange, et à y apporter leur contribution, de même qu'à aider à transformer notre monde dans le sens de la vision globale pour la santé planétaire et le bien-être.

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Entornos para la salud planetaria y el bienestar: Consideraciones sobre el tema de la 25ª Conferencia Mundial de la UIPES, Abu Dabi, 2025

Evelyne de Leeuw[1] y Mumtaz Meeran[2], por el Comité Científico Mundial de la 25ª Conferencia Mundial de la Unión Internacional de Promoción de la Salud y Educación para la Salud (IUHPE 2025)

Una oportunidad única y trascendental

La 25ª Conferencia Mundial de la Unión Internacional de Promoción de la Salud y Educación para la Salud, que se realizará en el 2025 (IUHPE2025), será una ocasión trascendental. No solo celebraremos un jubileo en nuestra serie de conferencias mundiales durante nuestro 74° aniversario, sino que este encuentro de la comunidad internacional de la promoción de la salud y sus instituciones también tendrá lugar, por primera vez, en una parte del mundo limitada por el Mediterráneo al norte y el Sahel al sur, y que va desde el Océano Atlántico hasta el mar Arábico. Abu Dabi, capital de los Emiratos Árabes Unidos, será la sede de nuestra Conferencia como parte de la Región del Mediterráneo Oriental de la OMS.

Un lugar en el orden mundial

Considerados la cuna de la civilización, de la urbanización y de las religiones abrahámicas, los diferentes países de la región tienen un gran significado como punto focal histórico de descubrimiento científico y de conocimiento. La región no solo está haciendo grandes avances en el desarrollo y la innovación en salud, sino que también reconoce sus desafíos y responsabilidades en un mundo posindustrial y posextracción de carbón. En los países del Golfo y sus vecinos se están produciendo relevantes acontecimientos que demuestran el compromiso con la alineación mundial y las acciones globales. La lista de estos eventos abarca desde la COP28 sobre el cambio climático hasta encuentros deportivos y exhibiciones internacionales.

Presiones en salud

Hay acontecimientos sociales, económicos, políticos y de salud que suceden de forma paralela a dichos desafíos y responsabilidades mundiales. Debido a su ritmo acelerado, los retos demográficos incluyen el envejecimiento y el aumento de la población adolescente. Al mismo tiempo, las situaciones de emergencia – desde las consecuencias del cambio climático hasta el conflicto armado y los desplazamientos humanos forzados – también implican que los avances en temas de salud sean observados con gran interés por las partes interesadas locales, regionales y mundiales. Entre ellos se incluyen comunidades afectadas, organizaciones no gubernamentales, agencias estatales y actores de la industria mundial. Hay una gran urgencia para identificar e implementar las innovaciones sociales y en salud, en particular aquellas que se fundamentan en el paradigma de la promoción de la salud, que a su vez se basa en las declaraciones que van desde la *Carta de Ottawa* (1) hasta la *Carta de Ginebra para el bienestar* (2), la declaración de la IUHPE 2019 en Rotorua Waiora: *Promover la salud planetaria y el desarrollo sostenible para todos* (3), la IUHPE 2022 *Tiohtià:ke* (4), la Declaración de posición de la UIPES sobre la promoción de la salud planetaria y los conocimientos y opiniones de los pueblos originarios

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(5) y la Declaración sobre el Clima y la Salud de la COP28 en Dubai (6), y que alude a la Declaración de Posición de la UIPES del 2023: *A practical vision for a health-literate world* (en inglés) (7), así como a la Declaración de Shanghái de la OMS sobre la *Promoción de la salud en la agenda 2030 para el desarrollo sostenible* (8).

Innovaciones en entornos saludables

Los países y las comunidades de la zona han adoptado la innovación con vigor y entusiasmo y les han brindado especial atención a los escenarios para la promoción de la salud. Hay un auge de redes de Ciudades Saludables en toda la región, un creciente movimiento de Escuelas Promotoras de la Salud, un naciente y fuerte esfuerzo hacia las Universidades Promotoras de la Salud, así como innovaciones basadas en evidencia para crear Centros Comerciales Saludables en los que las poblaciones vulnerables pueden ejercer y construir una resiliencia saludable en entornos climatizados. El discurso sobre el desarrollo y la aplicación de los medios digitales y de los ambientes virtuales para la salud continúa presente en las agendas, en particular cuando se trata de la aplicación de la inteligencia artificial para una política en salud informada según la evidencia y lo que algunos llaman "prevención de precisión".

Equilibrio entre sostenibilidad social y en salud, y resiliencia

Al mismo tiempo, las comunidades y las autoridades en la región reconocen los desafíos únicos para un desarrollo sostenible de la salud en entornos físicos y sociales que son calurosos y secos, y en los que las presiones de la población requieren de inversiones particulares que algunas veces resultan difíciles de reconciliar con los principios de la salud planetaria y de la economía del bienestar. Una doble carga de enfermedades y de una posible oportunidad para la resiliencia en salud, tanto local como mundial, dicta la necesidad de combinar las intervenciones tradicionales de salud pública (vacunaciones, inversiones en el estilo de vida, salud primaria) con un trabajo de vanguardia en torno a los determinantes sociales, políticos y comerciales de la salud (9). La IUHPE2025 ofrecerá una oportunidad para hacer un balance y para servir de inspiración, tanto para la región como para el mundo.

Tema y subtemas de la Conferencia

Basándose en el sólido legado de las recientes conferencias (de Ginebra, Pattaya, Curitiba, Rotorua y Montreal), la IUHPE2025 adoptará unas agendas concretas de equidad, salud planetaria y ecosalud, voces de pueblos originarios, desarrollo de la salud basado en la comunidad y enfoques salutogénicos del bienestar, que combinen y comprometan los sistemas y las personas hacia la salud positiva.

Por consiguiente, el tema propuesto para la Conferencia es "*Entornos para la salud planetaria y el bienestar*". Explícitamente, son fundamentales los siguientes subtemas (alineados con la política de la UIPES y las acciones emprendidas por sus Grupos Mundiales de Trabajo, las redes idiomáticas y de profesionales noveles, así como por las oficinas regionales):

- Cambio demográfico e inclusión de todos los grupos de edad, géneros y creencias.
- Equidad en salud y sus determinantes.
- Financiamiento de la promoción de la salud.
- Diplomacia mundial y preparación para emergencias/pandemias en la actual realidad social y natural.
- Entornos de alfabetización en salud – escuelas, centros de salud, comunidades y más allá.
- Nuevos escenarios para la (Promoción) Innovación en la salud.
- Transformación digital de la salud (IA, macrodatos, equidad digital, herramientas y gestión).
- Salud y Bienestar en Todas las Políticas.
- Redes glocales (globales/locales) para la salud.
- Una Sola Salud y Promoción de la Salud Planetaria (ecosalud, salud humana y animal, espíritu saludable).
- Espiritualidad, fe y bienestar planetario.
- Promoción de la salud de precisión.

Invitamos a los promotores de la salud, a las comunidades, los activistas, académicos, estudiantes y a los responsables políticos a participar activamente y contribuir a este diálogo e intercambio, y a ayudar

a transformar nuestro mundo para la visión mundial de la salud planetaria y el bienestar.

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Original Article

The influence of emotional reactions and compliance with Ministry of Health guidelines during the COVID-19 pandemic in Israel: a longitudinal study of gender differences

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Abstract: This study sought to examine gender differences in emotional reactions and compliance with Ministry of Health (MOH) guidelines during the COVID-19 pandemic in Israel, with the goal of gaining a deeper understanding of these gender-related variations throughout the lockdown periods. A longitudinal study comprising 2509 participants was conducted during two of Israel's lockdowns: 1424 participants completed a questionnaire during the first lockdown (23 April–5 May 2020); of these, 1085 completed a follow-up questionnaire during the second lockdown (September 30–October 10, 2020). Participants exhibited higher levels of compliance with MOH guidelines (e.g., wearing face masks, maintaining social distancing) and knowledge about COVID-19 during the second lockdown, whereas they exhibited more negative emotional reactions during the first lockdown. Female participants scored higher than male participants on all measures. Multiple regression results showed that about 21% of the variance in compliance with MOH guidelines was explained by lockdown type (i.e., first or second), gender, and age, while knowledge and negative emotional reactions added another 19% to the explained variance. The results suggest that the impact of the pandemic on emotional reactions decreased over time, with people exhibiting greater compliance with MOH guidelines and more knowledge about COVID-19. Moreover, the behavioral and psychological impact of the pandemic was greater on women than on men. The results suggest that healthcare professionals should pay more attention to mental health issues during a pandemic. Moreover, policymakers should focus on women as a vulnerable group and suggest appropriate solutions to reduce their emotional distress. Furthermore, governments and employers should provide greater flexibility and support for single mothers during the pandemic. In addition, gender inequality during lockdowns may place women at greater risk of psychological distress.

Keywords: gender, COVID-19, emotional reactions, healthy behaviors

Introduction

On 11 March 2020, the World Health Organization (WHO) (1) issued a declaration stating that COVID-19 (the disease caused by the SARS-CoV-2 virus) was a global pandemic. According to the latest WHO figures, the virus has infected over 770 million people worldwide, and more than 6,950,000 have succumbed to it (1). The results of a meta-analysis of global COVID-19 cases showed no differences between the numbers of men and women affected by the disease (2). Nevertheless, the long-term impact of gender in the context of COVID-19 is still unknown, particularly in terms of the effects of the lockdowns necessitated

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by the pandemic. Professionals have many reasons to be alarmed by the pandemic's rapid and persistent detrimental impact on mental and physical health (3,4). In Israel, these lockdowns dictated that people must stay at home at all times, other than for purposes of work, health (e.g., doctor's appointments), or purchasing necessities.

Lockdowns have been found to be an effective means of limiting the spread of disease during pandemics. Nevertheless, prolonged confinement at home can have deleterious effects on physical as well as mental health (5). Among these effects are symptoms of depression and anxiety, as well as acute stress disorders (6). Research conducted during the pandemic shows that women tend to report more mental health issues than men (7,8). Yet this gender difference also appears during normal times (9) and, therefore, cannot necessarily be attributed to lockdowns. In view of this, we sought to discover whether there were further gender differences in mental health during the lockdowns. A study that examined psychological and behavioral symptoms among the general non-infected population in Israel during the first two weeks of April, when restrictions were at their most severe, found that levels of anxiety and depression, poor sleep quality, and a tendency toward emotional eating predicted adjustment difficulties. Other variables that predicted adjustment difficulties included being female, intensive news consumption, and a decline in economic status due to the pandemic (10). The survey, conducted among 187 Israeli physicians, found that female physicians experienced higher levels of negative emotions than male physicians during COVID-19 (11).

Bangasser and Wicks (12) found that gender differences in stress response systems are manifested in increased endocrine, affective, and arousal responses to stress among women. Moreover, women's predominant roles as family caregivers and frontline healthcare workers also serve as gender-related factors (13). Thelwall and Thelwall (14) examined tweets in English related to COVID-19. They found that women's tweets about the virus referred mainly to family, social distancing, and healthcare, whereas men's tweets focused on sports cancellations, the global spread of the virus, and political reactions. These findings are reinforced by the results of a cross-sectional study suggesting that women, individuals with previous psychiatric illnesses, and those with preexisting conditions are most likely to be affected psychologically by the pandemic (15,16).

A longitudinal survey from the UK before and during the lockdown period showed that women, and especially mothers who shouldered the major burden of housework and childcare, exhibited the most dramatic decline in well-being during the pandemic (17). The survey also pointed to strong gender differences in emotional reactions. Other studies, however, revealed no gender differences in health behavior or emotional distress during the pandemic (18,19). Indeed, some studies found higher values of extraversion or anxiety among men (20,21). Unlike previous studies, two cross-sectional surveys conducted in Israel about COVID-19 did not find that adherence to distancing regulations, or stress were predicted by age, gender, or subjective health status (22,23). Two other studies conducted during the second lockdown in Israel found a significant main effect of gender, with women reporting higher levels of posttraumatic growth than men (24,25).

The effectiveness of official health guidelines depends on the public's level of compliance, which often varies according to social group and location. Studies conducted in Israel examining compliance to Ministry of Health (MOH) guidelines at different times during the pandemic reveal a significant gender difference, with women reporting greater intentions to comply than men (8,26). Zhong *et al.* (27) further found that women were better informed about COVID-19 than men and tended to comply more with official guidelines such as wearing masks and social distancing.

Previous studies of COVID-19 compliance guidelines that took knowledge into account consistently found a positive association between knowledge level and adherence to COVID-19 protective measures (28). A study conducted in Germany revealed that 9 out of 10 adults felt they were well informed or very well informed about COVID-19. Moreover, women more frequently reported feeling confused by the variety of information about COVID-19 than men (29). Other studies show that the female gender exhibited a significant association with adequate knowledge (8,30).

The current study

The current study used longitudinal data to examine gender differences during two lockdowns in Israel. Our aim was to examine the impact of gender on people's knowledge about the virus, their compliance with MOH guidelines, and the nature of their emotional reactions to COVID-19. By examining the evolution of gender differences in emotional reaction and compliance with MOH guidelines during the pandemic, we seek to understand whether the lockdowns have had any impact upon structural gender differences (8).

The study's hypotheses are the following:

H1: Compliance with MOH guidelines, knowledge about COVID-19, and negative emotional reactions will be higher in the second phase than in the first.

H2: Compliance with MOH guidelines, knowledge about COVID-19, and negative emotional reactions will be higher among women than among men.

H3: The associations between knowledge about COVID-19, negative emotional reactions, and compliance with MOH guidelines will be higher for women than men.

Method

Participants and procedure

The study was conducted according to the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for observational studies (31). The Ethics Committee of Bar-Ilan University approved the study (Authorization No. 032003). Data from across Israel were collected during two periods via the Qualtrics online platform. A link to the electronic survey was distributed via Facebook™. Before completing the survey, participants were asked to read an informed consent form and indicate their agreement to participate. The sampling technique was a combination of non-probability consecutive sampling and snowball sampling. Participants were 2509 Israeli citizens: 1424 participants completed the study questionnaire during the first lockdown (23 April–5 May 2020); and 1085 of these same participants completed a follow-up questionnaire during the second lockdown (30 September–10 October 2020) (Figure 1).

Participants were given the following instructions: participation in this study is anonymous; you do not have to answer any questions that make you uncomfortable and you can withdraw from participation at any time; the data will be used for research purposes only. All participants gave their informed consent by clicking on the following option: 'I freely consent to participate in this survey'. Inclusion criteria were Hebrew speakers over the age of 18.

At the end of the questionnaire, participants were asked to provide their e-mail addresses to enable the researchers to contact them for a follow-up study. When the second lockdown was announced, the researchers decided to conduct a comparison of the two lockdowns. Not all participants from the first wave participated in the second wave. Among the reasons for failing to participate in the second wave were the following: e-mails that bounced back due to inactive or erroneous addresses; participants who declared they were too busy to answer the second questionnaire; and lack of time. For each wave, data collection ended after a period of 10 days. The participants' e-mail addresses were deleted after the second wave.

Measures

The following variables were measured during both lockdowns:

Compliance with MOH guidelines was measured by participants' responses to four positive statements reflecting precautionary guidelines issued by the Israeli MOH (3,4,8,32). Sample items included: 'To what extent do you comply with the instructions to stay at home during the lockdown?' and 'To what extent do you comply with the social distancing guideline of 2 meters?'. Participants answered on a 5-point Likert scale, ranging from 1 (a very small extent) to 5 (a great extent). Scale validity was assessed by a panel of four expert physicians. This assessment, referred to as expert validity (a form of content validity), aimed to eliminate any completely irrelevant items from the instrument and to rephrase or reword items related to the measured construct, as necessary. We generated a composite index based on the average of all items, with a higher score indicating greater compliance with MOH guidelines. Cronbach's $\alpha = 0.85$.

Knowledge about COVID-19 was measured by six items covering COVID-19 symptoms: diagnosis, risk factors, means of spreading infection, ways to safeguard against COVID-19 infection, and knowledge in relation to when suspected cases should be referred for treatment (3,4,8,32). A sample item is the following: 'Older adults and those with series chronic illnesses such as diabetes are at increased risk of developing more serious complications from COVID-19'. Participants answered on a 5-point Likert scale, ranging from 1 (a very small extent) to 5 (a great extent). We generated a composite index of the average of all items, with higher scores indicating higher levels of knowledge about COVID-19. Cronbach's $\alpha = 0.82$.

Emotional reactions to COVID-19 were assessed using three questions about stress, fear, and worry in the context of COVID-19. These questions were sourced from previous studies conducted among the general public (3,4,8,32): 'To what extent do you worry about COVID-19?', 'To what extent are you afraid of COVID-19?' and 'To what extent are you stressed about COVID-19?' Participants answered on a 5-point Likert scale ranging from 1 (a very small extent) to 5 (a great extent). We created a composite index of the average of all items, with higher scores indicating higher levels of negative emotional reactions toward COVID-19. Cronbach's $\alpha = 0.94$.

Socio-demographic variables included gender, age, years of education, marital status, number of children, employment status, and subjective health evaluation.

