

Core competencies for social innovation in health training: Evidence from a global scoping review and crowdsourcing open call

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Abstract

Introduction

Social innovation in health is a community-engaged process to stimulate creative solutions to local health challenges. Although it has expanded, little is known about core competencies required for training social innovation in health. This evidence synthesis included data from a global scoping review and crowdsourcing open call to identify core competencies in social innovation in health training.

Methods

We organized a scoping review and a crowdsourcing open call to identify existing studies on training practices in social innovation in health. The scoping review followed PRISMA 2020 guidelines, and the protocol was uploaded on the Open Science Framework (OSF). We extracted studies from 2007 and 2023 describing training on social innovation in health from nine databases. The purpose was to solicit training approaches for social innovation in health, focusing on low and middle-income country (LMIC) settings. Textual data describing social innovation learning competencies from the open call and studies from the scoping review were descriptively analysed.

Results

Six skills, six mindsets and four types of knowledge were categorized as core competencies from 20 scoping review studies and 38 eligible open call entries. Seven competencies were further addressed for their frequent presence in the social innovation in health training. Communication skill(12 studies and 18 entries) and collaborative mindset(15 studies and 19 entries) were

highlighted in training to connect stakeholders and partners from local community; Community-engaged participatory methods(14 studies and 16 entries), and intersectional knowledge (9 studies and 13 entries)were considered crucial in understanding the health context and designing the solutions.

Conclusion

Our evidence synthesis identified core competencies in social innovation in health through a scoping review and crowdsourcing open call. These findings informed a co-created SIH training workshop series and consensus-building on the competencies list. Future training programs or health curricula could integrate these competencies to develop standardized SIH learning frameworks.

What is already known on this topic

Social innovation in health stimulates creative solutions to local health challenges. Limited research had focused on the training process to develop core competencies of social innovation.

What this study adds

This research identified sixteen core competencies in the social innovation in health training from the evidence of a scoping review and a global crowdsourcing open call. Evidence from both high-income settings and low-and-middle income settings highlighted the problem-solving skills, collaboration mindset, community-engaged participatory method and intersectionality knowledge as core competencies in social innovation in health training.

How this study might affect research, practice or policy

Our findings suggested that skills, mindsets and knowledge should be involved in social innovation in health training practices. There is a need for future research and curricula design to further imply the core competencies into the expansion of social innovation in health.

1 **Introduction**

2 Social innovation refers to new ideas that meets the social needs.[1] Social innovation in health
3 is a community-engaged process to address local health and social problems. [2] Social
4 innovations provide a ground-up approach to developing new health services, engaging
5 communities, and spurring social change. For example, a community-led telephone referral line
6 in Malawi scaled up to provide nationwide maternal health services,[3] while a pay-it-forward
7 sexually transmitted infection (STI) testing program in China leveraged monetary and non-
8 monetary resources to support men who have sex with men (MSM). [4] The expanding social
9 innovation in health movement underlines the need for training in this field.

10
11 Training and capacity strengthening are critical for advancing social innovation in health.
12 However, there is limited focus on the content or format of core competencies, defined as skills,
13 mindsets, and knowledge required to engage in and promote social innovation in health
14 effectively. Many social innovation training programs are designed and promoted by researchers
15 from high-income countries, with less focus on low- and middle-income countries (LMICs)
16 settings. [5,6] Recognizing these gaps, the Special Program for Research and Training in
17 Tropical Diseases (TDR) and the Social Innovation in Health Initiative (SIHI) have emphasized
18 the need to identify training materials for social innovation in health.

19
20 This evidence synthesis aimed to identify and analyze the core competencies essential for social
21 innovation in health using a scoping review and a global crowdsourcing open call. A
22 crowdsourcing open call is a collective process engaging both experts and non-experts to solve

problems and share solutions.[7] The data can then be used to inform courses, learning modules, and training workshops in this growing field.

Methods

The study was organized by the Social Innovation in Health Initiative (SIHI) in partnership with Social Entrepreneurship to Spur Health (SESH), the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the World Bank and the World Health Organization Special Programme for Research and Training in Tropical Diseases (TDR). SESH is an initiative to promote more creative, equitable, and effective health services using crowdsourcing open calls and other social entrepreneurship tools. We used a scoping review followed by a global crowdsourcing open call. The scoping review examined social innovation in health training and educational activities, synthesized existing evidence to provide an overview on the field. The scoping review findings informed the structure of the open call. The crowdsourcing open call invited submissions from the public and community—particularly from LMICs and social innovation networks—focusing on learning modules, teaching approaches, and content related to teaching social innovation in health to captured diverse perspectives. The protocol for the scoping review was co-developed by two early career researchers (OBA and JC) and two senior researchers (EC and JT).

The scoping review revealed limitations in the amount and geographic scope of existing studies, with most research conducted in higher education settings in Europe and American regions. To

address this bias and enhance inclusivity, the open call was structured to specifically capture social innovation in health training in LMICs.

