

Public health competencies and sustainable development: a scoping review

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Abstract

This study mapped and analyzed the scientific literature on the competencies required for public health professionals to promote health while taking the Sustainable Development Goals into account. This scoping review was conducted in April 2025 according to the Joanna Briggs Institute methodology, the Manual for Scoping Reviews, and the PRISMA-ScR guidelines, using eight international and regional databases. Sixteen studies published between 2016 and 2024 were included, descriptively analyzed, and organized into analytical frameworks. Fifteen competencies were identified, particularly intersectoral collaboration, promotion of equity, public policy formulation, and education for sustainability. These skills can guide educational curricula and public policies aimed at sustainable health. A scarcity of studies from low-income countries and methodological heterogeneity were observed, indicating the need for further research on public health education.

Keywords: Professional competence. Sustainable development. Personnel management. United Nations. Public health.

Resumo

Competencias en salud pública y desarrollo sostenible: revisión de alcance

Este estudo mapeou e analisou a produção científica sobre as competências necessárias para profissionais de saúde pública atuarem na promoção da saúde, levando-se em conta os objetivos de desenvolvimento sustentável. Trata-se de revisão de escopo, conduzida em abril de 2025, segundo a metodologia do Joanna Briggs Institute, o *Manual for Scoping Reviews* e as diretrizes Prisma-ScR, em oito bases de dados internacionais e regionais. Foram incluídos 16 estudos publicados entre 2016 e 2024, que foram analisados de forma descritiva e organizados em quadros analíticos. Identificaram-se 15 competências, destacando-se articulação intersetorial, promoção da equidade, formulação de políticas públicas e educação para a sustentabilidade. Essas habilidades podem orientar currículos formativos e políticas públicas voltadas à saúde sustentável. Observou-se escassez de estudos em países de baixa renda e heterogeneidade metodológica, recomendando-se maior aprofundamento na educação em saúde pública.

Palavras-chave: Competência profissional. Desenvolvimento sustentável. Gestão de recursos humanos. Nações Unidas. Saúde pública.

Resumen

Competencias en salud pública y desarrollo sostenible: revisión de alcance

Este estudio mapeó y analizó la producción científica sobre las competencias necesarias para que los profesionales de la salud pública actúen en la promoción de la salud, teniendo en cuenta los Objetivos de Desarrollo Sostenible. Se trata de una revisión de alcance, realizada en abril de 2025, de acuerdo con la metodología del Joanna Briggs Institute, el *Manual for Scoping Reviews* y las directrices PRISMA-ScR, en ocho bases de datos internacionales y regionales. Se incluyeron 16 estudios publicados entre 2016 y 2024, que fueron analizados de forma descriptiva y organizados en cuadros analíticos. Se identificaron 15 competencias, entre las que se destacan la articulación intersectorial, la promoción de la equidad, la formulación de políticas públicas y la educación para la sostenibilidad. Estas habilidades pueden orientar los currículos de formación y las políticas públicas dirigidas a la salud sostenible. Se observó una escasez de estudios en países de bajos ingresos y heterogeneidad metodológica, por lo que se recomienda profundizar en la educación en salud pública.

Palabras clave: Competencia profesional. Desarrollo sostenible. Administración de personal. Naciones Unidas. Salud pública.

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The Sustainable Development Goals (SDG) constitute a global initiative launched in September 2015 by the United Nations (UN) and member States. The summit on the issue had the approval of the 2030 Agenda, an action plan with goals to be achieved by 2030.

Thus, it has been called universal collective initiative to face humanity's most urgent challenges, such as poverty eradication, equity promotion, environmental protection, and well-being expansion on a planetary scale¹⁻³.

Composed of 17 core goals and 169 specific targets, the SDGs cover interconnected social, economic, and environmental dimensions, proposing an integrated vision of development. The issues addressed are health, education, gender equality, decent work, justice, food security, climate change, sustainable cities, terrestrial and marine life, peace, and effective institutions.