Statistical analyses

SPSS v27 was used to analyze the data. The analyses compared demographic and background characteristics, subjective health evaluation in the context of coping with the COVID-19 lockdowns, and gender. Chi-square tests and *z*-tests of dependent proportions were used to measure categorical variables, and dependent sample *t*-tests were used to measure continuous variables. A series of analyses of covariance were used to measure *compliance with MOH guidelines*, COVID-19 knowledge, and negative emotional reactions by lockdowns and gender, while controlling for age. We calculated a multiple hierarchical regression for *compliance with MOH guidelines*, COVID-19 knowledge, and negative emotional reactions, while controlling for lockdowns, gender, and age. The third step of the regression model involved standardizing the variables, defining all second- and third-order interactions with lockdowns and gender, and entering them in a stepwise manner. Significance level was set at $p = 0.01$.

Results

In this study, 2509 Israeli citizens were surveyed during the COVID-19 outbreak: 1424 participants answered a questionnaire during the first lockdown; and 1085 of these same participants answered a follow-up questionnaire during the second lockdown. During both survey periods, most respondents were women (79.8%–77.5%) between the ages of 18 and 97 (Lockdown 1: $M = 40.7$, $SD = 14.78$; Lockdown 2: $M = 45.13$, $SD = 15.16$). Most participants were married (62.3%–66.7%) and had up to three children. About 83% of the respondents were employed during the first lockdown, compared to about 69% during the second lockdown. This difference is significant. Most respondents reported good subjective health (79% of the participants in the first lockdown and about 66% of the participants in the second lockdown), with no gender difference. A higher percentage of both men and women reported good health during the first lockdown than during the second (χ^2 (2) = 28.44 and χ^2 (2) = 51.29, $p < 0.001$, respectively; Table 1).

Compliance with MOH guidelines, knowledge about COVID-19, and negative emotional reactions were significantly and positively higher in the second phase than in the first, supporting Hypothesis 1 (Table 2). Moreover, compliance with MOH guidelines, knowledge about COVID-19, and negative emotional reactions were higher among women than among men, supporting Hypothesis 2.

We ran a multiple hierarchical regression for compliance with MOH guidelines, with COVID-19 knowledge and negative emotional reactions serving as factors, while controlling for lockdown (0, first; 1, second), gender (0, women; 1, men), and age (Table 3). About 21% of the variance in compliance with MOH guidelines was explained by lockdown, gender, and age, while COVID-19 knowledge and

Table 1. Participants' background characteristics (N = 2509).

	Lockdown 1 (N = 1424)			*Lockdown 2 (N = 1085)*			
	Women	*Men*	*Difference*	*Women*	*Men*	*Difference*	*Total lockdown difference*
Mean age (SD), range	39.25 (13.92), 18-85	46.47 (16.57), 18-97	$t(393.82)^1 = 6.80$ $p < 0.001$	43.42 (14.60), 18-83	51.05 (15.49), 18-96	$t(1023) = 6.89$ $p < 0.001$	$t(2450) = 7.25$ $p < 0.001$
Mean years of education (SD), range	15.82 (3.84), 6-30	15.97 (3.67), 9-26	$t(1422) = 0.58$ $p = 0.564$	16.57 (3.41), 5-30	16.40 (3.64), 8-31	$t(991) = -0.68$ $p = 0.497$	$t(2260.59)^1 = 4.58$ $p < 0.001$
Marital status (%)							
Married	682 (60.6%)	198 (69.0%)	$\chi2\ (4) = 9.37$ $p = 0.053$	528 (63.8%)	185 (77.1%)	$\chi2\ (4) = 17.64$ $p = 0.001$	$\chi2\ (4) = 22.45$ $p < 0.001$
Single	322 (28.6%)	62 (21.6%)		170 (20.6%)	39 (16.3%)		
Divorced	67 (6.0%)	15 (5.2%)		79 (9.6%)	10 (4.2%)		
Widowed	22 (2.0%)	2 (0.7%)		21 (2.5%)	3 (1.3%)		
Other	32 (2.8%)	10 (3.5%)		29 (3.5%)	3 (1.3%)		
Mean number of children (SD), range	2.37 (1.24), 0-9	2.33 (1.39), 0-9	$t(409.00)^1 = -0.35$ $p = 0.727$	2.08 (1.58), 0-13	2.25 (1.41), 0-7	$t(1022) = 1.52$ $p = 0.129$	$t(1948.97)^1 = -4.37$ $p < 0.001$
Employed (%)							
Yes	937 (82.4%)	241 (84.0%)	$Z = 0.63$ $(p = 0.532)$	554 (67.2%)	183 (76.6%)	$Z = 2.76$ $(p = 0.006)$	$Z = 7.92$ $(p < 0.001)$
No	200 (17.6%)	46 (16.0%)		270 (32.8%)	56 (23.4%)		
Subjective health evaluation (%)							
Poor	4 (1.4%)	15 (1.3%)	$\chi2\ (2) = 0.45$ $p = 0.797$			$\chi2\ (2) = 4.31$ $p = 0.116$	$\chi2\ (2) = 51.29$, $p < 0.001$
Fair	52 (18.1%)	226 (19.9%)		16 (7.0%)	51 (6.4%)		
Good	231 (80.5%)	896 (78.8%)		74 (32.6%)	207 (26.0%)		

[1]– t for unequal variances

Table 2. Correlates, Means, SDs, and ranges of study variables (N=2509).

Variables	*1*	*2*	*3*	*4*	*5*	*6*
1.Gender (male)	-					
2.Age	0.2**	-				
3. Lockdown (second)	0.03	0.14***	-			
4.Knowledge about COVID-19	-0.03**	0.13***	0.18***	-		
5.Emotional reactions	-0.19***	0.17***	-0.13***	0.44***	-	
6.Compliance with MOH guidelines	-0.06**	0.23***	0.36***	0.20***		-
Means		42.56		3.81	3.12	3.6
SDs		15.09		0.68	1.0	0.81
Range				1-5	1-5	1-5

**$p<0.01$, ***$p<0.001$; SD=Standard deviation

Table 3. Multiple hierarchical regression for compliance with MOH guidelines (N = 2509).

	Model 1			*Model 2*		
	B (SE)	β	*p*	*B (SE)*	β	*P*
Lockdown (1 or 2)	0.64 (0.04)	0.39	<0.001	0.56 (0.03)	0.34	<0.001
Gender	-0.28 (0.05)	-0.13	<0.001	-0.13 (0.04)	-0.06	<0.001
Age	0.01 (0.01)	0.16	<0.001	0.01 (0.01)	0.17	<0.001
Knowledge about COVID-19				0.44 (0.02)	0.36	<0.001
Negative emotional reactions				0.21 (0.01)	0.29	<0.001
Adj. R^2	0.207, $p<0.001$			0.404, $p<0.001$		

negative emotional reactions added another 19% to the explained variance. Compliance with MOH guidelines was higher in the second lockdown, higher for women than for men, and higher among older participants. Beyond these background variables, compliance with MOH guidelines was higher when knowledge about COVID-19 was higher and negative emotional reactions were greater.

Table 4 presents the distribution of the study variables (compliance with MOH guidelines, COVID-19 knowledge, and negative emotional reactions) by lockdown and gender. For each variable, we calculated a two-way analysis of covariance that included lockdown and gender as independent variables and controlled for age.

Compliance with MOH guidelines was significantly higher during the second lockdown than during the first ($F(1, 2433) = 235.96$, $p < 0.001$, $\eta^2 = 0.088$). Overall, this factor was higher among women than among men ($F(1, 2433) = 34.70$, $p < 0.001$, $\eta^2 = 0.014$), while the interaction between lockdown and gender did not reach significance ($F(1, 2433) = 0.77$, $p = 0.379$, $\eta^2 = 0.001$). The results for COVID-19 knowledge were significantly higher during the second lockdown than during the first ($F(1, 2426) = 51.70$, $p < 0.001$, $\eta^2 = 0.021$). Overall, women knew more about COVID-19 than men ($F(1, 2426) = 9.00$, $p = 0.003$, $\eta^2 = 0.004$), while the lockdown by gender interaction did not reach significance ($F(1, 2426) = 0.08$, $p = 0.780$, $\eta^2 = 0.001$). The findings for negative emotional reactions were significantly higher during the first lockdown than during the second ($F(1, 2434) = 9.44$, $p = 0.002$, $\eta^2 = 0.004$). Overall, negative reactions were higher among women than among men ($F(1, 2434) = 57.32$, $p < 0.001$, $\eta^2 = 0.023$), and the lockdown by gender

Table 4. Compliance with MOH guidelines, knowledge about COVID-19, and negative emotional reactions, by lockdown and gender (N = 2509).

	Lockdown 1 (N = 1424)			*Lockdown 2 (N = 1085)*			
	Total	*Men*	*Women*	*Total*	*Men*	*Women*	
Compliance with MOH guidelines M(SD)	3.71 (0.85)	3.57 (0.87)	3.74 (0.84)	4.31 (0.62)	4.23 (0.67)	4.33 (0.61)	(F(1, 2433) = 34.70, $p<0.001$, $\eta 2 = 0.014$)
Knowledge about COVID-19 M(SD)	3.71 (0.71)	3.66 (0.71)	3.72 (0.71)	3.98 (0.61)	3.92 (0.65)	3.99 (0.60)	(F(1, 2426) = 9.00, p=0.003, $\eta 2 = 0.004$)
Negative emotional reactions M(SD)	3.25 (1.14)	2.76 (1.08)	3.38 (1.12)	2.96 (1.02)	2.70 (0.98)	3.03 (1.01)	(F(1, 2434) = 57.32, $p<0.001$, $\eta 2 = 0.023$)

Range 1-5.

interaction was significant ($F(1, 2434) = 7.38$, $p = 0.007$, $\eta^2 = 0.003$). That is, women scored higher than men on negative emotional reactions during both lockdowns, yet the extent of the difference was greater during the first lockdown ($F(3, 2434) = 60.88$, $p < 0.001$, $\eta^2 = 0.024$) than during the second ($F(3, 2434) = 10.96$, $p = 0.001$, $\eta^2 = 0.004$). To summarize, participants exhibited more compliance with MOH guidelines and had more COVID-19 knowledge during the second lockdown than during the first, whereas they exhibited more negative emotional reactions during the first lockdown than during the second. On all measures, women scored higher than men, corroborating Hypothesis 3.

Discussion

This study sought to examine gender differences in emotional reactions and compliance with MOH guidelines during two of Israel's lockdowns.

The current study found that compliance with MOH guidelines, knowledge about COVID-19, and negative emotional reactions are higher among women than among men. These findings are generally consistent with those of previous research indicating that knowledge about COVID-19, psychological measures, and adhering to COVID-19 health guidelines are higher among women than among men (26,33). In a longitudinal online survey of 51,600 UK adults during lockdowns, compliance with guidelines was associated with negative emotional reactions, especially among women (34). Moreover, women had a greater burden of care during the lockdowns, both outside and within the home (13,17).

Additionally, our results found a significant interaction between gender and compliance with MOH guidelines, knowledge about COVID-19, and negative emotional reactions, with women's results higher than those of men at both time points. During the first lockdown, people had to adapt to new circumstances in which shops, schools, and entertainment venues rapidly closed down, perhaps explaining the higher negative emotional reactions (4,7). Previous studies also showed that women were more affected by the psychological impact of the pandemic than men (7,8,10,12,14,15), consistent with our results. Note, however, that depression and anxiety are generally more prevalent in women than in men (35). A survey conducted in Israel a year after the COVID-19 outbreak found that men have higher risk-taking tendencies than women (e.g., consumption of beer, hard liquor, and illegal drugs) (25).

In the current study, women also reported higher levels of COVID-19 knowledge than men. Indeed, by the second lockdown, women knew a great deal about COVID-19. A possible explanation for this finding is that the high level of stress and anxiety caused by the pandemic stimulated the need for additional knowledge (8,27,28,30). The findings in the literature regarding the association between gender and knowledge are contradictory. In support of our finding, Zhong *et al.* (27) found that during the COVID-19 pandemic, women were more informed than men about the disease and were more diligent in following guidelines such as wearing masks and social distancing.

The women in our study also exhibited higher levels of compliance with MOH guidelines and had more knowledge about COVID-19 than men. In previous studies, gender has been consistently associated with rule adherence, such that during the COVID-19 pandemic, women were more likely to

engage in protective behaviors (e.g., social distancing) than their male counterparts (8,26,27,36). During a prolonged lockdown in Melbourne (Australia) in late 2020 (112 days), women were found to have greater compliance intentions than men (36). This finding suggests that women are more inclined than men to adopt precautionary behaviors. These include washing hands, using hand sanitizer, wearing face masks, cleaning surfaces, and planning to seek medical attention if they suspect symptoms. This may reflect a broader perception that women are more susceptible to illness (8,26,27,36).

In line with previous results (13,17,21,34), the participants in our sample reported higher levels of compliance with MOH guidelines and had more knowledge about COVID-19 during the second lockdown and exhibited more negative emotional reactions during the first lockdown. One possible explanation for this finding is that during the first lockdown in Israel, participants described their sense of shock and chaos at the outbreak of the pandemic. This was followed by a gradual process of adjustment to the new situation, although they still had fears and concerns for their own welfare and that of their loved ones (3). People's knowledge may have increased due to explanations provided by the government and the MOH, and media exposure. Nevertheless, stress levels in Israel remained high during the second lockdown, such that the situation was still perceived as unstable and unpredictable (37,38). Our study also showed that compliance with MOH guidelines and knowledge about COVID-19 were higher during the second lockdown. We assume that people who are conscious of the extent of a threat are likely to take reasonable steps to prevent harm (22,33). Further, high levels of pressure and threat may increase people's motivation to comply with the guidelines to protect themselves from the pandemic (27,28,30).

Limitations

This study is limited by several factors. The majority of the study participants were women. Moreover, the sample was biased by the research design, which entailed online collection of self-report questionnaires, thus limiting the generalizability of our results. The research questionnaire assessed emotional reactions to COVID-19 by three questions about stress, fear, and worry. Yet emotional reactions in the context of mental health are much broader. Hence, future studies should also include items measuring depression, anxiety, and other emotional responses.

In addition, the online design made it more likely that participants would have access to digital resources, and have virtual social connections. Nevertheless, the lockdowns severely restricted physical mobility. Thanks to online recruitment, we were able to collect data from a diverse sample within a short time. In addition, including only respondents who completed the questionnaire in both collection periods may have produced a selection bias. The low response rate in the second wave may be explained by the fact that participants did not receive any compensation for participating in the study. Moreover, the length of the survey may have influenced the participation rate.

It should be noted that about a quarter of Israel's population is composed of non-Jews, including Muslim Arabs, Christian Arabs, Druze, Bedouins, Circassians, and other communities. This study did not examine ethnic differences. Such differences should be examined in future studies.

Conclusion

Our findings revealed gender differences in negative emotional responses, compliance with MOH guidelines, and knowledge about COVID-19 during two lockdowns in Israel. The results showed higher levels of compliance with MOH guidelines and knowledge during the second lockdown, whereas people's negative emotional reactions were higher during the first lockdown. Women scored higher than men on all measures. The fact that women seemed to experience more distress during the lockdowns shows that the lockdowns contributed to widening the existing structural gender gap. Previous studies have shown the need for health interventions targeting unique population groups. The results of this study suggest a need for developing gender-targeted interventions during future pandemics as well (39). For example, policymakers should consider providing childcare services during lockdowns as a means of reducing this gender gap in mental health. Women are usually the ones who take care of children while also working outside the home, potentially causing additional mental health problems. Moreover, health authorities should offer accessible e-mental health modules to help

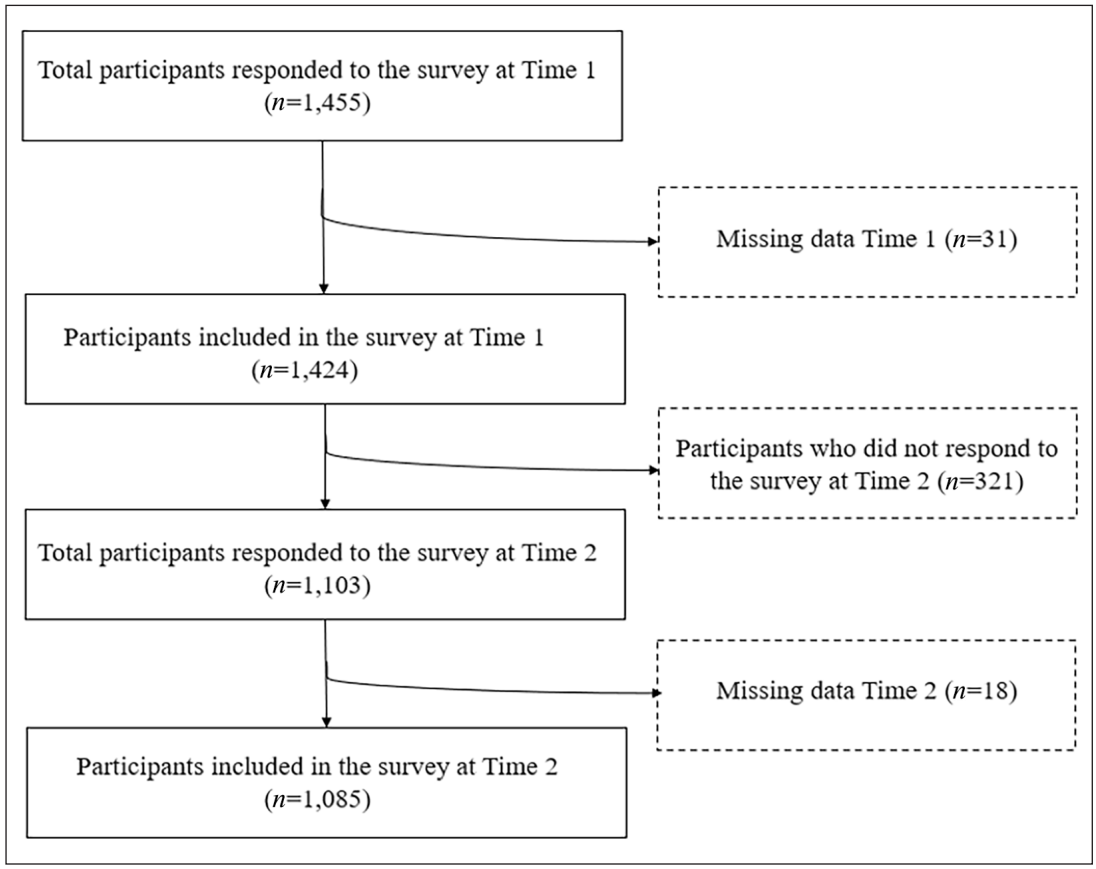

Figure 1. Flowchart illustrating participant selection.

people cope with their mental health issues even when they must stay at home. We recommend conducting further research studies to examine these variables at additional points in time, as people continue coping with the crisis caused by the novel coronavirus.