Scoping Review

This scoping review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension and the Joanna Briggs Institute (JBI) methodology for scoping reviews.[8,9] The JBI methodology strengthens the study's reliability by ensuring a systematic and transparent approach to literature selection and data extraction, minimizing bias and enhancing the comprehensiveness of the review.[9] The protocol was uploaded on the Open Science Framework (OSF), an open-access platform (Registered under Doi: <https://doi.org/10.17605/OSF.IO/YNW8G>).[10]

Eligibility Criteria

Studies were included if they met any of the following criteria: (1) discussed how individuals learn or teach social innovation in health; (2) discussed methods for learning social innovation in health; (3) discussed social innovation in health within educational settings, such as universities (public or private); or (4) presented frameworks or methodologies related to social innovation in health. All study designs, publication types, and publication dates were included. Studies not published in English were excluded because of empirical data suggesting that this approach does not impact outcomes.[11,12] Relevance was determined based on explicit mentions of training, teaching, or learning competencies in the context of social innovation in health.

Information Sources and Search Strategy

A health sciences librarian (JC) searched the following nine databases on August 14, 2023: PubMed, APA PsycInfo (EBSCOhost), CINAHL Plus with Full Text (EBSCOhost), Cochrane Library (Wiley), Education Database (ProQuest), Education Full Text (EBSCOhost), Embase (Elsevier), ERIC (EBSCOhost), and Scopus (Elsevier). In addition, the research team searched the European Social Innovation Database, the SIHI website, and Google Scholar for relevant references. PubMed and Embase were chosen for their comprehensive health-related coverage, while ERIC and Education Full Text were included to capture educational resources relevant to the focus on competencies. We checked the citations of the included references and consulted with domain experts.

The search strategy incorporated both subject headings and keywords related to three main concepts: social innovation, education, and health. When searching health-related databases, the keyword 'health' was excluded, and similarly, the term 'education' was omitted when searching education-focused databases. An English language filter was applied to the search. The full search strategy across all databases is provided (supplemental appendix I).

Supplementary Appendix I: Full search terms of all databases

Study Selection

All references were imported into EndNote (version 21) and deduplicated. Unique records were then imported into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia, available at www.covidence.org) for screening and data charting. Two independent researchers screened titles and abstracts for eligibility, and conflicts were resolved by discussion with a third reviewer (EC, JT, JC). Subsequently, two researchers independently

screened full-text and conflicts through discussion or arbitration with a third researcher (EC, OBA or JT).

Data Extraction and Analysis

Data extraction was performed using Covidence, which was piloted with 100 references by two researchers (OBA and EC). The standardized extraction form captured the following data: study characteristics (author, year of publication, title, country, setting, study purpose, teachers, learners, article type, duration of training, and framework or model), social innovation in health competencies (specific mindsets, knowledge, or skills), and teaching and training strategies (type, outcomes, and findings). The evaluation of the training process was also extracted and analysed (supplemental appendix II).

Supplemental Appendix II: Evaluation outcomes across scoping review results

Two reviewers (OBA, EC) independently extracted data for each included reference, and a third reviewer assessed discrepancies (JT).

Crowdsourcing Open Call

In addition to the scoping review, an open crowdsourcing call was organized on competencies and training practices in social innovation in health. The open call was organized from February to April 2024. The open call was based on the TDR crowdsourcing open call practical guide and was supported by the Social Entrepreneurship to Spur Health (SESH), TDR Global, and SIHI.[7]

The open call organized a multisectoral steering committee comprising nine members from diverse geographic regions, seven of whom were from LMICs. Committee members were

selected based on their expertise and experience in social innovation training, their residence in LMICs, and their prior involvement in social innovation in health training events. Five were training directors or had assisted in social innovation in health training events. Steering committee meetings were held biweekly via one-hour teleconference to update preparations, refine submission guidelines, and provide expert feedback on the call for submission and promotion strategies.

Promotion of the open call was carried out through the SESH website, social media channels, email listservs, and partner organizations, especially through SIHI networks. These promotional channels were effective in reaching a wide audience. To ensure diversity in submissions, direct outreach was also conducted to key stakeholders in LMICs, including local organizations, training directors, and community leaders. Participants who had attended or organized social innovation in health training were encouraged to submit ideas related to the following: curriculum or module design for social innovation in health courses; adapting training practices in complex settings with limited teaching capacity, especially in LMICs; participatory training methods (e.g., co-creation, flipped courses); and the evaluation of social innovation in health training. Submissions were accepted in any of the six UN languages: French, Spanish, Arabic, Russian, English, and Chinese.

Eleven independent judges, including three steering committee members and eight external experts, were assigned to rate each submission on a 1-10 scale (with 1 being the lowest and 10 being the highest) based on five criteria. These included the following: clarity and of the idea; relevance to core learning competencies in social innovation in health; novelty of the training

approach; feasibility, scalability, sustainability of the approach; and promotion of equity and fairness (Supplemental Appendix III).

Supplemental Appendix III: Judging rubric for crowdsourcing open call

Judges with conflicts of interest were recused. Non-English entries were initially examined for eligibility using translation tools before being judged. The final score was determined by averaging the five subcomponent scores, with a minimum score of 7 required for the selection of the finalists. Eight finalists were chosen, ensuing geographic diversity among the selected entries.