These agendas are a strategic framework for governments, civil society organizations, the private sector, and citizens to mobilize efforts for a more just and sustainable world^{1,4}.

In this context, health care professionals, as essential actors in social and environmental systems, are called upon to contribute toward the SDGs. For their performance to be qualified, strategic, and effective, it is essential that they have the necessary professional competencies aligned with the principles of sustainability, equity, and social justice⁵.

This study adopted the conceptual framework of competence proposed by Brandão⁶, which comprises the systematization of knowledge, skills, and attitudes in situated contexts, oriented towards the creative and integrated resolution of problems⁶.

This understanding goes beyond the idea of competence as a mere repertoire of individual attributes, and values the capacity for acting critically, ethically, and transformatively in the face of the demands of the world of work and life in society.

From this perspective, the identification, description, and analysis of competencies contribute toward understanding the knowledge, skills, and attitudes necessary for public health professionals in the face of contemporary, complex, intersectoral, and global health-related challenges⁷.

Furthermore, this mapping supports professional training, public policy development, performance assessment, and priority definition in health and development agendas. Analyzing the competencies valued and described in the scientific literature, in relation to the SDGs, contributes not only toward qualifying professional practice in public health but also to consolidating the transformative role of health care in the face of the challenges of the 2030 Agenda^{6,8}.

The COVID-19 pandemic revealed structural weaknesses in health care networks in several countries and inequalities in access to health care, especially among vulnerable populations. The global health crisis not only challenged the response capacity of governments and institutions, but also tested the very SDGs, exposing the limits of intersectoral coordination and emergency preparedness^{7,9}.

In this situation, the importance of public health professionals with technical, ethical, communicational, educational, and political skills to deal with conjunctures of crisis and reconstruction became even clearer. The commitment to the SDGs calls not only for governmental initiative, but also for a health care workforce prepared to face global challenges with a critical, integrated, and transformative approach^{4,8}.

Expanding this perspective, it is understood that the 17 SDGs propose an integrated vision to overcome adversities in a coordination and collaboration between sectors and territories. Although not all have health as their main focus, all SDGs are related to public health agents, either by the impact on social determinants of health or by the need for intersectoral and participatory practices^{1,3}.

No poverty (SDG 1), Zero hunger (SDG 2), Good health and well-being (SDG 3), and Quality education (SDG 4) are among the historical foundations of public health policies.

Gender equality (SDG 5), Clean water and sanitation (SDG 6), and Affordable and clean energy (SDG 7) directly influence healthy living environments. Decent work and economic growth (SDG 8) and Industry, innovation, and infrastructure (SDG 9) are essential for strengthening health systems and valuing professionals.

Reduced inequalities (SDG 10), Sustainable cities and communities (SDG 11), Responsible

consumption and production (SDG 12), climate action (SDG 13), and the preservation of aquatic and terrestrial life (SDGs 14 and 15) are associated with planetary health. Finally, Peace, justice, and strong institutions (SDG 16) and Partnerships for the goals (SDG 17) are indispensable for democratic and collaborative environments, in which health can thrive equitably⁴.

Several studies have noted skills such as leadership, effective communication, work management, and decision-making as central to clinical practice. In addition to structuring the daily performance of these professionals, these skills are strategically related to the SDGs.

For example, public health leadership expands access and reduces inequalities in health care, in line with SDG 3 (good health and well-being); environmental surveillance and emergency response strengthen systems for extreme weather events, aligning with SDG 13 (climate action). In turn, the promotion of equity and social justice favors gender equality (SDG 5). Thus, these competencies are essential for the advancement of public health towards the 2030 Agenda^{3,4}.

Considering the significance of health in the SDGs and the urgent need for agents prepared for the challenges of sustainability, understanding how competencies oriented toward this purpose have been built, described, and applied in the scientific literature is essential. Although these goals explicitly recognize health as an interrelated component, there are still gaps as to the systematization of specific expertise that public health workers must develop to respond to the demands of the aforementioned agenda^{8,9}.