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Author contributions

Both authors recruited the participants and collected the data. IL extracted and analyzed the data and wrote the paper. SSA revised the manuscript. Both authors read and approved the final manuscript.

Consent for publication

Not applicable.

Availability of data and materials

The data sets used in the study are available from the corresponding author upon request.

Declaration of conflicting interests

The authors have no conflicts of interest to declare.

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Ethics approval and consent to participate

The Ethics Committee of Bar-Ilan University approved the study (Authorization No. 032003). Our survey's introductory page stated explicitly that proceeding to the questionnaire would signify consent to participate.

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Original Article

Status of the Health Promoting University (HPU) globally and its relevance for emerging African HPUs: an integrative review and bibliometric analysis

Cecil G. S. Tafireyi and Jeanne M. Grace

Abstract:
Background: The Health Promoting Universities (HPU) concept is undertheorized, with no African university belonging to the International Network of Health Promoting Universities (IHPU).
Aim: The study aimed to investigate the status of the HPU concept globally to inform emerging HPUs, more specifically in Africa, regarding its implementation.
Methods: An integrative literature review of studies conducted between 1 January 2013 and 5 November 2023 was conducted from online databases (PubMed, Scopus, Web of Science, Lilacs, CINAHL and Medline). A VOS bibliometric analysis viewer was used to extract and analyze further relevant information that could have been missed in the review.
Results: From 1128 records, 22 ($N = 22$) articles including two reports met the inclusion criteria. The main findings were that: (1) the HPU network is growing as a global network though undertheorized and less reported on, (2) the implementation of the HPU depends on a plethora of underpinning philosophies such as salutogenic and whole systems approach, and diverse programs and initiatives, 3) the terms HPU and healthy universities are often used interchangeably but the whole systems approach appears to be consistent in many HPU interventions. However, five contextual challenges that emanated from this review were discussed, including the definition of the HPU concept, theories for the HPU concept, measurement of the HPU concept, coordination and methods for measuring the HPU concept status. These challenges present obstacles to measuring the status of the HPU concept beyond the number of affiliated universities and HPU initiatives.
Conclusion: Despite the challenges, the HPU concept is gaining momentum globally, as evidenced by the growing list of universities (HPU network) involved and the proliferation of interventions/initiatives targeting university students.

Keywords: Health Promoting Universities (HPU), healthy universities, whole settings, student health, healthy aging, campus settings

Introduction

The Health Promoting University (HPU) concept, influenced by the Ottawa Charter (1), is central to promoting health amongst university students globally, as expounded by various authors (2,3). The evolution of the HPU concept can be traced back to 1996, leading to the concept's launch in Europe (4). It was later promoted through various conferences, leading to charters such as the Edmonton Charter (5) and the Okanagan Charter (6). The conference leading to the launch of the Okanagan Charter

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(2015) was attended by 375 participants from 30 countries (7), signifying the growing number of HPU networks and the popularity of the HPU concept. The terms HPU concept and healthy universities are used inter-changeably (7,22); thus, the term HPU concept is used for this study.

The HPU concept comes against the backdrop of poor health habits reported by several scholars globally and the devastating impact of non-communicable diseases (NCDs). According to the World Health Organization (WHO) (8), almost 500 million people will develop heart disease, obesity, diabetes or other NCDs attributable to physical inactivity between 2020 and 2030. To intervene will cost US$27 bn annually if governments take urgent action to encourage more physical activity among their populations. Physical activity is one of the key critical areas of the HPU concept (8). The HPU concept is mainly premised on the whole systems approach, hence the proliferation of terms referring to the HPU concept (9).

Many national and international networks related to the HPU concept have been formed mainly on four continents (2,9). The African continent has been reported to be lagging in the implementation of the concept and also the formation or affiliation to an international HPU network (9,10). Only one South African university belongs to a network similar to an HPU network – the International University Sports Federation (FISU). Furthermore, there is a lack of theoretical frameworks to base its full implementation on (2,9). There is also a need to identify the key indicators for an HPU. Theoretical frameworks used in other developed countries, specifically Europe, need to be contextualized to the African continent and regions, fully considering current university settings and frameworks (10). However, to fully implement the HPU concept in other continents like Africa, an understanding of the current HPU status is inevitable. The study's objective was to investigate the status of the HPU concept globally to inform emerging HPUs, more specifically in Africa, regarding its implementation.

Materials and methods

To achieve the proposed objective, we opted for an integrative review – a method that provides a synthesis of knowledge. Studies conducted between 1 January 2013 and 5 November 2023 were included in the integrative review. The rationale of the time frame (2013–2023) was to review the most recent articles regarding the implementation of the HPU/healthy universities frameworks. All relevant articles published in all languages including qualitative, quantitative and mixed methods focusing on the HPU concepts were included. Articles were constrained to the HPU concept/healthy universities approach to delimit the study and gain more insight into the implementation of the concept globally. Status was interpreted with regard to the main objectives of the HPU concept. A bibliometric analysis using VOSviewer software was also conducted for further insight into the HPU network and common terms used in the HPU discourse (https://www.vosviewer.com/).

Search strategy

The authors systematically searched documentary evidence from electronic databases including PubMed, Medline, CINAHL, Lilacs, Web of Science and Scopus. The following search terms and filters were used: 'health promoting universities' OR 'healthy universities' OR 'HPU' AND (full text: AND db:('MEDLINE' OR 'LILACS' OR 'CINAHL') AND mj:('Health Education' OR 'Universities') AND type_of_study:('qualitative_research' OR 'observational_studies' OR 'evaluation_studies' OR 'guideline' OR 'systematic_reviews' OR 'sysrev_observational_studies' OR 'overview' OR 'policy_brief' OR 'structured_summary_of_systematic_review') AND (year_cluster:[2013 TO 2023]). In the PubMed database, the search terms were: 'Health Promoting University Students' or 'HPU', 'Health Promoting Universities' or 'whole universities'. Furthermore, one similar article that closely resembled the search terms was used to retrieve the most relevant articles for the search question. All searches were conducted directly without using an intermediate interface such as Ovid. The authors read the abstracts and the main findings to screen the articles suitable for this study according to the eligibility criteria cited below.

Eligibility criteria and selection of studies

Articles focusing on the HPU concept holistically were considered to address the study's objective. For this study, a holistic focus would imply the use of an underpinning theory, concept or framework influenced by the HPU concept, for example, whole

systems approach, healthy universities, and campus interventions, and also conformity to the main item areas of the HPU concept according to a review by Tafireyi and Grace (9). Studies also needed to have been published between 2013 and 2023 to get the most recent and relevant studies regarding the implementation of the HPU concept. Reviews and studies of a report, evaluative, exploratory and descriptive nature were mostly considered. Studies that focused on only one item area or action area of the HPU concept were not considered unless the focus was on a broader concept such as physical activity, as well as those that did not attempt to review, describe or evaluate the implementation of the HPU concept in global universities.

The titles and summaries of the selected studies for inclusion in the full-text review were autonomously evaluated by two reviewers. Only those full-text studies that both authors agreed with and met the inclusion criteria were selected for full-text review eligibility. Mutual unanimity between the two reviewers ensured differences were minimized. To find eligible supplementary studies, the two reviewers searched the reference lists and citations of included studies.

Quality assessment

The authors used the objectives of the HPU (3) to check the compliance of the articles to at least three action areas and underpinning philosophies such as the whole systems approach.

Data extraction and analysis

Relevant information such as year of publication, study method, study focus, results and conclusions (main observations) were extracted from the included studies. The information was summarized and recorded in tables. Analysis was based on the status of the HPU (the aim of the study), which could also be implied if not directly evident from the findings. The thematic method was used to come up with the main themes in the results section.

Results

The searched databases identified 1128 articles, of which 1018 were removed due to ineligibility and 108 were screened. Of the 108 articles, 88 were removed and did not fully meet the inclusion criteria. After checking the eligibility of full-text articles, applying exclusion criteria, and screening, 20 studies ($n=20$) plus two reports ($n=2$) met the inclusion criteria (2,7,9,11–29), as portrayed in Figure 1. Mendeley Desktop reference was used to identify duplication and apply data management. For the Bibliometric analysis, the same articles were used, plus seven others that did not fully meet the inclusion criteria (Figure 1) but addressed at least one item of the HPU. One report from the initially selected 22 articles did not meet the supportive version of Bibliometric analysis; hence it was removed. Therefore, 28 articles (21+7) were selected for the Bibliometric analysis.

Study characteristics

The selected studies and reports ($N=22$) comprised six theoretical/qualitative research studies (2,13,16,17,26,27), four mixed methods studies (7,18,20,23), two quantitative/questionnaires (19,24), two reports (11,29), one network analysis (12) and seven reviews (9,14,15,21,22,25,28). The main findings are presented in Table 1.

Synthesis

Context/semantics of the HPU

What is clear from the studies reviewed is that the terms HPU and healthy universities/whole systems approach are used interchangeably (2,7,9,11–29), and the term HPU does not specifically refer to the HPU movement. Activities being implemented by universities are not explicitly influenced by the HPU (2,7,9,11–27).

Growth and coordination of the HPUs

The number of HPU network universities continues to expand in Europe and Latin America, and not much has been reported in continents like Africa (9,11,13,24). The HPU network exists mainly on four continents and is described as a truly global movement (11). However, some HPUs do not operate under the political leadership and coordination of university authorities or networks though it is highly encouraged to gain the support (14,23,26). The FISU Healthy Campus program is not part of the IHPU but

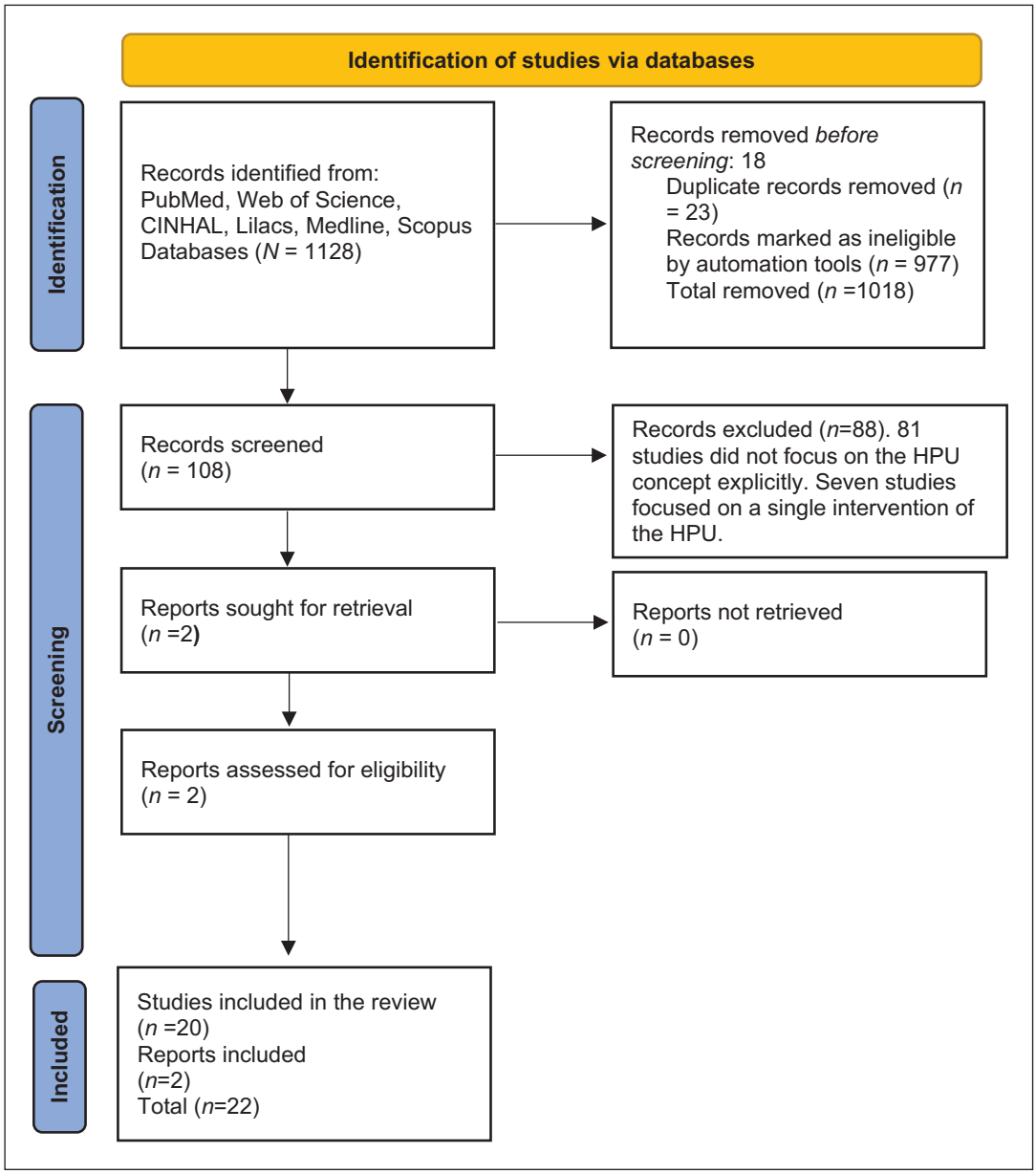

Figure 1. PRISMA flow diagram showing the selection of studies.
Source: own study.
PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; HPU: Health Promoting University

Table 1. Characteristics of articles.

Title of the article	*Type of study/methods*	*Focus/objectives of the study*	*Main observations*	*HPU status deductions*
Informe SESPAS 2018 (The university as a community: health-promoting universities. SESPAS Report 2018) (11).	A report study.	Focused on the HPU concept.	The creation of HPU networks in 2003 in Latin America took the form of the Ibero-American Network of Health Promoting Universities in 2007, and was within the framework of the III Congress of Health Promoting Universities held in Ciudad Juárez, Mexico. In Spain, the Spanish Network of Healthy Universities was created in 2008 with the aim to reinforce the role of universities as environments promoting the health and well-being of both their students and their staff and society, leading and supporting processes of social change.	Many HPU networks have been created in four continents, signifying the growth of the HPU movement.
Promoting students' health at university: key stakeholders, cooperation, and network development. Front Public Health (12).	A network analysis study.	To visualize and describe the positions and characteristics of the network actors and examine organizational relationships to determine the characteristics of the complete network.	The university sports center is considered the most important actor in the context of students' health. Presidium and Institute of Sport and Sports Science play an integral role in terms of network functionality.	The university sports center takes charge of HPU initiatives.
The application of salutogenesis in universities. In: The Handbook of Salutogenesis (13).	Theoretical research (book chapter).	How health can be created, maintained and supported in university settings. It first explores the higher education context and introduces key concepts underpinning healthy universities and applying a settings approach within this sector.	Healthy Universities has explicitly emphasized whole system approaches and drawn on socioecological theory and systems thinking, emphasizing the importance of creating environments and contexts that support and maintain health, well-being and human flourishing. Although informed by salutogenic orientation, Healthy Universities implementation and research have tended not to be framed explicitly in terms of salutogenic constructs. Higher education has witnessed a growing focus on well-being, resilience and coping – perspectives that are not the same as, but clearly relate to, salutogenesis. Universities are complex systems and in guiding future developments, it will be important that salutogenic thinking informs research, policy and practice at multiple levels.	Healthy universities are based on the whole system approach and are mainly influenced by salutogenic orientation.