Data Extraction and Analysis

For open call submissions, we collected both quantitative data of participants' demographics information and qualitative data of submission content. The quantitative data captured the participant's age, gender, country of residence and education level. The qualitative data was independently extracted by two reviewers (either ZZ, BW or KS) using Microsoft Excel. A third reviewer assessed discrepancies (JT).

Synthesis method

After reviewing all available evidence, concepts were inductively categorized into three main domains—skills, mindsets, and knowledge—based on recurring themes identified across the evidence. These categories were developed through a systematic process of grouping similar competencies and refining the classification to align with the core components of social innovation in health. After identifying a set of competencies, each included evidence was coded for the presence of these competencies, and whether they were present or absent was recorded.

The scoping review studies, together with the open call entries, were synthesized by the research team into draft competencies list. We also conducted subgroup analysis by isolating evidence from only high-income settings and low- and middle-income settings. Competencies with the highest frequency (over 20) in each domain (skills, mindsets, knowledge) were presented in the manuscript.

Patient and public involvement

This study collected evidence from a scoping review and a crowdsourcing open call. This study does not involve patients. The scoping review search for evidence from publicly available data source on social innovation in training. The crowd sourcing open call was promoted through SIHI global network and open access media to encourage public engagement and submission, especially from LMICs. Our findings also informed the social innovation in health workshop series, which the open call finalists were invited to co-create the content. The workshops are open-access, available online, provided to public to guide and improve social innovation in health competencies.

Results

Scoping review

There were 20 studies included in our scoping review (Figure 1).

Figure 1: PRISMA diagram for social innovation in health competency scoping review

[13–32] Ten studies were from high-income countries, seven from middle-income and three from low-income countries. Two were published before 2010, nine were published between 2010

and 2019, and nine were published after 2020. Most training occurred in high-income countries (n=13). The most common region for training was North America (n=11). Ten studies were case studies. Four studies were theories, frameworks, or models.

Most studies focused on activities conducted in college or university settings (n=14) compared to healthcare settings (n=3), virtual settings (n=2), or other settings. Teachers included college or university faculty (n=12) and researchers (n=8). Learners were undergraduate students (n=7), graduate students (n=5), researchers (n=5), healthcare providers (n=3), and community members (n=3).

The training activities lasted years (n = 6), months (n=7), or weeks (n=3). The majority of the studies (n=16) applied a specific approach, framework, or model to their training activities. With regards to training strategies, the studies often reported team-based learning (n=13), participatory elements (n=12), lectures (n=7), designathons (n=3), and flipped classrooms (n=2). All studies referenced teaching social innovation in health skills and mindsets, and most (n=17/20, 85%) of the studies described teaching social innovation health knowledge.

Crowdsourcing Open Call

The crowdsourcing open call received 43 submissions, of which 38 were eligible. Ineligible were not relevant (n=1), over length (n=2), video or graph (n=2). The entries were from 24 men and 14 women, mostly aged 28-47 (71%, n=27) and had a master's degree or above (73%, n=28). Among the 38 eligible entries, 34 (89%) were from LMICs, and four were from HICs. Most entries were from regions of the Americas, African, and West Pacific regions, with the top

countries being the Philippines (n=7), Colombia (n=5), and Argentina (n=3). More details are provided in Table 1.

Table 1: Socio-demographic characteristics of "Social innovation in health learning competencies" open call participants

Thirteen entries were submitted in Spanish, and 25 were submitted in English. Regarding the submission content, eight entries (22%) were descriptions of social innovation in health training curriculums, and seven (19%) focused on the theories, frameworks, or models of social innovation in health training strategies. Thirty-six out of the 38 eligible open call entries were further processed into the data extraction stage to identify the key competencies related to social innovation in health competencies. Twelve entries received an average score of 7/10 or higher (Figure 2).

Figure 2: Distributions of the Average Score of Open Call Entries

Social innovation in health competencies across scoping review and open call

We identified 16 core competencies related to social innovation in health by pooling the evidence from both scoping review and open call. Competencies were categorized into three domains: skills (six competencies), mindsets (six competencies), and knowledge (four competencies) (Figure 3).

Figure 3: Skills, Mindset and Knowledge identified from the Evidence

Seven competencies were further discussed in the following sections as the most frequently presented and commonly acknowledged competencies across the evidence of each domain, including problem-solving skills, communication skills, creative thinking, collaboration mindsets, community-engaged participatory method, health disparity knowledge, and

intersectionality on health, gender, and local culture. The other competencies were categorized and listed in Table 2.

Table 2: Social innovation in health competencies included across scoping review and open call

The sub-group analysis results are similar regarding the frequencies of evidence (Supplemental Appendix IV and Supplemental Appendix V).

Supplemental Appendix IV: Open call submissions for evidence synthesis

Supplemental Appendix V: Subgroup analysis of competencies included from high-income and low-and-middle income countries' evidence.