The search on the Joanna Briggs Institute (JBI) database identified no published or ongoing systematic reviews that directly address this issue, which reinforces the originality and relevance of this review¹⁰. Thus, this study aimed to map and analyze the production of knowledge on the skills that are necessary for public health workers to promote sustainable health based on the SDGs.

Method

This is a scoping review following the methodology proposed by the JBI, adopting the

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR), and registered on the Open Science Framework (OSF) platform^{10,11}.

We considered the following inclusion criteria: studies published in any language in the last ten years (2015/2025), original articles, systematic reviews, scoping reviews, guidelines, or reports from relevant organizations.

In addition, the scope included descriptive, qualitative or quantitative studies, methodological, conceptual and/or reflection studies, randomized controlled clinical trials, with experimental or quasi-experimental design, indexed in databases, addressing competencies in the context of sustainable health, aligned with the SDGs from the 2030 agenda¹¹.

We excluded studies without a defined methodology or that did not address the researched issue, duplicate studies, opinion pieces, letters to the editor, and conference abstracts without full texts available, and partial publications.

The searches were conducted in April 2025 in eight databases, selected for their relevance in public health and health sciences: PubMed/MEDLINE, Web of Science, Virtual Health Library (BVS), Lilacs, Embase, CINAHL, SciELO, Redalyc, and Scopus. The choice of these sources is based on the diversity of relevant national and international publications.

These eight databases were accessed through the portal of the Coordination for the Improvement of Higher Education Personnel (CAPES), via the CAFE network, maintained by the Brazilian government and recognized for gathering comprehensive collections focused on scientific research.

The scoping review sought to answer the following question: "What is the production of knowledge on the competencies that are necessary for public health professionals to act in the promotion of sustainable health in relation to the sustainable development goals (SDGs)?"

In March 2025, the search strategy was defined by the first author with the assistance of two librarians from the Federal University of Paraná, in order to find the best combinations between the health sciences descriptors (DeCS) and the medical subject headings (MeSH), associated with

Boolean operators AND and OR, which establishes the intersection between the terms.

The search strategy was structured based on the PCC mnemonic (population, concept, and context), recommended for scoping reviews. For this review, P was defined as health care professionals; the first C as professional competencies; and the second C as sustainable development within the scope of the 2030 Agenda and the Sustainable Development Goals (SDGs). Based on these components, we defined the descriptors and terms used in the search strategy.