(Continued)

Table 1. (Continued)

Title of the article	*Type of study/methods*	*Focus/objectives of the study*	*Main observations*	*HPU status deductions*
Health promotion programs in higher education: an integrative review of the literature (14).	An integrative review of the literature (17 articles included).	To characterize the interventions of health promotion programs implemented in HPUs; to analyze the results of the interventions of health promotion programs.	The health intervention promotion programs aimed at increasing the welfare of students, with an emphasis on physical activity, sexual health and improving the environment of health support within the university community. Health promotion strategies in a university context do not always result from converging educational, political, legislative or organizational actions.	HPU strategies are not always a result of converging educational, political, legislative or organizational actions. Other interventions are possible for the promotion of health among university students.
Health literacy among university students: a systematic review of cross-sectional studies. Front Public Health (15).	Systematic review of cross-sectional studies (21 research studies).	To provide an overview of cross-sectional studies examining university students' health literacy and identify possible determinants related to health literacy.	The majority of studies report health literacy scores among university students that are lower compared with reference samples. Students' health literacy is influenced by different variables (age, gender, number of semesters, course of studies/curriculum, parental education, and socioeconomic background).	Most students not health literate due to many factors. This might signify slow adoption of the HPU/healthy universities approach influenced by whole settings.
The physical activity and health promotion activities of global university students: a review of reviews (9).	A review of reviews (studies).	To review global universities' physical activity and health promotion activities to inform the PA and HP guidelines for Eswatini University students in the Sub-Saharan region.	Some global universities follow the HPU concepts influenced by the Ottawa Charter (1986). The main item areas of health promotion are smoking control/alcohol and drug abuse, mental health, sexual health, physical activities, and healthy eating habits The main PA activities were pedometer activity tracking, and measurement of PA using validated questionnaires, sports, games, among other intervention activities.	Main item areas of the HPU are: smoking control/alcohol and drug abuse, mental health, sexual health, physical activities, healthy eating habits. The main PA activities were pedometer activity tracking, measurement of PA using validated questionnaires and sports participation.
The UK healthy universities self-review tool: whole system impact (7).	Online questionnaires and focus groups.	This paper reports on research exploring the use and impact of the UK Healthy Universities Network's self-review tool, specifically examining whether this has supported universities to understand and embed a whole system approach.	The self-review tool was extremely valuable and, when engaged fully, offered significant benefits to universities seeking to improve the health and well-being of their communities. These benefits were felt by institutions at different stages in the journey and spanned outcome and process dimensions.	Evaluation critical for the HPU implementation, e.g. UK self-review tool.

(Continued)

Table 1. (Continued)

Title of the article	*Type of study/methods*	*Focus/objectives of the study*	*Main observations*	*HPU status deductions*
Comprensión e implementación de la promoción de la salud en instituciones de educación superior en Colombia [The understanding and implementation of health promotion at higher education institutions in Colombia]. Rev Salud Publica (16).	A qualitative study with an ethnographic approach was carried out at 11 institutions selected in five cities.	To characterize the implementation and understanding of health promotion at higher education institutions in Colombia.	These institutions have implemented policies and programs and undertaken actions like education, reorientation of health services, participation and intervention in the environment, as well as research and activities with family and community outreach. Different scopes related to the development of health promotion were found, i.e. there was a preventive approach and an inter-sectorial outlook with a broad extent.	Implementation of diverse policies and programs towards HPU.
How does the campus environment influence everyday physical activity? A photovoice study among students of two German universities. Front Public Health (17).	A photovoice method to thoroughly understand students' daily life on campus. Forty-six university students in two German cities (university 1: $n = 22$, university 2: $n = 24$).		Both universities do not exploit their potential to foster daily physical activity on campus, according to the photos and discussions of the participating students. The vast green spaces offer no cues for movement: easily accessible equipment for sports (fixed or mobile) is lacking, walkways are partially hidden, and the facilities discourage cycling to and on campus. Social norms induce participants to keep sitting during lectures and learning time. Indoor hallways and foyers could be put to better use concerning physical activity. The Photovoice project raised the participants' awareness of how the context influences their movement behavior. It helped them develop solutions to make physical activity easier for students at their respective universities.	University campuses not fully exploiting the HPU through the whole settings approach. The photovoice method is novel for exploring the whole settings approach discourse.
Healthy universities: an example of a whole-system health-promoting setting (2).	Documentary analysis, observation field notes and semi-structured interviews with staff and students.	This study explores how the concept of a healthy university is operationalized in two case study universities.	The concept of healthy universities has been slow to be adopted compared with healthy schools Lack of theorization for healthy universities Paucity of evidence Difficulties in capturing the added value of the whole systems approach	Healthy universities slowly adopted.

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Table 1. (Continued)

Title of the article	*Type of study/methods*	*Focus/objectives of the study*	*Main observations*	*HPU status deductions*
Conceptualizing the 'whole university' approach: an international qualitative study (18).	A multi-method qualitative approach was used.	The study that explored vice-chancellors' and network members' understanding of and commitment to HPUs, examined perspectives on leadership and investigated the Okanagan Charter's potential to catalyze whole university leadership and change.	The HPU is confirmed as a truly global movement in four continents signifying the growth of the network. Even with the Okanagan Charter inspiring individuals and universities, there are still major challenges in translating the rhetoric of whole system approaches into meaningful action within large, complex and culturally diverse organizations.	HPU has existence in four continents, mostly influenced by the Okanagan Charter. Challenges of putting the whole systems approach into practice.
Healthy Universities: a guiding framework for universities to examine the distinctive health needs of its own student population (19).	Quantitative data were gathered from 3683 students studying at a UK urban university. A 60-question online student questionnaire focusing on seven key topic areas was used to gather data and simple descriptive statistics are used to present key findings.	This study examined the student health behaviors of one university so that future initiatives can be tailored to its own student population.	The study has identified a need for considering alternative ways of engaging students with appropriate health services throughout the academic year. A focus on university initiatives around healthy eating options, how to cook healthy food and the importance of keeping hydrated is highlighted as a common need. Risky behavior involving alcohol, drug and substance use and sexual activity suggests a strong argument for not separating university sexual health and alcohol interventions.	A common need for the HPU university is initiatives around healthy eating options. Consideration of diverse interconnected activities is critical.
Student perceptions of a healthy university (20).	Student surveys and focus groups were used to collect data across 11 universities in England, Scotland and Wales. A priori themes were used to develop our own model for a healthy university, and for the thematic coding phase of analysis.	This paper presents findings from consultative research undertaken with students from universities in England, Scotland and Wales, which explored what they believe represents a healthy university.	A healthy university would promote student health and well-being in every aspect of its business from its facilities and environment through its curriculum. Access to reasonably priced healthy food and exercise facilities were key features of a healthy university for students in this study. The self-review tool has provided a crucial start for universities undertaking the journey towards becoming a healthy university. In looking to the future both universities and the UK Healthy Universities Network will now need to look at what students want from their whole university experience, and consider how the self-review tool can help universities embrace a more explicit conceptual framework.	Whole systems approach important for the HPU concept. Self-review tool critical towards the healthy universities.

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Table 1. (Continued)

Title of the article	*Type of study/methods*	*Focus/objectives of the study*	*Main observations*	*HPU status deductions*
Implementing the Health Promoting University approach in culturally different contexts: a systematic review (21).	Systematic review: selected articles were content analyzed paying attention to (a) the definition of a HPU; (b) priority areas of action; (c) items of work; (d) coordination of the project; (e) evaluation; and (f) adaptation to the cultural context.	This systematic review aims to describe how universities have implemented the HPU concept in different cultural contexts.	The programs described in the selected studies are mostly based on the guidelines of the Edmonton Charter. They incorporated the main areas of action and items of work proposed by the HPU framework. The implementation of healthy policies and incorporation of health promotion in the curriculum are remaining challenges. Strategies to facilitate adaptation to context include stakeholder participation in planning and implementation, adaptation of educational material and analysis of needs. The review suggests that most of the universities work towards similar goals, relying on the HPU framework, yet that the way in which initiatives are implemented depends on the context.	Universities are incorporating the HPU framework based on the Edmonton Charter.
Theorizing healthy settings: a critical discussion with reference to Healthy Universities (22).	A scoping literature review was undertaken between 2010 and 2013, identifying 26 papers that met inclusion criteria.	To identify what theories and conceptual models have been used in relation to the implementation and evaluation of Healthy Universities.	Seven theoretical perspectives or conceptual frameworks were identified: the Ottawa Charter; a socio-ecological approach (which implicitly drew on sociological theories concerning structure and agency); salutogenesis; systems thinking; whole system change; organizational development; and a framework proposed by Dooris.	Theoretical frameworks influence the HPU approach therefore intervention programs must be influenced by them.
Creating healthier graduates, campuses and communities: Why Australia needs to invest in health promoting universities (23).	Mixed methods.	Settings-based health promotion project.	Leadership is required from Australian universities to invest in health promotion. This is the time for higher education in Australia to consider its role in shaping the health of its local and global communities.	Higher education leadership lacking for the effective implementation of the HPU framework or healthy universities.

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Table 1. (Continued)

Title of the article	*Type of study/methods*	*Focus/objectives of the study*	*Main observations*	*HPU status deductions*
How do universities implement the Health Promoting University concept? (24).	An online questionnaire was used to assess the action areas and items of work addressed by the universities and to determine their adherence to the components of the HPU framework: use of the whole systems approach; multiservice collaboration; recognition by the university authorities; funding availability; membership of a HPU network and evaluation of the initiative.	This study explored the way in which 54 universities from 25 countries across the world implemented the HPU framework.	Most universities addressed: the use of the whole systems approach; multiservice collaboration; recognition by the university authorities; funding availability; membership of an HPU network and evaluation of the initiative.	Most universities use major areas of the HPU framework.
The whole and inclusive university: a critical review of health promoting universities from Aotearoa New Zealand (25).	A critical review.	This paper provides a critical review of the existing HPU approaches which is informed by health promotion values.	The authors introduce the New Zealand university landscape, in which there are eight Western universities and three whare wānanga (Māori universities), and, drawing on a survey of their Charters and other official statements, offer a moemoeā (vision or dream) of an HPU that addresses structural discrimination, is based on holistic conceptions of health, and is centered on indigenous worldviews and concerns.	Initiatives based on holistic concepts of health and indigenous worldviews.
Developing a health promoting university in Trinity College Dublin – overview and outline process evaluation (26).	Qualitative paper.	Using and expanding on the HPU platform within HEIs, this article provides a description of Healthy Trinity, which is an initiative underway in Trinity College Dublin, the University of Dublin.	Healthy Trinity is contextualized in background literature including international and national policy and practice.	Initiatives of the HPU have been developed, including the Healthy Trinity.

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Table 1. (Continued)

Title of the article	*Type of study/methods*	*Focus/objectives of the study*	*Main observations*	*HPU status deductions*
Factors influencing the implementation of the Health Promoting University initiative: experiences of Ibero-American universities (27).	Semi-structured interviews were held with 17 representatives of universities in Ibero-America that had implemented an HPU initiative.	This study aimed to identify the factors influencing the implementation of HPU initiatives in Ibero-American universities.	The main factors influencing the implementation of an HPU initiative were political support by the university authorities, coordination structure, funding, collaboration inside and outside the university and participation of the university community. Among them, political support by the university authorities was considered the most important, although some initiatives succeeded without it and managed to obtain support during the implementation process.	Political support by the university authorities is most important for the effective implementation of the HPU initiative.
[Analysis of the promoting actions of physical activity developed by Valencian public universities] (28).	Review and qualitative study.	The purpose of this study was to analyze and review the activities developed by the RVUPS on the promotion of Physical Activities in the university context.	Currently, Valencian universities do not cover all the needs to achieve an adequate well-being state. In response, some universities from RVUPS offer individualized activities to prevent and treat some of the chronic pathologies that currently have the highest incidence in the population. In addition, new services are being implemented which integrate all health professionals in order to achieve a more comprehensive service to their population. The qualitative study revealed that interviewees also perceive such needs and, therefore, support these initiatives, considering that a physical activity and nutrition service would be an interesting option for implementation in universities.	Universities not fully implementing the whole settings approach, which is an important factor of the HPU/healthy universities frameworks.
The FISU Healthy Campus Best Practices. 2021–2022 (29).	Best practices e-book. Report on 130 universities in 39 countries.	Program based on: healthy campus management, physical activity and sport, nutrition, and disease prevention, mental and social health, risk behavior, environmental sustainability and social responsibility.	Universities design programs that address one of the FISU focal areas, implement and evaluate them.	More than 130 universities from 39 countries registered for the Healthy Campus program since 2020 and have since implemented programs that have been recorded in the FISU latest publication.

Source: Own study.
HPU: Health Promoting University; PA: Physical Activity; HP: Health Promotion; HEI: Higher Education Institution; RVUPS: Valencian Network of Healthy Public Universities; FISU: International University Sports Federation

is fast growing, with more than 130 universities from 39 countries and only three from Africa registered so far (29).

Reporting on the HPU

Some studies included in this study agree that there is not much reporting regarding the success of the HPU movement, even though there is a growing focus on promoting health and well-being among universities globally (9,14). Many studies focus on different institutional interventions with the HPU/healthy universities approaches as underpinning health promotion frameworks (7,9,14–19,29). However, the FISU Healthy Campus program is well documented and showcases how registered universities have designed, implemented and evaluated the program they have offered according to the focus areas of the FISU Healthy Campus label (29).

Theories and charters influencing the HPU concept

It was also reported that although the underpinning philosophy of some HPU initiatives is mainly salutogenic, some universities' HPU programs are not entirely influenced by it (13). The socioecological theory is also applied by other universities for their HPU programs. These philosophical underpinnings of the HPU concept, including Ottawa, Edmonton and Okanagan charters, were seen to be influencing various HPU initiatives in many global universities (13,18,21,22).

Intervention programs/HPU initiatives

Furthermore, intervention programs focusing on promoting health and well-being are popular with many universities. These interventions include: physical activities, sexual health and mental health programs (9,29). However, some studies reported low health literacy among university students (15) and slow adoption of the healthy universities approach (2,15). The authors discovered that students' health literacy is influenced by different variables (age, gender, number of semesters, course of studies/curriculum, parental education, and socioeconomic background); hence, health literacy activities should target all students (15). It was reported that self-review tools were valuable for health and well-being promotion in United Kingdom universities (7). The tools are complemented by policies (13) on health promotion targeting university students and creating whole systems (7,9,15,17–22,27). An example of initiatives influenced by the HPU/healthy universities is the Healthy Trinity (25). The FISU Healthy Campus program is another initiative that has recruited at least 130 universities from 39 countries with a few from Africa (29). Although not affiliated with the IHPU, FISU is arguably an HPU as it implements many aspects of the concept, including the whole systems approach. The university sports centers were found to be at the core of HPU initiatives, understandably so because of their focus on high-performance participation and health promotion. In some universities, faculties of health sciences and sustainable settings are responsible for the HPU initiatives (29).

Bibliometric analysis of the organizations working on the HPU

Twenty-eight ($n = 28$) articles were selected and analyzed using VOSviewer Bibliometrics analysis. These articles included 21 that met the inclusion criteria for the integrative review and seven (7) that met at least one action area of the HPU concept (Figure 1). One (1) report from the initially selected articles ($n = 22$) did not meet the supported file format for the VOSviewer. The lines in Figure 2 refer to the link strength between the organizations and the dots represent the density of the link. The bigger the dots the more the density and vice versa.

We sought to establish the locations of the organizations working on the HPU concept to determine in which geographical part the HPU concept discourse is mainly popular. A network and density analysis was performed, and the results showed that 27 organizations from the selected studies focused on the HPU concept or related. Only nine (8) organizations had the greatest total link strength with each other, indicating the relationship/collaboration and or co-authorship between researchers working on the HPU concept. These organizations shown in Figure 2 and Table 2 are mainly from Europe – Sweden, United Kingdom, Norway, Switzerland and Austria. The health and social sciences departments are at the forefront of

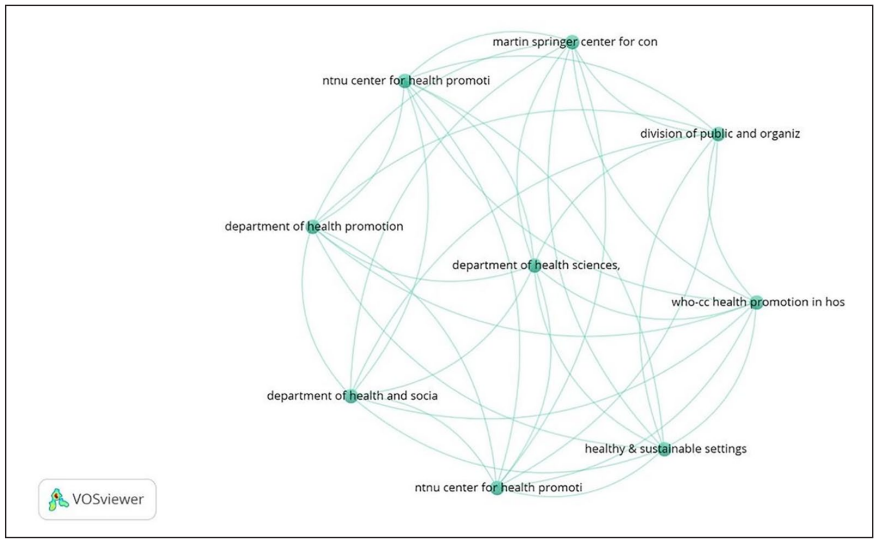

Figure 2. Network and density analysis of universities focusing on the HPU concept.
Source: VOSviewer Bibliometric software.

researching the HPU concept. Only one university, the University of Central Lancashire, has a 'health and sustainable settings' department, as shown in Figure 2 and Table 2.