Social innovation in health skills

Problem-solving skills were the most common frequently identified core competency. We define problem-solving as the ability to frame local health challenges and tackle them. Strong problem-solving skills were mentioned in 20 studies and 28 of the open-call entries. [13–32] One study demonstrated how creative problem-solving combined with human-centred design enabled participants to develop user-oriented health solutions, resulting in improved access to healthcare services. [18] Another study emphasized problem-solving through entrepreneurial teamwork. [25] Problem-solving skills were particularly important in resource-limited settings such as rural areas. Six entries were curricula that included problem-solving skills. Effective problem-solving could foster resilience in dynamic and resource-limited environments, enabling innovators to adapt to emerging challenges while focusing on sustainable impact.

Communication skills also emerged as a critical competency in social innovation. Defined as the ability to effectively connect with a broad range of stakeholders, especially people with lived experience and those who may be potential partners, [18] communication skills were empathized in 12 studies and 18 open call entries. [13,15,18,19,22–24,26,28–30,32] Design thinking and participatory processes with stakeholders were applied in LMIC settings to ensure culturally sensitive interventions.[28] Involving community members in co-creating health solutions contributed to the trust-building process. Interventions were more widely accepted, increasing engagement and participation in health programs. One study used human-centered design strategies to enhance communication between researchers and local populations. [18]Communication skills allowed researchers and innovators to address needs and concerns during the solution design process fully. These have also been applied to the prototype development training to ensure the pathway for iterative feedback of solutions in open call cases. The ability to communicate effectively engaged stakeholders, fostered collaboration, facilitated knowledge transfer, and further ensured that interventions were clearly understood

Social innovation in health mindsets

The most common mindset-related learning competency identified was the need for creativity and novelty in developing health solutions centred and implementation strategies. Creativity is defined as the ability to think divergently and develop innovative approaches when traditional methods are insufficient. This mindset was highlighted in 16 studies and 22 open call entries. [13–15,18–21,23,25–32] One study introduced an entrepreneurial pitch project where students were tasked with designing technological and social innovations for health challenges in LMICs.[20] This experiential learning approach significantly enhanced students' ability to apply

creative thinking in real-world global health contexts, driving them to creatively address resource shortages in underserved areas by leveraging community assets. Creativity formulated an open mind for creative solutions when traditional approaches fell short of addressing the healthcare challenge in resource-limited settings. In open call entries, 13 case studies have demonstrated innovative solutions and how they were generated and implemented to address health problems. Embracing innovative thinking could drive the development of groundbreaking solutions to address complex health challenges, promote the adaptation of new approaches to meet evolving needs, and ensure that interventions remain relevant and effective in a rapidly changing healthcare landscape.

Another important learning competency was collaborative mindsets, which we defined as the ability to partner with stakeholders, leverage network resources, and engage in interdisciplinary teamwork. Fifteen scoping review studies and 19 open call entries highlighted the importance of collaboration, especially with interdisciplinary teams to address complex health challenges. [13,14,16,18–20,22–26,29–32] Effective collaboration with stakeholders and the community integrated diverse expertise and perspectives, which was essential for tackling multifaceted health issues. For instance, one study illustrated how interdisciplinary collaboration among epidemiologists, community health workers, and local leaders significantly enhanced rural health initiatives targeting vector-borne diseases. [30] Another study demonstrated that cooperation between engineers, public health experts, and community stakeholders led to more effective and sustainable water quality management interventions. [29] One open call finalist entry of public servants in health departments also emphasized their role as natural leaders across the various sectors that influence health and promote social innovation through a multidisciplinary and

integrated approach, fostering active participation and effective inclusion. This approach improves problem-solving capabilities and ensures that health solutions are more comprehensive and adaptable, addressing immediate and long-term needs.

Social innovation in health knowledge

Community-engaged participatory methods emerged as a critical knowledge competency in social innovation learning. We define community-engaged participatory methods as the methods to engage community stakeholders as full partners in all phases of research. [33] These methods include community advisory boards, qualitative research, co-creation, open calls, and design-a-thons. Fourteen scoping review studies and 16 open call entries discussed the need to learn community engagement strategies, especially the ones relevant to resource-poor settings, such as community advisory boards, qualitative research, co-creation, open calls, and design-o-thons. [7,13,14,16–18,20–23,26,28–31] One study demonstrated the effectiveness of participatory workshops in addressing gender-related health issues, where co-created solutions led to greater acceptance and long-term adoption.[16] Other cases included using cross-disciplinary collaboration to involve community members in planning health initiatives through focus groups and meetings. [17] This co-creation strategy had built trust and improved participation, aligning interventions with the cultural and social needs of the communities and leading to better health outcomes. Open call entries have further provided cases of implementation of community engagement strategies where the strategies were developed with local culture, labour, and resources to maximize the acceptance of the strategy among community members and maximize the mobilization of resources. One of the open-call finalist entries integrated the co-creation strategies with the historical and cultural elements of the local Filipino community .[34] These

strategies fostered collaboration and ensured that interventions were tailored to the specific needs of the communities they serve.