We also conducted a network analysis of common terms from the 28 articles (Figure 3). The lines represent the network or link among the common words, and the dots indicate the density. The bigger the dots, the denser the common word. Likewise, the more the word occurs, the more links (lines) it has with other words. The results were 20 terms, including initiative, context, study, community, action, research, healthy universities, settings approach and health promoting universities. The term *study* had the highest total link strength, with 16 links and 83 occurrences, as shown in Figure 3. The implication might be that the healthy universities/HPU discourse is gaining global momentum. It is also interesting to confirm the interchangeability of the HPU terms and the use of the whole systems approach as an underpinning philosophy. It is worth noting that interviews are commonly used in studies related to health promotion among university students. Terms like initiative, community, context, action, understanding and practice are indications that the HPU discourse is developing globally and has diverse semantical, cultural and contextual considerations.

Five contextual challenges of the HPU

Definition

The foremost challenge in evaluating the status of the HPU concept is the definition/semantics and the context of the HPU concept itself, as it is apparent that the HPU network influences a fraction of global universities whilst many focus on health promotion interventions. Dooris *et al.* (18) assert that there are still challenges in translating the rhetoric of the whole systems approach into action with large, complex and culturally diverse organizations. They also alluded to the fact that the HPU is a truly global movement on four continents. This is also supported by the growing list of HPU initiatives and networks in Australia, and New Zealand, and the interest from African universities (9,23,25,26,29). According to Suárez-Reyes *et al.* (24), HPU initiatives exist worldwide, yet information on how universities translate the HPU concept into actions is scarce.

Thus, evaluations of the current status of the HPU concept are possible by first understanding the dynamics and semantics that apply to the discourse. The first dynamic is that the HPU is semantically a concept used or applied to improve

Table 2. Key for the abbreviations in Figure 2.

Abbreviation/center	*University*
martin springer center for con	Ben Gurion University
ntnu center for health promoti	Norwegian University of Science and Technology
department of health promotion	University of Bergen, Norway
department of health and socia	University of West England, Bristol, UK
ntnu center for health promoti	Norwegian University of Science and Technology
healthy & sustainable settings	University of Central Lancashire
who-cc health promotion in hos	Ludwig Boltzmann Institute of health promotion
division of public and organiz	University of Zurich, Switzerland
department of health sciences	University of West Trollhattan, Sweden

Source: VOSviewer Bibliometric software.

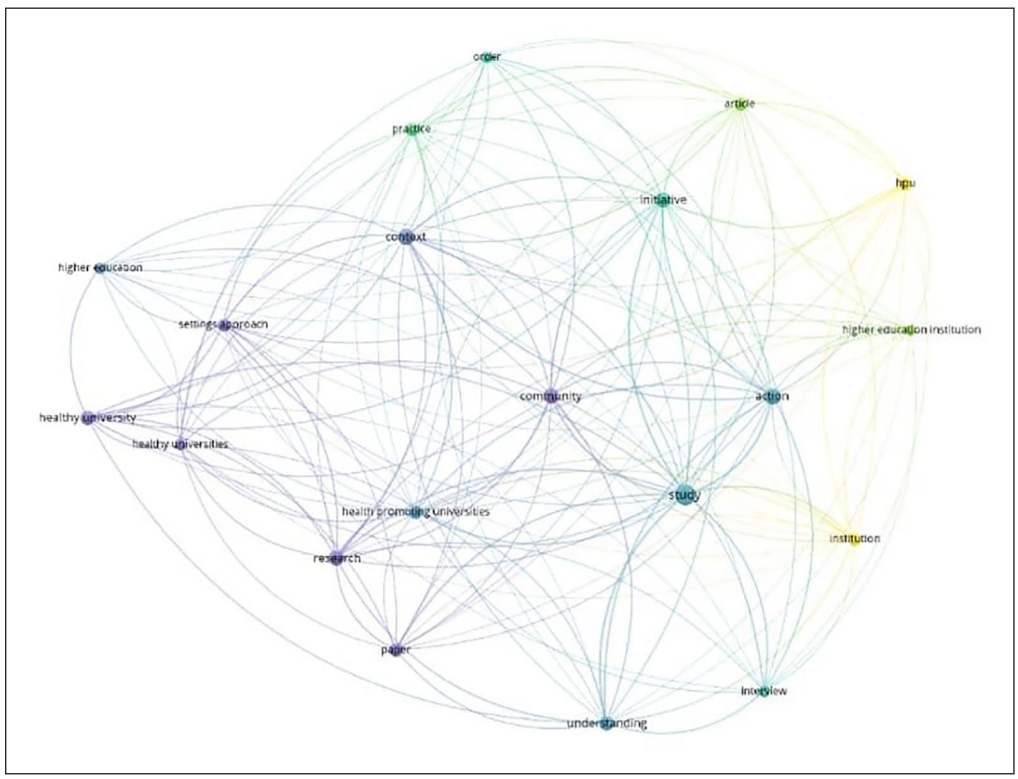

Figure 3. Network analysis of common terms.
Source: VOSviewer Bibliometric software.

health among university students. At the same time, the concept is also officially a program owned by the IHPU network of universities – with several HPU networks affiliating (3). Universities do not necessarily have to be part of the HPU network of universities to implement the HPU concept, especially if they have political support from university authorities, a coordination structure,

funding and collaboration (21). These factors were found to be influencing the HPU concept in a study by Suárez-Reyes *et al.* (24). However, affiliating with one of the IHPU networks can lead to better delivery of the action and item areas, coordination and collaboration (10).

Theorization of the HPU

Secondly, components of the HPU concept are cross-cutting and evident in many intervention programs, including the whole systems approach and healthy universities (21). The whole systems approach is the most common framework implemented by HPUs globally – which promotes a wholesome focus when targeting interventions for promoting health among university students (2,9,13,20–22,24). Most of the interventions are influenced by the Ottawa Charter, the socioecological approach, and salutogenesis, among others (22). Theorization of the HPU concept is thus clear to investigate, but the impact depends on many factors depending on which health-promoting approach is being followed and which HPU network is affiliated.

Measurement of the HPU concept

Thirdly, measurement of the HPU concept can be done with regard to the number of universities in the HPU network/number of universities implementing the HPU concept (11) or through reviews (qualitatively) to measure the impact of interventions, whole systems approach and other programs. However, measuring the growing number of universities in the HPU network is not enough to prove the impact of interventions but, rather, a holistic analysis of the different global concepts universities use. For instance, most African universities are not part of the HPU network (9), though some of these universities can be regarded as health-promoting universities based on whole systems approach or other intervention programs/initiatives. Global scholars have used various measurement tools (7,17), mainly questionnaires, interviews and photovoice. Still, they have concentrated mainly on universities from four continents. Results from the bibliometric analysis show that most of the institutions working on the HPU concept are in Europe and, thus, not reflective of global institutions or universities. It appears, though, that the impact of interventions has been explored in individual countries like Ireland (Healthy Trinity), the United Kingdom (UK self-review tool), Latin America, Australia and New Zealand, among others, rubberstamping the need for an HPU network and HPU initiative existent in all the continents. (7,16,23,26,27).

Coordination of the HPU concept

The fourth challenge is that some HPU initiatives have the political support of the university authorities and national or regional networks, whilst some do not (14,23,26). In the absence of political support, some universities may not be technically classified as HPUs, hence the difficulty in measuring the implementation of the HPU. The bibliometric analysis revealed that the HPU concept is coordinated by specific departments, especially in health sciences and sports science. This was also confirmed in a study by Bachert *et al.* (12). However, what is novel is that the study revealed the University of Central Lancashire as having a specific department tailored to suit the operations of the HPU/healthy universities, namely, the Department of Health and Sustainable Settings. This is very interesting as the HPU is mainly centered on the whole settings approach (2,9,11,13,15,17,18, 20,22,27,29). The university's website states:

> 'Established in 2001, the Healthy and Sustainable Settings Unit aims to support the holistic and integrated development of healthy settings – acknowledging that "health is created and lived by people within the settings of their everyday life; where they learn, work, play and love" (WHO, 1986) and that many health challenges are interrelated and can be best tackled through comprehensive, integrated programmes in the contexts and places where people live their lives.'

It is interesting to note that one of the top authors of the HPU concept, Mark Dooris, is the coordinator of the center and co-chair of the UK Healthy Universities Network, which has advanced in promoting the whole settings approach. This is a practical example of how academics help shape theoretical frameworks for the HPU concept in their regions and coordinate the implementation and evaluation of the concept.

Methods for researching the HPU concept

Methods used for evaluating the status of the HPU concept globally may determine the type of results extracted, which may not be a true reflection of the HPU status. This study unearthed new methods that can be used in the discourse of the HPU concept, including photovoice, network analysis, ethnographic research, and traditional interviews, systematic and integrative literature reviews. The photovoice method attaches images of campus settings to the students' voices, enabling researchers to get better insight into the relationship between the campus settings and the healthy behaviors of the students (17). The photovoice can complement ethnographic research such as direct observation and network analysis. Most interesting is that we used Bibliometric analysis and VOSviewer as a novel and innovative method for further understanding the dynamics of the HPU discourse, including the authors involved and their locations and networks, and to establish the depth of the concept. This method allowed us to include some other articles that did not fully meet the inclusion criteria – one advantage over systematic and integrative reviews. More interestingly, the FISU Healthy Campus Best Practices e-book (29) provides another holistic method for evaluating the status of HPUs globally.

Recommendations and implications for emerging African HPUs

We recommend that universities, globally and specifically in Africa, establish a health and sustainable settings department that oversees the implementation of the HPU concept within and outside their institutions which is fully acknowledged and funded by university authorities. A case of reference is the sustainable settings department at the University of Central Lancashire in the United Kingdom. It is paramount that African universities affiliate with the HPU networks globally to take advantage of the support and expertise of the members of those networks. An example has also been set by the University of Johannesburg (South Africa), Chinhoyi University (Zimbabwe) and Makerere University (Uganda), which are part of the FISU Healthy Campus program (29). Universities must also consider expanding their influence regarding the HPU to the macro environment to play a leading role in the whole settings approach. This study, therefore, provides a reference source for African universities to help them become an HPU through university political leadership, network affiliation, theorization, coordination, evaluation, and implementation of initiatives.

Conclusion

The HPU concept is gaining momentum globally, as evidenced by the growing list of universities (HPU network) involved and the proliferation of interventions/initiatives targeting university students. However, the concept's conceptual understanding varies depending on the diverse affiliations and beliefs of the HPU concept. It is contextually challenging to 'package' the concept as implementation differs according to a plethora of influences, including theories and models and the dynamics surrounding the definition and understanding of the HPU concept. Global interventions are highly influenced by national, regional or continental networks working on the HPU concept. The impact of the networks is pragmatically difficult to ascertain if the assessment is to go beyond the number of affiliating universities. However, it is undisputed that the status of the HPU concept is positive, and the advantages of implementing it globally are of paramount importance. Universities globally may take advantage of the various HPU networks and initiatives available in their countries or regions to implement the HPU concept effectively. African universities have available networks such as the FISU Healthy Campus to register and gain from the support, collaborations, implementation and evaluation of their HPU programs.

Limitations

The selected studies were mainly those that explicitly referenced the HPU concept or similar. Other studies addressing certain aspects of the HPU concept may have been excluded. However, the limitation was counteracted by the Bibliometric analysis, which allowed for the inclusion of some other articles that partially met the inclusion criteria.

Data availability statement

The original contributions presented in the study are included in the article; further enquiries can be directed to the corresponding author.

Declaration of conflicting interests

The authors have no conflicts of interest to declare.

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Original Article

Rethinking the World Health Organization's leadership of global health governance and the global health surveillance systems

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Abstract: Global health governance is a strategic priority for the World Health Organization (WHO), and the public health surveillance system (PHSS) is a fundamental element of the global health governance structure to timely identify emerging diseases and guide global public health decisions and actions. This analysis explores the overall landscape of global health governance, with a specific focus on the PHSS to understand whether the existing governance landscape facilitates or undermines the WHO's ability to formulate and implement global health policies and initiatives. To achieve this, the existing evidence was reviewed, and synthesized with the experts' perspectives. It is reported that fragmentation is the main drawback of the global health governance landscape, necessitating reorganization and restructuring. The disintegration of PHSS at the global, regional and local levels is associated with a lack of leadership, misalignment with global health priorities, imbalance in coverage of surveillance systems, inadequate innovative technology and digitalization, and fragmented data and information systems. The fragmentation and disintegration of global health governance undermine the effectiveness of the WHO's global health strategic directions and programmes and hinder its ability to govern and guide the global, regional and national public health emergency response. Strategic rethinking of the WHO's governance is essential because strong governance and leadership lead to a robust, aligned and effective PHSS.

Keywords: global health governance, public health surveillance systems, WHO's mandate

Introduction

The World Health Organization (WHO) is at the forefront of the global response to health threats and pandemics, with a mandate to direct and coordinate global actions for achieving the highest attainable standard of health. Strengthening the global governance for health emergency preparedness, response and resilience (HEPR) requires effective leadership, inclusivity and accountability. The WHO is governing these actions by adhering to international legal instruments, such as the International Health Regulations (2005) (1), and through initiatives like the Intergovernmental Negotiating Body, which focuses on strengthening pandemic prevention, preparedness and response (2,3). Furthermore, the

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establishment of the Standing Committee on Health Emergency Prevention, Preparedness, and Response reinforces the WHO's ability to address health emergencies. Proposals for a global health threats council and a high-level meeting at the United Nations General Assembly aim to enhance collective capacity and accountability, promoting an inclusive and evidence-based approach to preparedness and response (3). The WHO launched the Universal Health and Preparedness Review to drive accountability through regular intergovernmental dialogue between countries for health emergency preparedness (3,4). To ensure sustainable financing for HEPR, the WHO has launched the Pandemic Fund and is engaged in ongoing discussions within the G20 joint health and finance track. These efforts seek to transform financing mechanisms and establish surge financing for pandemic response (3). The WHO prioritizes the integrative and collaborative Public Health Surveillance Systems (PHSS) to be a practical tool to interconnect the national and global health systems that can strengthen the world's preparedness to respond to global health emergencies in a timely manner. Recently, the WHO has released a report titled 'Defining collaborative surveillance' (5), which is the first component in a series aimed at strengthening HEPR (6). The report outlines specific objectives centred around reinforcing national surveillance systems for diseases, threats and vulnerabilities, improving laboratory and diagnostic capacities for pathogen and genomic surveillance and establishing collaborative capacities to predict, identify and assess risks while monitoring response efforts (5). The COVID-19 pandemic has exposed not only the weaknesses in the architecture of global health governance, but also the weaknesses in PHSS in nearly all countries, especially in low- and middle-income countries (LMICs) (7). Furthermore, the pandemic shed light on weaknesses in technical aspects and emphasized the critical need to prioritize the improvement of accountability and transparency. These weaknesses also include resource utilization, workforce efficiency, effective training and capacity building, infrastructural components such as technology and innovation and a robust information system needed for equitable sharing of public health surveillance data. Therefore, it is crucial to expedite the adoption of emerging tools and methodologies to enhance the accessibility of high-quality and up-to-date surveillance data (8) and promote equitable and inclusive distribution of resources to mitigate the impact of infectious diseases (9). The fragmentation and poor integration of PHSS on the local level and between countries and regions are evident and have negative effects on the mandate of the WHO. In this reflective theoretical analysis, we critically analyse the leadership of the WHO in the context of global health governance and the functioning of global health surveillance systems. The analysis explores this issue from two perspectives: policy shaping and effective implementation. Various aspects related to PHSS were examined, including the lack of consolidation and its impact on the WHO's mandate in global health leadership. The rationale behind the need to address the PHSS issues is underpinned by the fact that it is a current global health priority and at the heart of all stakeholders' health agendas, particularly in the aftermath of the COVID-19 crisis and climate change effects. All stakeholders, including the WHO, believe that global, regional and national PHSS is a critical element of the global health structure because it is a key component to identify global health threats, generate valid epidemiological data and take collective proper response. This perspective is undertaken to investigate the role and leadership of the WHO towards strengthening and consolidating the PHSS within the broader framework of global health governance. We aim to build a deeper understanding of complex issues of fragmentation and interconnectivity concerning both PHSS and the WHO governance.

Method

This study employs a grounded approach, integrating a thorough examination of existing literature with the synthesis of expert perspectives. The review process encompassed a systematic thematic synthesis of 22 WHO publications and 21 peer-reviewed articles. The search strategy incorporated various sources, including Google Scholar for pertinent journals and studies, official state websites and portals for the latest reports and publications, and targeted searches for relevant grey literature. The review methodology was organized in three distinct phases: (1) initial exploration and selection of literature and studies based on precise criteria, prioritizing resources that were directly relevant to the topic and published since 2000; (2) rigorous data extraction focusing on key components of the

subject and (3) comprehensive synthesis and thematic analysis of the extracted data to present the findings cohesively.

The thematic synthesis process involved a purposive assessment of these selected publications, employing critical appraisal techniques. This method ensured the presentation of pertinent findings supported by the authors' insights, in line with the overarching objective of the review on global health governance and PHSSs. The synthesis process was executed using MS Word and Excel programs, guaranteeing accuracy and consistency across all stages. Additionally, expert perspectives were integrated into the analysis to provide a well-rounded and nuanced understanding of the subject matter.

The landscape of global health governance

The global health governance was defined as 'the use of institutions, rules, and processes to deal with challenges to health that require cross-border collective action to be addressed effectively' (10). Effective governance plays a crucial role in attaining global health objectives. Recognizing this, the United Nations established the WHO with the purpose of providing global health governance as a strategic priority to seek the enhancement of constructive collaboration and adopt a more coordinated multisectoral approach to achieve a well-defined global health agenda (11,12). While the WHO has made commendable strides in advancing global health in various aspects, it has fallen short of meeting the expectations placed upon it in terms of its leadership role (12) and is insufficient in adequately addressing global health challenges (13). The fragmentation of the global health governance structure is emphasized, and this fragmented landscape is clear in three global domains: first, the global response to the COVID-19 pandemic (14), second, the attainment of the Sustainable Development Goals (SDGs), especially the health-related goals (15), and, third, the progress towards achieving Universal Health Coverage (UHC) (16). There is broad variance among the countries, particularly between high-income countries and LMICs, in response to the pandemic and in the level of progress towards the SDGs and UHC.

Furthermore, the global health governance encounters several challenges that are interconnected and often overlapping that necessitate a comprehensive and systemic approach to address them effectively. These challenges encompass the following: (i) insufficient efforts in harnessing and employing creativity, energy and resources; (ii) insufficient funding and lack of clear priority setting.; (iii) lack of robust accountability mechanisms and absence of transparency, monitoring and enforcement processes; (iv) limited coordination and collaboration among multiple stakeholders; (v) inattention to the fundamentals of health systems strengthening (12,16,17).

Addressing these challenges requires a holistic approach that considers their interdependencies and develops comprehensive strategies to tackle them collectively. By doing so, it is possible to enhance global health governance and make significant strides in improving health outcomes worldwide. One example of a holistic approach is the Global Action Plan for Healthy Lives and Well-being for All (SDG GAP), an initiative that was developed by the WHO and major global health organizations to enhance collaboration and collective actions in health, development and humanitarian response (15,18). In the recent progress report released in May 2023, the SDG GAP highlighted six recommendations: improve collaboration, maintaining GAP as a collaborative platform, enhancing collaboration at the country level in primary healthcare and climate resilience, implementing innovative approaches for impactful delivery, engaging with civil society, and strengthening incentives for collaboration through political leadership, governance direction and funding (18).

Unveiling and enhancing the understanding of public health surveillance

Public health surveillance forms the epidemiological cornerstone for contemporary public health endeavours. The WHO defines it as 'the continuous, systemic collection, analysis and interpretation of health-related data for use in public health actions to reduce morbidity and mortality and improve health' (19). Surveillance systems provide valuable information for monitoring disease burden, detecting changes in occurrence or outbreaks, identifying risk factors and vulnerable populations, guiding public health actions, informing disease prevention and control

programs and evaluating their effectiveness. The overarching goal of surveillance is to equip decision makers with timely and relevant evidence, enabling them to lead and manage more effectively (20,21).

Surveillance can be categorized into different types based on the format and content of data collection (22). Types of surveillance by forms of data collection: (i) passive or active surveillance: passive surveillance relies on voluntary reporting of data, while active surveillance involves proactive collection. Active surveillance typically generates high-quality data but requires substantial resources. (ii) Compulsory or voluntary: surveillance systems can be based on mandatory or voluntary data submission. (iii) Comprehensive or sentinel: comprehensive surveillance includes reports from the entire population within a specific geographical area. However, sentinel surveillance relies on notifications from selected healthcare facilities or institutions (22).

Types of surveillance by content of data collection: (i) indicator-based surveillance: this involves routine reporting of disease cases, including notifiable disease surveillance, sentinel surveillance and laboratory surveillance. Standardized information is collected to establish historical trends and trigger public health responses based on predefined threshold levels. (ii) Event-based surveillance: event-based surveillance focuses on the rapid detection, reporting, confirmation and assessment of public health events, including community-based surveillance, which is an active process that utilizes community representatives and health workers as contact persons for surveillance purposes. Both indicator-based and event-based surveillance systems are essential components of a national surveillance system and should complement each other (22,23).

Numerous global initiatives, frameworks and tools are playing pivotal roles in enhancing public health surveillance, early detection, and response to health threats worldwide. These include the Global Influenza Surveillance and Response System (GISRS) for collaborative virus data sharing (24), the Global Public Health Intelligence Network (GPHIN) for rapid threat assessment (25), and the Global Antimicrobial Resistance and Use Surveillance System (GLASS) for standardized antimicrobial resistance (AMR) tracking (26). Other key contributions include the Global Early Warning System for Major Animal Diseases (GLEWS+) (27), the Global Outbreak Alert and Response Network (GOARN) (28) and PulseNet International, dedicated to tracking foodborne infections (29). Furthermore, programmes such as ProMED-mail and the Asia Pacific strategy for emerging diseases (APSED III) contribute to infectious disease reporting and regional health security (30,31). These initiatives collectively facilitate interconnectedness, timely information sharing and coordinated action to address global health challenges.

PHSSs in the context of global health governance

Numerous compelling pieces of evidence established a direct connection between the PHSS and the global health governance. A prominent illustration of this link is found in the International Health Regulations (IHR). Under the IHR, countries are required to establish and maintain surveillance systems capable of rapidly detecting and assessing public health events. These systems serve as early warning mechanisms for potential international health emergencies. By monitoring and reporting on disease outbreaks, surveillance systems contribute vital information to global health governance efforts, enabling coordinated responses and resource allocation at both regional and global levels (1,32). An additional line of evidence lies in the Global Health Emergency Preparedness and Response that describes the WHO's role in global health emergency preparedness and response, particularly during pandemics and other public health emergencies. Public health surveillance is instrumental in guiding and informing the WHO's actions, including risk assessment, decision-making and resource allocation, which are all essential elements of global health governance (3,33).

The PHSS is a fundamental pillar of the global health architecture. These systems are considered essential for the health information and scientific databases that can lead to effective and efficient global public health decision-making and appropriate public health actions (7,34). It is evident that these surveillance systems need to be consolidated, integrated and institutionalized into the national health systems as they are central to the successful achievement of the SDGs, UHC and pandemics responsiveness (35). Therefore, the

WHO is placing greater emphasis on prioritizing PHSS as a valuable tool of global health policy and actions, and the strategic direction of the WHO is to ensure that global, regional and national surveillance systems are effectively functioning and integrated. Although evidence indicates that PHSSs are present in numerous countries, these systems often exhibit a fragmented structure as they are primarily designed for disease-specific programmes, reliant on international donor funding, and face challenges related to financial and human resources sustainability, as well as fluctuation (33,34). This specific fragmentation and disintegration in the PHSS are mainly reported in the LMICs and regions such as Africa, the Middle East and Asia (34). The COVID-19 pandemic has exposed and amplified this significant gap and weaknesses in the global health landscape where the existing surveillance systems impeded the early identification and response to COVID-19 cases and hindered any effective and rapid containment strategies (7). Furthermore, the lack of organization and structural framework hampers the collection, sharing, reporting and analysis of epidemiological data within the surveillance systems. Many existing disease surveillance systems are inadequate in effectively measuring the health impact of outbreaks and are insufficiently designed, resourced and operated to detect outbreaks for timely and effective public health interventions (34).

The Technical Framework in Support of IHR (2005) Monitoring and Evaluation: Joint External Evaluation Tool (36) provides criteria for effective surveillance as part of the broader assessment of countries' capacities to implement the IHR with targets to (i) strengthen surveillance systems to detect significant events for public health and health security effectively, (ii) foster communication and collaboration among sectors, national and international authorities, and (iii) enhance national and regional capacity to analyse data incorporating the use of interoperable and interconnected electronic tools. Nevertheless, the implementation of these criteria may be impeded by the challenges associated with global health governance fragmentation. These challenges have been highlighted by different global health organizations and there is a pressing need to tackle them. This would support the countries in establishing strategies for integrated disease surveillance and enable them to overcome data fragmentation in any context (34). These challenges are:

1. *Lack of leadership and governance*. Strong leadership is crucial as the primary and indispensable prerequisite for realizing shared visions and advancing progress towards a more cohesive and resilient global PHSS (34).
2. *Lack of priority and imbalance in coverage of surveillance systems*. A vision for global health surveillance to address the most critical health problems and diseases with a focus on low-resource settings is essential. These systems are particularly important for population health and major diseases such as the non-communicable diseases (NCDs) (37). For example, NCDs are heavily affecting the health and wealth of the population with high prevalence and economic burden. NCDs and their associated risk factors, including socio-economic and environmental risk factors, should be integrated in the structure of the PHSSs (38). This priority-driven vision can tackle the fragmentation of surveillance between disease-specific programmes' that are rarely grouped under an integrated and comprehensive national health information system (34).
3. *Inadequate innovative technology and digital solutions and fragmented data systems*. To a considerable extent, this challenge has been observed in LMICs, as most of these countries still rely on paper-based broken systems. Additionally, the disease-specific programmes' surveillance systems usually use different information technology applications, which limits the opportunity to combine them under one comprehensive national surveillance system. However, in settings where electronic reporting systems are used, these systems are non-interoperable, and therefore cannot exchange data with other systems (34).
4. *The lack of information resources, robust surveillance framework for implementation, and limited and unsustainable financial resources* (34,39). These frameworks are deficient in LMICs with scarcity of financial resources. However, these countries benefited from disease-specific surveillance programmes with specific funding sources that leave gaps in the national surveillance opportunities, duplicate efforts and

waste resources. This also may apply to the challenges of availability and competency of human resources required to operate the PHSSs in a collaborative and effective manner.

Fragmentation and interconnectivity of global health governance and PHSSs

The impact of complex and fragmented global health governance on the organization and integration of PHSSs at both the global and national levels is evident. This situation significantly hinders the WHO capacity to effectively lead, guide and support a robust global health governance system. The primary responsibility of the WHO is to establish cohesive global and national PHSSs as operational tools to enhance global, regional and national capabilities in preventing and controlling infectious diseases. However, the current fragmented global systems undermine the effectiveness, integration and collaboration of most existing surveillance systems, rendering them inadequate and non-functional. The fragmentation of surveillance systems inhibits the information and data from being routinely and systematically shared with the WHO to then take data-driven and evidence-based decisions. Moreover, this may make the WHO's mission difficult to lead and effectively guide the global health actions of combating disease outbreaks, epidemics and health issues. Evidence revealed that the response to the Ebola epidemic was inadequate, and the Director-General of the WHO underlined the importance of regaining the trust of the global community in the WHO's ability to manage global health crises and disease outbreaks (40). There is an obvious indication that the WHO still needs to take additional actions for effective global health leadership, including supporting the Member States in building and strengthening consolidated, collaborative and integrated PHSSs.

However, to date, there is some progress made in the area of the IHR implementation, for example, the introduction of national focal points to connect with different government sectors, stakeholders and the WHO; an increase in reporting transparency; improvement in the use of early warning systems; and enhancement of cooperation between organizations dealing with human and animal health (41). A notable example of this progress is the establishment of the WHO Hub for Pandemic and Epidemic Intelligence, which works closely with Member States and WHO Regional and Country Offices to strengthen their data-sharing capacities and enable partners from around the world to collaborate and co-create tools to gather and analyse data for early warning surveillance (42). Nevertheless, there are still significant gaps that necessitate a revision of the IHR with a focus on surveillance systems integration.

Case Studies 1 and 2 play a pivotal role in substantiating the theoretical underpinnings of this analysis. Case Study 1, which examines the Ebola outbreak in West Africa, vividly illustrates the repercussions of ineffective implementation of health surveillance systems within a fragmented governance structure. This case underscores the critical importance of strategic planning, coordination and robust surveillance infrastructure in effectively responding to public health crises. Case Study 2, focused on Rwanda's Integrated Disease Surveillance and Response programme, stands as a testament to the transformative potential of cohesive public health surveillance systems guided by sound governance principles. Rwanda's success story highlights the substantial positive impact that concerted efforts, investment in health information infrastructure and strong inter-sectoral collaboration can have on strengthening national surveillance capacities. Together, these case studies provide empirical grounding for the argument that a consolidated and well-integrated PHSS, underpinned by effective global health governance, is indispensable in effectively addressing emerging health threats on a global scale.

The focus of this perspective centred around four major problems that are limiting the WHO's ability to perform its duties. The problems are linked to the malfunctioning of global health surveillance systems. (i) Lack of integrated PHSS, particularly in LMICs, which inhibits the data-driven decision-making process to tackle outbreaks and diseases. (ii) The structural and operational fragmentations and the cost associated with addressing them, which will expose the WHO to financial stress and weaken the prospect for greater autonomy (46). (iii) Conflicted political, technical and economic interests and priorities among Member States, agencies and networks (40). Lastly, (iv) lack of longstanding and sustainable One Health collaborations, which increases the burden on the WHO's ability to provide policy guidance, technical support and resource mobilization (47).

Case Study 1: Fragmentation of global health governance and PHSS

The case of the Ebola outbreak in West Africa serves as an example where ineffective implementation of a health surveillance system can be attributed to governance failure (43), particularly in Guinea, Sierra Leone and Liberia between 2014 and 2016. That was noticed through: (i) The governments of the West African countries were lacking preparedness and planning to handle the Ebola outbreak. There was a lack of strategic planning and coordination between government agencies, resulting in delays in response and containment efforts. (ii) Weak health infrastructure and lack of investment and poor governance in the health sector. (iii) Inadequate surveillance systems with scarce necessary resources and technology for timely detection and reporting of cases. (iii) Corruption and lack of accountability along with mismanagement and misallocation of resources for the Ebola response. (iv) Insufficient coordination and non-effective collaboration between international organizations, governments and non-governmental organizations, which hampered the implementation of a unified surveillance system.

Case Study 2: Interconnectivity of global health governance and PHSS

Rwanda is a successful example of implementing a PHSS as part of a strategy for good governance through the 'Integrated Disease Surveillance and Response' (IDSR) programme (44,45). Rwanda has made noteworthy progress in improving its public health infrastructure and surveillance systems. The IDSR programme was initiated as part of the government's commitment to good governance and effective public health management. The key elements of its success are: (i) the Rwandan government developed a *comprehensive strategy and policy framework* to guide the implementation of the IDSR programme. (ii) The government invested in *strengthening health information systems* by establishing a centralized electronic reporting system. (iii) The success of the IDSR programme was attributed to *strong collaboration and coordination* between different sectors. The government worked closely with the Ministry of Health, other relevant ministries, international partners and local communities to ensure the effective implementation of surveillance activities and timely response to public health threats. (iv) *Continuous monitoring and evaluation* were integral to the programme's success. The government established a system for monitoring surveillance activities, data quality and the overall performance of the programme. Feedback mechanisms were implemented to address challenges and improve the system over time (44,45).

Nevertheless, the WHO believes that collaboration is an essential approach needed for robust surveillance systems. One example is the collaboration that produced the One Health Approach with the Food and Agriculture Organization of the United Nations, the World Organisation for Animal Health, and the United Nations Environment Programme. This new operational approach was articulated to address the global health issue of AMR through establishment of multisectoral coordination mechanisms, the recent launch of global research agenda for AMR (48) and the formation of surveillance and information sharing systems (49).

Conclusion

The global health governance landscape continues to be weak, fragmented and unstructured due to the following factors: the multiplicity of global health actors, drawbacks in global leadership, divergent interests and priorities, lack of accountability, and power dynamics. It is also evident that there is fragmentation in public health surveillance at global, regional and local levels and this is associated with key challenges such as lack of leadership, lack of priorities alignment, imbalance in coverage of surveillance systems, inadequate innovative technology and digital solutions, and fragmented data systems.

Overall, the fragmentation of global health governance and of PHSSs represents two sides of the same coin. They require equal attention as they are negatively affecting the WHO's ability in decision-making processes, funding sustainability, resource allocation, global health priorities alignment at all levels and in the implementation of a One Health collaboration approach.

Author contributions

All authors made a significant contribution (drafting, revising and critically reviewing the article) to the work reported. MA, HM and MK have equally contributed to

the conception analysis design and article synthesis too. All authors, MA, HM and MK, gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Ethical approval

This analysis does require ethical approval.