Understanding health disparities was another essential knowledge competency. For social innovation in health. Nine scoping review studies and 14 open call entries discussed knowledge of health disparities, often at the systems level. [16,18,20,22–24,29–31] One study emphasized how medical education can address health disparities by incorporating experiential learning to help students engage directly with marginalized communities .[24] This approach enabled future healthcare professionals to understand the social determinants of health better and develop more culturally sensitive interventions. The result was an increased capacity to address inequities through tailored interventions that resonate with the specific needs of underserved populations. Open call entries also underlined the awareness of health disparities and exploration of their root as a fundamental element to targeting innovative solutions towards specific groups, which further merged in training practices in social innovation in health. One entry highlighted the inequality of health access for families living in sanitary vulnerability without access to main water and brought it into the co-creation process for technology development. Recognizing these disparities was crucial for developing equitable health interventions that address the underlying social, economic, and structural factors contributing to unequal health outcomes across different populations.

Understanding intersectionality was identified as an important core competency of social innovation. Intersectionality is a concept that describes how a person's identity can lead to different experiences of discrimination and privilege. [35] The intersectional lens provided social

innovators with an understanding of culture or gender-specific needs and approaches for creating health solutions that were relevant and effective in different cultural settings, and for addressing issues related to gender and health equity. Nine of the scoping review studies and 12 open call entries called for an understanding of local culture to create health solutions that are both relevant and effective. [16,18,22–25,29–31] For example, one study used participatory workshops to challenge gender stereotypes and co-design culturally appropriate health programs with community members, particularly women. [16] By engaging community members, particularly women, in co-designing health interventions, the study challenged harmful norms and ensured that health programs were culturally appropriate and inclusive. This approach fostered a sense of ownership and trust, leading to higher levels of participation from marginalized groups. The same emphasis on the intersectionality of gender has also been repeated in the open call entries, as five case studies in the social innovation in health training have been designed for women or illustrate the topics of gender perspective, sexual and reproductive health, and maternal care.

These studies also highlighted the importance of addressing gender stereotypes within cultural contexts to promote equitable health outcomes and avoid reinforcing harmful norms that may limit access to healthcare for women and marginalized groups.

Discussion

This study is identified the core competencies of social innovation in health training with evidence from a scoping review and a crowdsourcing open call. Our findings revealed key insights and gaps in the literature on social innovation in health core competencies for learning. Sixteen core competencies for learning were categorized in social innovation in health skills,

mindset, and knowledge, especially focusing on problem-solving skills, communication skills, creative thinking, collaboration mindsets, community-engaged participatory methods, etc. This study extends the literature on social innovation in health training by combining data from a scoping review and a global open call, using participatory crowdsourcing approaches to identify LMIC evidence, and focusing on learning and teaching related to social innovation in health.

Our data demonstrated that community engagement elements are important for social innovation in health training. Multiple competencies identified in our study focused on community engagement in training: community representatives as key partners of collaboration, community members as learners of training, and community-engaged participatory methods applied for training. These findings align with previous toolkits on crowdsourcing participatory method and WHO guidelines on community engagement. [36] Community engagement allows targeted and accessible health training to promote positive health impact and training outcomes. Future social innovation training programs should deepen community engagement to realize the full potential of local knowledge and resources.

Our data highlighted the importance of incorporating intersectionality into social innovation training. Intersectionality, which examines how overlapping identities influence experiences of discrimination and privilege, is increasingly recognized in the broader health education literature .[37,38] Understanding intersectionality equips learners to address healthcare inequities by tailoring solutions to the unique needs of diverse populations. For instance, an intersectional lens can help identify and dismantle systemic barriers disproportionately affecting marginalized

groups. From an equity perspective, this competency is essential for promoting fair and inclusive healthcare interventions.

Our subgroup analysis revealed the similarity of training focus across high-income settings and low- and middle-income settings, which provided a grounded basis for the further generalization and promotion of these core competencies globally. The team applied a Delphi method to build consensus based on the evidence synthesis finding. The consensus aims to develop agreements on the core competency across borders. Our study also informed the design of social innovation in health midyear training workshops.[39] The open-call finalists, social innovation in health experts who joined the workshop co-creation, and trainees who attended the workshops were also invited into the consensus-building process. The consensus concluded with a core competencies list of nine items from three domains.

Limitations

While the open call opportunity was disseminated through various channels, there may have been selection bias due to snowballing dissemination within our research networks and institutional collaborations (e.g., universities, the Social Innovation in Health Initiative). Although the Social Innovation in Health Initiative (SIHI) is a well-established global network, the reliance on these connections may have inadvertently limited the diversity of entries. To mitigate this, we allowed submissions in all six UN languages. To address this limitation, the multilingual open-call entries provided some representation from these regions. Despite the limitations, this study provides valuable insights into core competencies for learning for social innovation in health and highlights areas for further research and development in LMIC contexts.

We also did not report the quality assessment due to the data limitation of the evidence. However, we applied the subgroup analysis to explore potential heterogeneity, and the result suggested a similarity set of core competencies across diverse settings.