Declaration of conflicting interests

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Original Article

Behavioural risk factors for non-communicable diseases among South African Durban-based refugees: a cross-sectional study

Jeanne Martin Grace and Mateisi Wailer Thabana

Abstract: Behavioural risk factors for non-communicable diseases (NCDs) are rising among refugees, increasing chronic disease prevalence that causes morbidity and mortality. This study aimed to ascertain the prevalence, awareness and management of behavioural risk factors for NCDs among South African Durban-based refugees. A once-off quantitative, cross-sectional design was conducted on the behavioural risk factors for NCDs among 122 randomly selected Durban-based refugees using a modified version of the World Health Organisation (WHO) STEPwise approach to NCDs surveillance (STEPS) instrument. Participants' awareness and management of risk factors for NCDs were determined with a behavioural NCD awareness and management of behavioural NCD risk factor questionnaire. Smoking and alcohol prevalence were 4.1% and 20.7%, respectively, with 40.8% consuming fewer than five servings of fruit and/or vegetables daily. Participants performed more than 150 min of moderate physical activity per week. A significant 30.8% ($p < 0.001$) was aware that consuming alcohol poses an extremely large risk, similarly for smoking (38.7%; $p < 0.001$]. A significant 56.2% ($p < 0.001$) believe that regularly eating raw vegetables presents no risk, likewise for being physically active (51.7%; $p < 0.001$). A significant 40.6% ($p < 0.001$) of the participants always drink water or non-alcoholic drinks to manage their alcohol consumption, 54.2% ($p < 0.001$) manage their unhealthy diet by sometimes filling half their plates with fruits and vegetables, and 49.2% manage their physical activity levels by sometimes choosing a range of physical activities ($p < 0.001$). Refugees' lack of awareness of behavioural risk factors for NCDs highlights the importance for health service providers to present health promotion programs to make refugees aware of their behavioural NCD's risk factors and how it impacts their health.

Keywords: alcohol, behaviour change, diabetes, health care, nutrition, physical activity

Introduction

The prevalence of non-communicable diseases (NCDs) and their risk factors is rising among refugees – a vulnerable and socially disadvantaged population – increasing their morbidity and mortality (1,2). A higher prevalence of chronic diseases among refugees has flowed into developing countries where NCD behavioural risk factors, such as tobacco use and harmful alcohol use, unhealthy diet and physical inactivity are associated with the development of diabetes, cardiovascular disease, cancers and chronic lung diseases (3). To control the global burden of NCDs, researchers suggest a shift to primary prevention by addressing inadequate nutrition, physical inactivity, alcohol consumption, smoking, high blood pressure and dyslipidaemia (4). The large influx of refugees in urban settings and the corresponding excessive burden of NCDs place significant pressure on under-resourced healthcare systems in low- and middle-income host countries like South Africa (5,6). Although South Africa does

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not have formal refugee camps, most refugees live in urban areas (7), such as Durban. Surprisingly, literature on South African-based refugees' behavioural NCD risk factors and the awareness and management of their NCD risk factors are scant, which is concerning considering that NCDs have been determined as a significant health challenge among many humanitarian set-ups around the world (8).

Tobacco use is one of the main behavioural risk factors for NCDs and a leading cause of illness and death from major NCDs such as cancer, respiratory and cardiovascular diseases among Syrian refugees (9). The number of deaths is projected to grow to more than 8 million a year by 2030 if preventive measures are not implemented (10), with 86.9% of all deaths among current smokers in humanitarian settings (11). Researchers show that tobacco usage was 22.9% among Bangladeshi refugees aged 48.6 years (12), 31.4% among Syrian refugees aged 41.9 years (9), and 9.4% among Afghan refugees aged 36.8 years (13), notably lower than the high prevalence of 43.7% among the general population in Bangladesh (14). However, literature on the awareness and management of tobacco use among refugees is very scant.

Researchers showed that alcohol is the most widely used substance globally. In refugee camp settings, beer, wine and home-brewed alcohol are the most commonly consumed types of alcohol (15). In this regard, 98.6% of Syrian and 97.2% of Bangladeshi refugees indicated ever consuming alcohol (12,16). However, Durban-based refugees' awareness and management of alcohol as an NCD risk factor are currently unknown.

Globally, the annual total number of deaths due to low fruit and vegetable consumption is 1.7 million (17,18). More than 95% of Syrian refugees (9) and 94.5% of Afghan refugees consume fewer than five servings of fruits and/or vegetables daily (13), in contrast to the much lower 76.3% of Bangladeshi refugees (12). To manage fruit and vegetable intake, it is recommended that a person should consume five servings of fruits and vegetables daily (19). Increased consumption of food high in salt and decreased consumption of vegetables and fruits can negatively impact the quality of refugees' diets (9). A study by Rahman *et al.* (12) showed that 34.5% of Bangladeshi refugees consume extra salt in their food, and 37.2% of Syrian refugees add salt always/often to their meals before eating (16), which is similarly high, compared with a lower 28.1% of the Turkish general population who always add salt to their food before eating (20). To manage the risk of high salt intake, it is recommended that a daily intake of salt should be less than 5 g (19). Literature on the awareness and management of an unhealthy diet among refugees is sparse, with South African Durban-based refugees' dietary habits currently yet to be discovered.

Physical inactivity contributes to 6% of deaths worldwide (21). It has become another health-related concern among refugees (22), contributing to an increase in the number of refugees being overweight and obese (21). Researchers evidenced that the prevalence of insufficient physical activity among Afghan refugees was 18.1% (13) and 8.1% among Syrian refugees (23). Studies on the physical activity levels among refugees are very scarce (1). However, 89.6% of Bangladeshi refugees' physical activity levels are low (less than 150 min per week), and 6.8% and 2.4% perform moderate and vigorous physical activity, respectively (12). Although the physical activity levels of South African Durban-based refugees are unknown, minimum physical activity levels of either 150 min of moderate or 75 min of vigorous physical activity are recommended per week to obtain health benefits (24).

Studies focusing on behavioural NCD risk factors among South African-based refugees still need to be explored, with NCDs forming an integral part of health service provision even to this vulnerable population. Monitoring the current status of these key risk factors is an essential element of NCD control that could shed light on possible health promotion programs to be included in health service delivery. It is imperative to generate evidence to see how behavioural risk factors impact Durban-based refugees; hence, this study aimed to investigate the behavioural risk factors of NCDs amongst Durban-based refugees in South Africa.

Materials and methods

Study design and setting

A one-off, quantitative cross-sectional design survey was conducted among 122 Durban-based refugees living in the city of Durban. The study was conducted at the Pastoral Refugee Care Centre,

Durban, Kwazulu-Natal, South Africa, as South African refugees are based mainly in urban areas and not restricted to refugee camps (7). Most adult African refugees migrate to South Africa for economic benefits and job opportunities, with around 75,512 refugees hosted, based on South Africa's refugee statistics estimates (25). The majority in Durban originate from conflict-torn African countries like the Democratic Republic of Congo, Rwanda, Burundi, Angola, South Sudan, Ethiopia, Somalia and Zimbabwe. Unlike other African nations, South Africa lacks refugee camps, and many refugees live in urban areas around Durban, surviving without extensive assistance. Refugees have freedom of movement and can seek employment or self-employment, often starting informal sector enterprises due to limited opportunities in the formal sector.

The Refugee Pastoral Care Centre, affiliated with the Catholic Archdiocese of Durban, focuses on providing pastoral and social services to refugees, asylum seekers and migrants, aiming to restore their dignity, faith and hope through healing workshops and cohesion programs. The study site was chosen due to its location at the Denis Hurley Centre—a central hub for Durban's large refugee population.

Sampling

The study participants included refugees older than 18 years versed in English and living permanently in Durban, South Africa. Refugees meeting the specified criteria were included due to their English language proficiency, which is crucial for meaningful contributions to the study results. Refugees were excluded if their asylum was not secured or whose application was still in process, or who acquired citizenship through birth or marriage.

The sample size of 122 refugees was determined using a sample size calculator with parameters set at a 95% confidence level and a ±5% confidence interval (26). These participants were selected randomly to meet the minimum required sample size. To recruit participants, a sampling strategy was employed by contacting all organisations that assist refugees in attaining integration and independence. After obtaining informed consent, data were collected over 4 days at the Pastoral Refugee Care Centre.

Data collection, measurements and process

WHO STEPwise approach to NCD risk factor surveillance instrument

Data were collected using a modified version of the WHO STEPwise approach to NCD surveillance (STEPS) instrument version 3.1 (28). STEPS was administered to the participants by the second author and trained research assistants who received adequate training in survey methodology. The instrument incorporated questions on behavioural and cardio-metabolic risk factors and is separated into four sections. The STEPS instrument's first two steps were utilized for the current study's purposes. Step 1 included questions on socio-demographic characteristics, and Step 2 explored the refugee's behavioural risk factors such as tobacco use, alcohol consumption, physical inactivity and unhealthy diet (dietary habits).

Socio-demographic characteristics (WHO Step 1). Socio-demographic characteristics, such as sex, age, the highest level of education, income, ethnicity and contact details, were collected first.

Self-reported behavioural risk factors (WHO Step 2). Current use of tobacco (smoke and smokeless forms), alcohol consumption, and intake of fruits, vegetables and salt were collected subsequently. Physical activity at work, travel to and from places, recreational activities and time spent in sedentary behaviour were assessed using the Global Physical Activity Questionnaire (GPAQ) (27). Behavioural risk factors were determined based on the cut-offs recommended by STEPS guidelines (28). Tobacco (smoke or smokeless) and alcohol use in the last 30 days and 1 year were considered current use. Alcohol use was assessed as standard drinks (one standard drink = 100 ml wine, 285 ml beer or 30 ml Spirit/Toddy/Arrack).

Behavioural NCDs risk awareness questionnaire

Refugees' awareness of their behavioural NCD risk factors (tobacco use, alcohol consumption, physical inactivity and unhealthy diet) was determined using a self-developed questionnaire. The questionnaire was piloted on 20 respondents not included in the study to ensure reliability and validity. For each risk factor, participants could select one of the following five options 'No risk at

all', 'A small risk', 'A medium risk', 'A fairly large risk' and 'An extremely large risk'.

Management of behavioural NCDs risk questionnaire

Refugees' management of their behavioural NCD risk factors (tobacco use, alcohol consumption, physical inactivity and unhealthy diet) was determined using a self-developed questionnaire. The questionnaire was piloted on 20 respondents not included in the study to ensure reliability and validity. For each risk factor, participants could select one of the following five options 'Never', 'Rarely', 'Sometimes', 'Often', and 'Always' to indicate what they do to manage their behavioural risk factors.

Procedures

Field workers recruited from UKZN's School of Health Sciences underwent training by a Biokineticist before data collection. The Durban Pastoral Refugee Care Centre organized a group meeting to share study aims and address concerns. Refugees received a thorough explanation of the study's purpose and benefits before signing informed consent forms. A total of 122 refugees expressed interest by signing the consent forms.

Questionnaires were completed at the refugee centre during their first visit, and translated into English—a language spoken widely among the refugees. Data collected included awareness and management of NCD risk factors using the described tools.

Statistical analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS, version 21.0, Chicago, IL). Descriptive statistics were presented as means and SD. Frequencies were represented in tables or graphs. A Chi-square goodness-of-fit (univariate) test was used on the categorical variables to test whether any response options were selected significantly more/less often than the others. Under the null hypothesis, it was assumed that all responses were selected equally. A binomial test was used to test whether a significant proportion of respondents selected one of a possible two responses. A one-sample *t*-test was used to test whether a mean score differed significantly from a scalar value. Statistical significance was set at $p \leqslant 0.05$.

Results

A total of 121 refugees participated in the study, with a mean age of 40.5 (±8.6) years. The majority of participants, comprising 88 individuals (73.6%), were female. Additionally, 113 participants (93.3% lived in rural areas before being displaced from their origin. Supplemental Table 1 shows that the majority of participants, 93 (76.9%), earn less than R3800.00 per month; 58 (47.9%) of the respondents obtained a secondary school education. Most participants (81; 66.9%) originate from the Democratic Public of the Congo, with 79 (65.3%) unemployed; 63 (52.1%) of the participants are married.

Behavioural NCD risk factors

Smoking and alcohol consumption

The majority of participants (116; 95.9%) do not smoke, and 117 (98.3%) do not smoke daily. Of the 122 participants, 96 (79.3%) do not consume alcohol, and only one participant (8%) consumes alcohol daily.

Unhealthy diet

In a typical week, fruit is eaten on an average of 3.87 (±1.89) days, while servings (number) of fruit on those days are 2.68 (±1.43). This follows that in a typical week, vegetables are eaten on an average of 4.39 (±1.90) days, with daily servings of vegetables being 3.02 (±1.86). Of the participants, 40.8% consume fewer than five servings of fruit and/or vegetables on average per day. Supplemental Table 2 shows that a significant 33.3% of the participants sometimes and 21.7% always add salt or a salty sauce to their food right before eating it. A significant 36.7% of the participants sometimes and 23.3% always add salt or a salty sauce when cooking or preparing food. Of the participants, a significant 35.8% never and 25% sometimes eat processed foods high in salt. Further analysis shows that the participants significantly perceive that they consume too little salt ($M = 2.02$, $SD = 1.02$, $t(-10.5) = 118$, $p < 0.001$).

Table 1. Awareness of behavioural non-communicable disease risk factors.

Behavioural item	*Number of responses (%)*					x^2	*df*
	No risk at all	*A small risk*	*A moderate risk*	*A fairly large risk*	*An extremely large risk*		
Regularly eating fruit and vegetables	68 (56.2)*	13 (10.7)	24 (19.8)	4 (3.3)	12 (9.9)	107.47	4
Consumption of alcohol	48 (41.0)*	4 (3.4)	10 (8.5)	19 (16.2)	36 (30.8)*	57.23	4
Physical activity	62 (51.7)	22 (18.3)	21 (17.5)	9 (7.5)	6 (5.0)	83.58	4
Smoking	50 (42.0)*	2 (1.7)	6 (5.0)	15 (12.6)	46 (38.7)	86.08	4
Consuming foods that are high in salt	25 (20.8)	21 (17.5)	19 (15.8)	29 (24.2)	26 (21.7)	2.67	4

*$p < 0.001$.

Physical activity

A significant (66.9%) and (68. 1%) ($p < 0.001$) of the participants work does not involve continuous vigorous- and/or moderate-intensity activities at work during a typical week. A significant 67.7% and 71.3% ($p < 0.001$) of the participants, respectively, do not perform vigorous- and/or moderate-intensity sports, fitness or recreational (leisure) activities for at least 10 min.

During a typical week at work, the participants spent 4.51 (±1.88) and 4.53 (±2.05) days, respectively, on vigorous- and/or moderate-intensity activities as part of their weekly activities (Supplemental Table 3). The participants spent 209.18 (±271.49) and 252.95 (±254.06) min, respectively, performing vigorous- and/or moderate-intensity activities at work during a typical week. Supplemental Table 3 shows that, during a typical week, the participants partake respectively in vigorous- and moderate-intensity sports, fitness or recreational (leisure) activities for 3.18 (±2.08) and 3.45 (±2.11) days. The participants spent 117.58 (±110.78) and 121.55 (±115.42) min., respectively, performing vigorous- and/or moderate-intensity sports, fitness or recreational (leisure) activities during a typical day. Finally, during a typical day, the participants spend 129.65 (±173.97) min. sitting or reclining (being sedentary).

Awareness of NCD risk factors

As portrayed in Table 1, a significant 56.2% ($p < 0.001$) of participants believe that regularly eating raw vegetables presents no risk at all. On the participant's alcohol awareness, a significant 41.0%; ($p < 0.001$) believe that consuming alcohol poses no risk at all; however, 30.8% (p<0.001) believe it is an extremely large risk. A significant 51.7% ($p < 0.001$) of participants believe being physically active presents no risk at all. Regarding smoking, a significant 42% ($p < 0.001$) believe that smoking presents no risk at all, whereas 38.7% ($p < 0.001$) believe that it presents an extremely large risk.

Management of behavioural NCD risk factors

Table 2 shows that, regarding the management of their tobacco use, a significant 76.7% ($p < 0.001$) of participants never avoid triggers; 78.6% ($p < 0.001$) never delay their tobacco craving by 10 min, 71.7% ($p < 0.001$) never chew on sugarless gum or hard candy, 64.4% ($p < 0.001$) never get physically active and 66.7% ($p < 0.001$) never do other things to manage their tobacco use.

A significant 50.9% ($p < 0.001$) of participants never consume, and 21.1% ($p < 0.001$) limit the consumption of alcoholic drinks to manage their alcohol consumption (Table 2). A significant 58.9%

($p < 0.001$) of participants never have alcohol-free days, whereas a significant 34.4% ($p < 0.001$) of participants never or 40.6% ($p < 0.001$) always drink water or non-alcoholic drinks. Other participants manage their alcohol consumption by either never (57.1%, $p < 0.001$) or 27% ($p < 0.001$) always keep non-alcoholic drinks at home. Finally, a significant 50.8% ($p < 0.001$) of the participants never or 50.8% always ($p < 0.001$) do other things to control their alcohol consumption.

In managing their unhealthy diet on fruit and vegetable consumption, a significant 54.2% ($p < 0.001$) of participants sometimes or 23.3% always ($p < 0.001$) fill half of their plates with fruits and vegetables; 34.2% sometimes ($p < 0.001$) or 24.2% always ($p < 0.001$) cut back on solid fats and sugar; 48.3% sometimes ($p < 0.001$) or 22.5% always ($p < 0.001$) get physically active. Finally, a significant 40.5% ($p < 0.001$) sometimes do other things to manage their unhealthy fruit and vegetable consumption (Table 2).

Table 2 shows that regarding the management of their unhealthy diet (salt intake), a significant 44.4% ($p < 0.001$) of participants sometimes or 23.9% ($p < 0.001$) always limit the consumption of processed foods; 41.7% ($p < 0.001$) sometimes or 20.9% ($p < 0.001$) always look at the label's salt content; whereas 41.4% ($p < 0.001$) sometimes buy low-salt alternatives, and a significant 31.1% ($p < 0.001$) never use spices other than salt when cooking. Finally, a significant 23.7% ($p < 0.001$) of participants never, 33.1% ($p < 0.001$) sometimes, and 24.6% ($p < 0.001$) always do other things specifically to manage their salt intake.