Implications

Our study has implications for learning, practice, and research. From a learning perspective, the core competencies could be used to complement existing social innovation curricula (e.g., Uppsala University) or to develop new social innovation courses. Additional training syllabi need to be developed and aligned with these competencies, integrate training design with real-world training focus. In practical application, the Social Innovation in Health Initiative (SIHI) used these competencies to structure its Social Innovation in Health Mid-Year Training Workshop in the summer of 2024. The eight final open call groups were further invited into the co-creation process of SIHI midyear training workshops to implement the training ideas and, optionally, to engage in the modified Delphi-based consensus-building process. From a research perspective, since most of the existing studies evaluating social innovation have been short-term,[6] there is a need to assess medium and long-term outcomes associated with learners who join social innovation in health courses.

Conclusion

This study is an important first step in developing universal social innovation in health competencies for future health research and practice. The evidence identified through the open call and scoping review provided a descriptive overview of core competencies for learning in

social innovation in health. Future research and training practices based on the competencies are needed to provide better guidance on social innovation in health training.

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469 OBA, EC, JDT, and JLC conceptualized and drafted the study protocol. JLC, EC, OBA, JDT,

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471 review screening and data extraction. ZZ, BL, and KS extracted and coded data from the

472 crowdsourcing open call. OBA, EC, JDT, and ZZ conducted the data analysis. ZZ and OBA

473 prepared the first draft of the manuscript, with all authors contributing to writing, reviewing, and

474 editing.

475 All authors read and approved the final version of the manuscript.

476

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Competing interests

The authors declare the following potential conflicts of interest: Angelica Borbón, Bertha M. Chakhame, Adriana S. Ruiz, Abigail Ruth Mier, Obidimma Ezezika, Jana Deborah Mier-Alpano, and Gifty Marley received honoraria for speaking at the pilot workshops. These payments were provided by SESH, the SIHI Hub in China. The authors declare no other potential conflicts of interest and confirm that no competing interests exist.

Patient and public involvement

Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research.

Ethics Approval and Consent to Participate

Ethics approval was not required as the study used publicly available data and anonymized, voluntary crowdsourced submissions with informed participation.

Patient consent for publication

Not applicable.

Data availability statement

All data relevant to the study are included in the article or in Supplemental file.

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Table 1: Socio-demographic characteristics of "Social innovation in health learning competencies" open call participants (N=38)

<i>Age</i>	n	%
18-27	4	10.5%
28-37	16	42.1%
38-47	11	29.0%
48 years old or older	7	18.4%
<i>Gender</i>		
Male	24	63.2%
Female	14	36.8%
<i>Education level</i>		
No formal schooling completed	1	2.6%
High school graduate, diploma or the equivalent (for example: GED)	1	2.6%
Bachelor's degree	8	21.1%
Masters or similar professional degree	22	57.9%
Doctoral degree	6	15.8%
<i>Income level by World Bank</i>		
Low income	4	10.5%
Middle income	30	79.0%
High income	4	10.5%
<i>WHO Region</i>		
Region of the Americas	17	44.7%
African Region	10	26.4%
Western Pacific Region	9	23.7%
European Region	1	2.6%
South-East Asian Region	1	2.6%
<i>Country of residence</i>		
Philippines	7	18.6%

Colombia	6	15.9%
Argentina	3	7.9%
Nigeria	3	7.9%
Kenya	2	5.3%
China	2	5.3%
Uganda	2	5.3%
Liberia	1	2.6%
Canada	1	2.6%
Brasil	1	2.6%
Cameroon	1	2.6%
Panamá	1	2.6%
South Sudan	1	2.6%
Bolivia	1	2.6%
Paraguay	1	2.6%
Ecuador	1	2.6%
Honduras	1	2.6%
USA	1	2.6%
India	1	2.6%
Ireland	1	2.6%
Total	38	100%

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Table 2. Social innovation in health competencies included across scoping review and open call

Type of competencies	Competencies	Findings from scoping review/open call	Number of studies from scoping review that mention competency (n)	Number of open call entries that mention competency (n)	Number of scoping review studies and open call entries that mention competency (n)
Skills	Problem solving	Focus on a problem-solving orientation to investigate and frame challenges that directly address local problems	20	28	48
Skills	Communication	Enhance communication skills and effectively communicate with a broad range of communities, especially people with lived experience and potential partners.	12	18	30
Skills	Design thinking	Understand the basics of design thinking principles to incorporate end-user feedback across the life of a social innovation	7	20	27
Skills	Entrepreneurship & Sustainable financing	Strengthen entrepreneurial skills to raise funds for social innovation, develop innovative financing and sustainability approaches, and rapidly iterate ideas.	9	10	19
Skills	Leadership	Build leadership skills to nurture relationships with the local community, enhance multi-stakeholder partnerships, and manage diverse groups.	12	5	17

Skills	Monitoring Evaluation	& Monitor and evaluate the effectiveness of social innovations in health	4	13	17
Mindset	Creative thinking	Generates creative and novel solutions	16	22	38
Mindset	Collaboration& Partnership	Collaborate with partners to conduct interdisciplinary teamwork to achieve comprehensive health solutions	15	19	34
Mindset	Social determinants	Recognize social determinants and contextual factors in health.	11	18	29
Mindset	Adaptability	Practice adaptability so they can rapidly iterate and respond to the local context and feedback	10	18	28
Mindset	Empathy	Build empathy to connect deeply with local communities of interest	10	6	16
Mindset	Resilience	Build a growth mindset to manage and expect failures, learn over time, and develop resiliency	3	4	7
Knowledge	Community Engaged Participatory Methods	Learn community engagement strategies that are relevant to resource-poor settings, including community advisory boards, qualitative research, co-creation, open calls, and designathons	14	16	30
Knowledge	Health care disparities	Understand health disparities and how they are rooted in intersectional inequities.	9	14	23
Knowledge	Intersectionality	Understand culture specific/gender specific needs and approaches for creating health solutions that are relevant and effective in different cultural settings, and for addressing issues related to gender and health	9	13	22

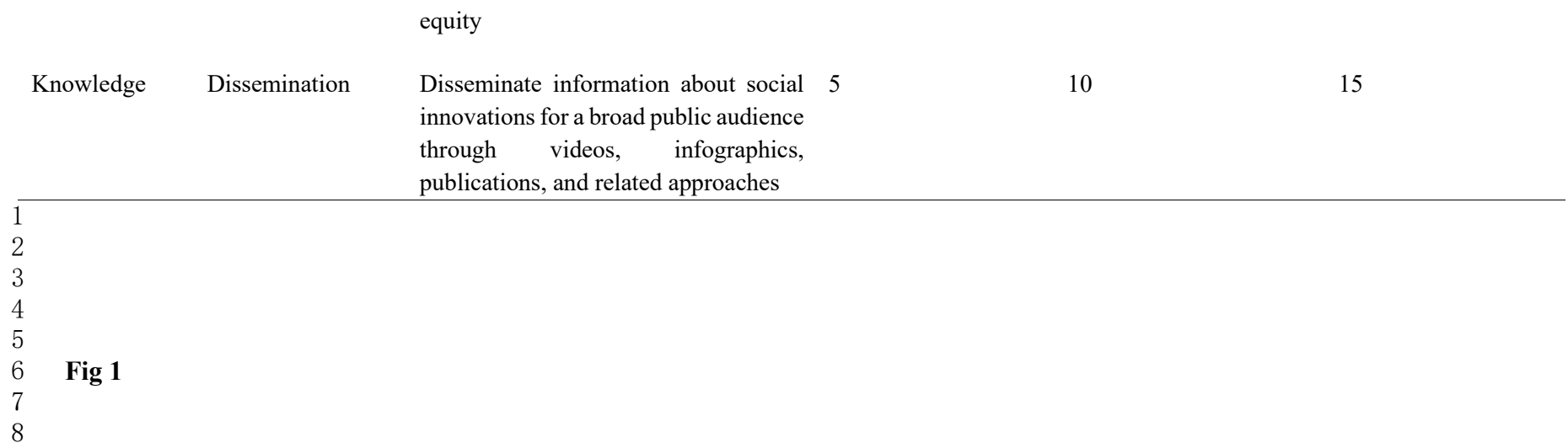


Fig 1

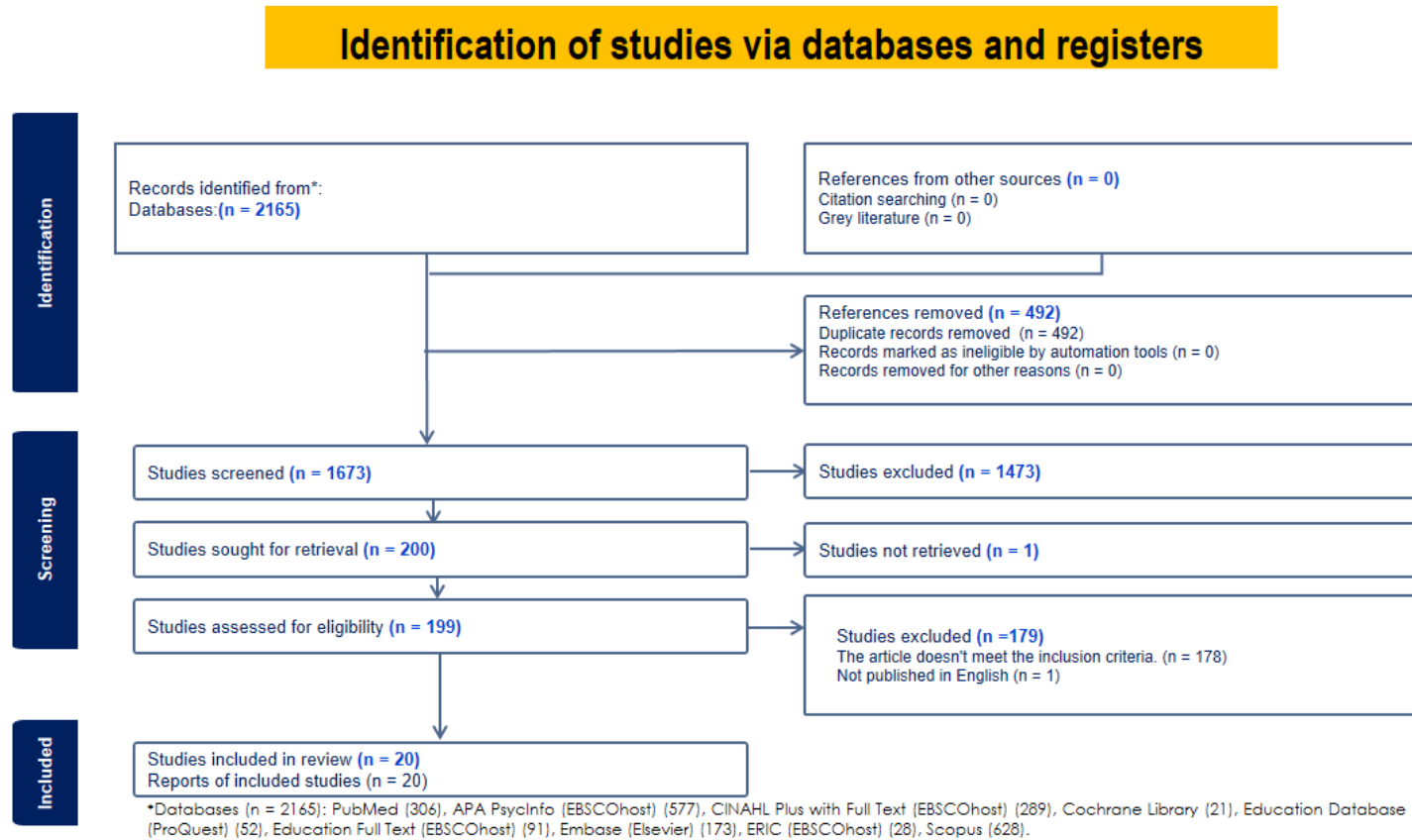


Figure 1

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3 **Fig 2**

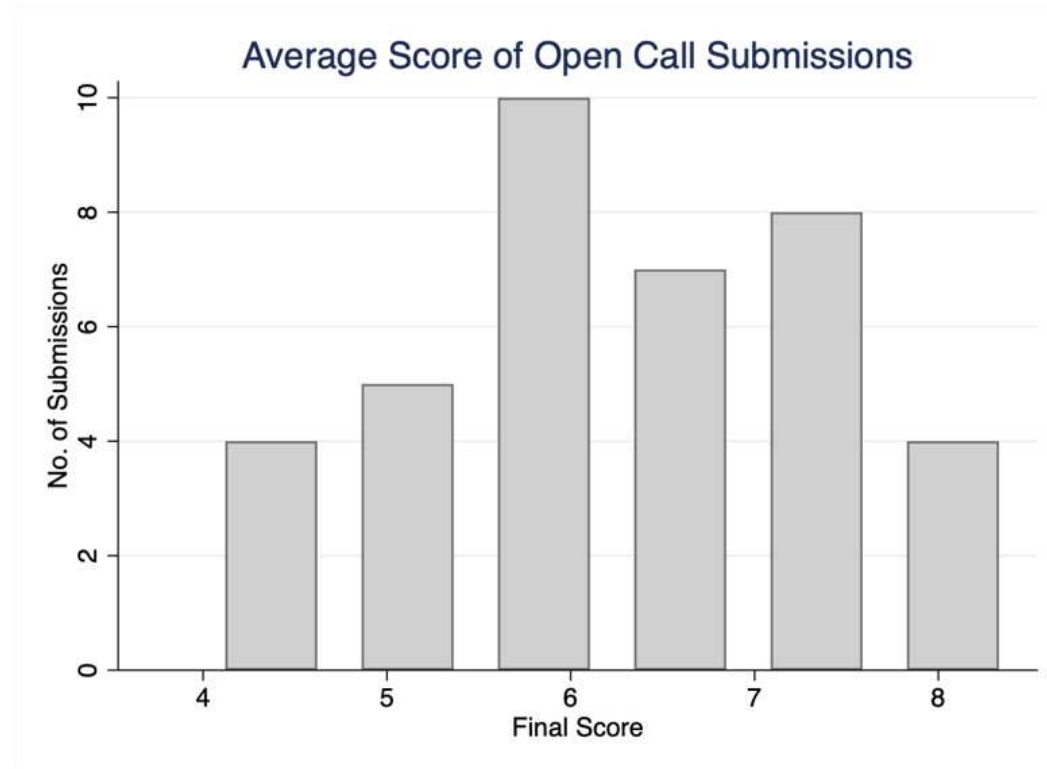


Figure 2

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3 **Fig 3**



*Note: Competencies in green were categorized as social innovation in health skills, competencies in purple were mindsets and competencies in orange were knowledge. The shades and areas represented for the rank of frequency.

Figure 3

Supplementary Files

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