In managing their physical activity, a significant 29.2% ($p < 0.001$) of participants never and 49.2% ($p < 0.001$) sometimes choose a range of physical activities. A significant 37.1% ($p < 0.001$) of participants never or 38.8% ($p < 0.001$) sometimes set new fitness goals. Of the participants, 40.7% ($p < 0.001$) never or 39.8% ($p < 0.001$) sometimes find a training partner or join a group activity in managing their physical activity. A significant 21.0% ($p < 0.001$) of the participants never, 42.9% ($p < 0.001$) sometimes and 23.5% ($p < 0.001$) always walk a bit faster. Finally, a significant 25.6% ($p < 0.001$) of the participants never, 40.2% ($p < 0.001$) sometimes, and 21.4% ($p < 0.001$) always do other things to improve their physical activity.

Discussion

This cross-sectional study described the behavioural risk factors for NCDs among South African Durban-based refugees and showed a low prevalence of behavioural risk factors for NCDs, with most refugees unaware that these risk factors pose a risk to their health. The findings indicated that 4.1% of the study population smoked, much lower than Bangladeshi and Syrian refugees (9,12). This low prevalence of smoking may result from 38.7% of the participants being aware that smoking poses 'an extremely large risk' and 12.6% indicating that it poses 'a fairly large risk'. This is an interesting finding, as Jawad *et al.* (29) suggest that refugees smoke more than the general population. Our results are heartening when considering that other researchers found that 89.7% of the participants in their study were aware that smoking causes chronic obstructive pulmonary disease, 76.8% were aware that it causes stroke and 51% were aware that tobacco use increases the risk for type 2 diabetes (30).

Our study findings also showed that 79.3% of the participants do not consume alcohol, which is slightly lower compared with other researchers' findings, showing that 98.6% of Syrian and 97.2% of Bangladeshi refugees indicated ever consuming alcohol (12,17). Our cohort's lower alcohol consumption can be attributed to a moderately low 30.8% of refugees indicating that alcohol consumption poses 'an extremely large risk'. The study's results showed that 40.8% of our participants consume fewer than five daily servings of fruit and/or vegetables on a typical day compared with a high 94.5% of Bangladeshi refugees (12). It can be postulated that consuming at least five daily servings of fruits and vegetables, as recommended by the WHO, is a real challenge to the refugee population. Coinciding with the above postulation, 56.2% of the current study's refugees indicated that not adhering to the WHO's daily servings of fruits and vegetables intake recommendation poses 'no risk at all', showing their lack of awareness or knowledge of the WHO's recommendations. A positive outcome of our study, considering that excessive salt intake is associated with hypertension, is that a lower proportion (21.7%) of participants reported always adding salt or salty sauce to their food just before eating, compared with the 37.2% reported among Syrian refugees (16). Similarly, a lower 23.3%

Table 2. Management of behavioural non-communicable disease risk factors.

Behavioural item	*Number of responses (%)*					x^2	*df*
Tobacco use	*Never*	*Rarely*	*Sometimes*	*Often*	*Always*		
Avoid triggers	33 (76.7)*	1 (2.3)	2 (4.7)	1 (2.3)	6 (14.0)	88.51	4
Delay your tobacco craving by 10 min	33 (78.6)*	0 (0)	2 (4.8)	2 (4.8)	5 (11.9)	64.87	3
Chew on sugarless gum or hard candy	33 (71.7)*	2 (4.3)	0 (0)	4 (8.7)	7 (15.2)	54.69	3
Get physically active	29 (64.4)*	1 (2.2)	4 (8.9)	3 (6.7)	8 (17.8)	58.44	4
Do other things to control your tobacco use	30 (66.7)*	0 (0)	3 (6.7)	1 (2.2)	11 (24.4)	46.64	3
Alcohol consumption	*Never*	*Rarely*	*Sometimes*	*Often*	*Always*		
Limit consumption of alcoholic drinks	29 (50.9)*	1 (1.8)	11 (19.3)	4 (7.0)	12 (21.1)*	41.51	4
Have a few alcohol-free days each week	33 (58.9)*	0 (0)	11 (19.6)	2 (3.6)	10 (17.9)	37.86	3
Drink water or non-alcoholic drinks	22 (34.4)*	1 (1.6)	8 (12.5)	7 (10.9)	26 (40.6)*	35.53	4
Keep non-alcoholic drinks at home	36 (57.1)*	1 (1.6)	4 (6.3)	5 (7.9)	17 (27.0)*	66.13	4
Do other things to control your alcohol consumption	31 (50.8)*	1 (1.6)	3 (4.9)	4 (6.6)	22 (36.1)*	59.57	4
Unhealthy diet (fruit and vegetables)	*Never*	*Rarely*	*Sometimes*	*Often*	*Always*		
Fill half your plate with fruits and vegetables	12 (10.0)	7 (5.8)	65 (54.2)*	8 (6.7)	28 (23.3)*	99.42	4
Cut back on solid fats and sugar	16 (13.3)	12 (10.0)	41 (34.2)*	22 (18.3)	29 (24.2)*	21.92	4
Get physically active	15 (12.5)	8 (6.7)	58 (48.3)*	12 (10.0)	27 (22.5)*	68.58	4
Do other things to control your diet	19 (16.4)	13 (11.2)	47 (40.5)*	15 (12.9)	22 (19.0)	32.62	4

(continued)

Table 2. (continued)

Behavioural item	*Number of responses (%)*					x^2	*df*
Unhealthy diet (salt intake)	*Never*	*Rarely*	*Sometimes*	*Often*	*Always*		
Limit consumption of processed foods	20 (17.1)	7 (6.0)	52 (44.4)*	10 (8.5)	28 (23.9)*	55.52	4
Look at the salt content on food label	21 (18.3)	11 (9.6)	48 (41.7)*	11 (9.6)	24 (20.9)*	39.91	4
Buy low-salt alternatives	12 (10.3)	18 (15.5)	48 (41.4)*	20 (17.2)	18 (15.5)	34.69	4
Use spices other than salt when cooking	37 (31.1)*	16 (13.4)	37 (31.1)*	4 (3.4)	25 (21.0)*	33.73	4
Do other things to control your salt intake	28 (23.7)*	10 (8.5)	39 (33.1)*	12 (10.2)	29 (24.6)*	25.64	4
Physical activity	*Never*	*Rarely*	*Sometimes*	*Often*	*Always*		
Choose a range of physical activities	35 (29.2)*	12 (10.0)	59 (49.2)*	4 (3.3)	10 (8.3)	86.92	4
Set new fitness goals	43 (37.1)*	8 (6.9)	45 (38.8)*	10 (8.6)	10 (8.6)	62.36	4
Find a training partner or join a group activity	48 (40.7)*	5 (4.2)	47 (39.8)*	8 (6.8)	10 (8.5)	81.24	4
Walk a bit faster or choose a longer route	25 (21.0)*	10 (8.4)	51 (42.9)*	5 (4.2)	28 (23.5)*	54.74	4
Do other things to improve your physical activity	30 (25.6)*	8 (6.8)	47 (40.2)*	7 (6.0)	25 (21.4)*	47.40	4

*$p < 0.001$.

always add salt or a salty sauce when cooking or preparing food compared with a higher 52.7% of Syrian refugees (16). The lower salt intake of our cohort can be ascribed to 41.4% of our study's participants buying low-salt alternatives compared with the much lower 12.3% of Syrian refugees (16). The significance of sufficient daily fruit and vegetable intake and reduced salt consumption cannot be overstated. Researchers emphasise that increased salt intake and decreased fruit and vegetable consumption negatively affect refugees' diets (9). Unfortunately, achieving this goal is challenging in South Africa due to expensive fruits and vegetables, exacerbated by inflation and a weakened currency.

The participants exceeded the recommendation of doing a minimum of 150 or 75 min of moderate or vigorous physical activity per week (24) by doing, respectively, 122 and 118 min of moderate- and vigorous-intensity sports, fitness or recreational (leisure) activities during a typical day. The much higher time spent doing moderate and vigorous-intensity physical activity can be attributed to the phrasing of the GPAQ question, which allowed participants to include their time spent performing recreational (leisure) activities. It can also be attributed to our cohort of refugees having less access to facilities like televisions, contributing to physical inactivity because of sitting and reclining when watching television. Corroborating our findings, researchers showed that 18% of Afghan refugees' physical activity levels are low (13). One factor contributing to refugees' having much higher physical activity levels than the general population is that circumstances force refugees to accept onerous and physically active jobs (13).

Strengths and limitations

The study has strengths worth mentioning. It addressed a knowledge gap by quantitatively studying NCD risk factors among refugees in Durban, South Africa using a quantitative questionnaire, which allowed for capturing participants' experiences compared with qualitative methods. Piloting ensured questionnaire appropriateness for refugees. However, limitations should be considered. Participant bias cannot be excluded, and causal relationships could not be determined due to the study's quantitative nature. Self-reported data on sensitive issues like alcohol and smoking may be distorted. Generalisability is limited because participants represent only Durban-based refugees, not from all South African provinces. Additionally, two-thirds of respondents were female, potentially affecting the generalization of men's health.

Conclusions

The study's findings indicate a low prevalence of behavioural risk factors for NCDs among South African Durban-based refugees. The results depict that this low risk is attributable to the various options the refugees execute to manage their behavioural NCDs risk factors. The latter finding is intriguing, showing a need for more awareness among most refugees who are not fully aware or believe that NCD risk factors pose a risk to their health. Many refugees were unfamiliar with the term NCD, but their understanding improved when presented with management options for NCD risk factors. The refugees' lack of awareness of dietary habits and physical activities is concerning as it can negatively influence their management of NCD risk factors such as overweight and obesity, blood glucose, cholesterol and blood pressure. By implication, this population group's lack of awareness regarding NCD risk factors renders them susceptible to NCDs. Raising awareness about NCD risk factors becomes essential for refugees to seek appropriate screening, management and prevention strategies. Therefore, implementing health promotion interventions to encourage healthy lifestyles and mitigate the adverse effects of NCD risk factors is crucial. This study's expected contribution to research in this area will aid in improving management and preventive strategies for NCD risk factors among refugee populations. Current health service providers should consider including health promotion programs making refugees mindful of the impact of risk factors for NCDs.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors without undue reservation.

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Ethics statement

All procedures in studies involving human subjects followed the institutional and/or national research committee's ethical standards and the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethical clearance was obtained from the University's Biomedical Research and Ethics Committee (BREC/00004006/2022). Permission was obtained from the Pastoral Refugee Care Centre manager before data collection.

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Commentary

Developing a theory of change – the importance of rich process data and authors' insights into context, implementation and mechanisms

Helen Elizabeth Denise Burchett[1], Rebecca S. French[1], Sally Griffin[2], Málica de Melo[2], Joelma Joaquim Picardo[2], and Dylan Kneale[3]

Abstract:
Background: Theories of change explaining how interventions work are increasingly important, yet the methods/data to develop these are less advanced than for evaluating effects.
Methods: We conducted a systematic evidence synthesis to develop a theory of change for structural adolescent contraception interventions. We reflect on the utility of the information provided in evaluation reports.
Findings/discussion: Few of the included evaluations presented their theory of change, or included rich, qualitative process data. Authors' descriptions of context and implementation, typically in introduction and discussion sections, were very useful. These helped to understand the intervention's context, how it was experienced and why or how it had the effect that it did. We recommend incorporating rich process evaluations into studies, and reporting contextual insights into the intervention's development, implementation and experience. We also recommend including these data and insights within syntheses that aim to develop theories of change.

Keywords: adolescent, contraception, evaluation, evidence synthesis, process evaluation

Introduction

Outcome evaluations tell us whether an intervention is effective or not. However, it has been increasingly recognised that it is also important to understand *how* an intervention works (i.e. what the causal mechanisms are), to explain why some interventions are more or less effective than others, and to consider whether an intervention is likely to be applicable to a new context (1–3). To answer these questions, we also need to know how the intervention was implemented, what the context was and how it was experienced.

A theory of change sets out how an intervention is expected to lead to an outcome, describing the causal mechanisms and what contextual and other factors may affect their enactment (4). It is useful throughout the process of intervention development and evaluation, from helping to determine what the intervention should be and how it should be delivered, to shaping the evaluation and finally, refining the theory based on empirical evidence gathered through evaluation (5). However, despite increasing awareness of their importance, the methods and data required for developing and refining theories of change are not as advanced as

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those for evaluating effects (4). Furthermore, despite their utility across different stages of an intervention, they are more commonly used to inform intervention development, rather than empirically testing a theory of change (5). Therefore, while a theory of change is often included to inform or represent the design of an intervention or evidence synthesis, less attention is given to evaluating and updating this theory based on knowledge developed through the research/evaluation itself.

Theories of change can be useful at the individual study level, but can also be developed through synthesis of multiple studies (6). One approach is to use meta-ethnography to synthesise individual studies' theories of change (7). However, studies' reporting of theories of change are by no means universal and their prevalence varies between fields of research (7,8). In instances where insufficient studies have reported theories of change to allow synthesis, reviewers could draw on other data and information provided in the studies, for example, from process evaluations, to develop a theory of change for a body of evidence.

Calls have been made in recent decades for process evaluations to accompany outcome evaluations and the number of process evaluations published has increased (3,9). However, process evaluations often focus on quantitative data, reporting what took place, for whom, and/or measures of the perceived acceptability of the intervention, rather than exploring how an intervention was experienced, or how and why it had an effect (10,11). Such quantitative data can be relatively simple to collect and analyse, but lacks the richness to help understand an intervention's causal mechanisms.

The question therefore remains, how to best conduct a synthesis that helps to understand interventions' mechanisms of action, when this has not been set out within a study and when rich process data are lacking.

Standard evidence syntheses of effectiveness typically draw mainly on the research methods and findings sections of evaluation reports, extracting data on the intervention content, study design and results. In this short communication, we reflect on the data we found useful in a recent evidence synthesis undertaken to develop a theory of change.

Materials and methods

We undertook a systematic evidence synthesis to develop a theory of change for structural interventions to enable adolescent contraceptive use (12). We wanted to understand how interventions were implemented and experienced to help explain their effect (or lack there of). We used a case-based approach, intervention component analysis (ICA), that drew on insights from all aspects of the included literature (13). ICA is an iterative method that involves extracting information about all aspects of the intervention and its evaluation (see Burchett *et al.* (12) for more details). The benefits of the method stem from its ability to draw insights from reports beyond those traditionally incorporated into reviews, particularly those related to the evaluation's context and the intervention's implementation – two factors that are understood to be of critical importance for developing theories of change. During and after the analysis, the team discussed and reflected on the types of data and insights that were most helpful in informing the development of our theory.

Results/discussion

Only a minority of the included studies explicitly set out their theory of change and those that did rarely reflected on or refined it based on empirical data gathered in their evaluation. We found the most useful data for us were often from authors describing the context and interactions within it, typically found in introduction and discussion sections. For example, in an evaluation of a Bangladeshi intervention teaching computer skills to adolescent girls, the authors explained that, 'The technology used is important for its novelty – to keep girls coming and to ensure attendance – as well as to generate a favorable impression in the community regarding the program' (14, p. 36). This offers insight not only into the context – that is, technology was novel there at that time – but also how the intervention might have been experienced, explaining why girls attended.

Insights were also gleaned on intervention implementation and experience. The authors of an Indian evaluation described efforts to gain community acceptance,

> When launched, the project faced considerable opposition from parents and other adults in the community. In order to allay concerns about exposing adolescents, especially girls, to information about sex . . . the project, led by local NGO partners, held community-level meetings . . . These efforts went a long way towards gaining community acceptance for the training programme (15, p. 19).

This shows not only that the context led to initial hostility, but that the project took steps to address this and achieve acceptance (and described how it did so).

Finally, authors have offered suggestions on how a study's control arm was experienced, helping to explain the evaluation's results. In a study in Zimbabwe, the control group not only received substantial care, support and intervention, but the authors also reflected that,

> There may also have been some 'contamination' across arms where control participants converted study reimbursements ($5/study visit) into economic opportunities – such as paying for school fees or buying and selling goods at a higher price. Although we did not capture this activity in a systematic way, program monitoring data indicate this did occur among some participants (16, p. 15).

Conclusion

We have presented some examples of how authors' perspectives can be useful in understanding intervention evaluations, specifically their context and causal mechanisms, in order to develop a theory of change through synthesis of a set of intervention evaluations. Insights into interventions' contexts and how interventions were implemented and experienced were particularly useful. We believe that to understand interventions in a broader sense, data, insights and authors' reflections from *all* parts of an article or report can be useful to help understand an interventions' context, implementation, experience and possibly even mechanisms of action. These may be particularly useful when rich process data and contextual information is lacking, and when individual interventions' theories of change are either unavailable or unable to be synthesised. Based on our experience, we recommend intervention evaluators incorporate rich process evaluations into their studies, and report contextual data as well as insights into the intervention development, implementation and experience. We also recommend that rich process data and contextual insights be included within evidence syntheses that aim to develop theories of change, or explain how interventions work, in order to provide more rigorous evidence for these aspects of interventions.

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