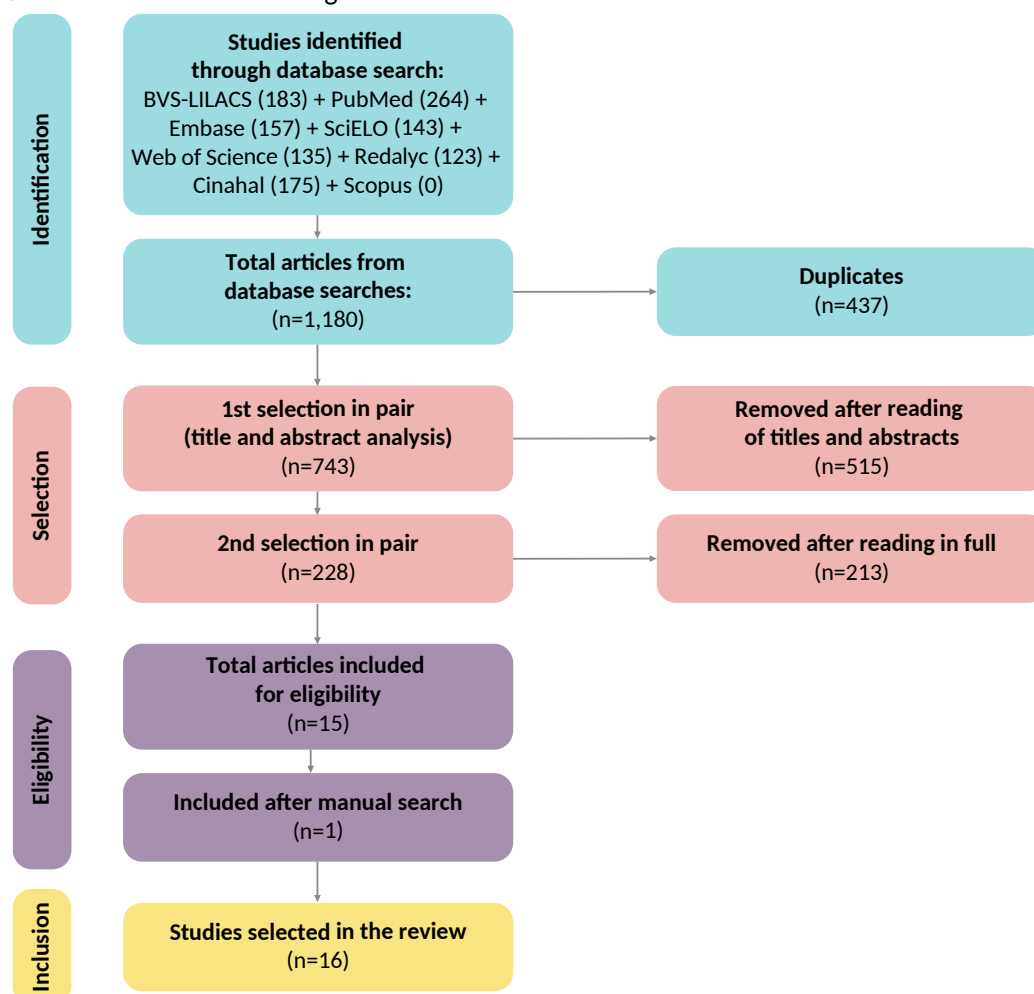
The descriptors and Boolean operators were associated to cover different terminologies: *peçoal da saúde* OR *prestadores de cuidados de saúde* OR *profissionais da saúde* OR *profissionais de saúde* OR *profissional da saúde* OR *profissional de saúde* OR *trabalhador da saúde* OR *trabalhador de saúde* OR *trabalhadores da saúde* OR *trabalhadores de saúde*

AND *competência profissional* OR *competências* OR *habilidades* OR *skills* OR *capacidades* AND *desenvolvimento sustentável* OR *Agenda 2030* OR *agenda de desenvolvimento pós-2015* OR *objetivos de desenvolvimento sustentável*.

This strategy was also adapted for English and Spanish, as demonstrated in the PRISMA protocol, detailed as it appears in the protocol registered on OSF. The obtained results were exported to the online platform Rayyan QCRI, in CIW/RIS format, which made it possible to automatically identify duplicates.

Based on the defined criteria, two reviewers independently selected the articles. The screening was divided into two phases: reading of titles and abstracts and, subsequently, full-text analysis, in order to verify compliance. In situations of disagreement, a third researcher was used to deliberate on the inclusion.

Figure 1. Article selection flow diagram



The information extracted from the articles included year of publication, country of origin and objective, methodological aspects (context, design, and type of study), and elements related to public health competencies that considered sustainable health promotion, aligned with the SDGs (2030 Agenda).

The findings were organized into charts and tables for better visualization. As the study did not involve people, there was no need for submission to the research ethics committee. Still, we respected ethical principles related to the intellectual integrity and the ideas, definitions, and concepts of the authors included in the review.

Results

The scoping review resulted in the inclusion of 16 studies, published between 2016 and 2024,

with different methodological designs, such as case studies, editorials, documentary analyses, narrative reviews, and institutional documents.

These studies were national and international productions that addressed diverse public health-related issues, such as professional training, intersectoral policies, equity, innovation, sustainability, health care management, and planetary health.

Chart 1 shows the characterization of the included studies: author, year, country/region, study type, objectives, SDGs addressed, and main findings.

The systematic analysis of the 16 studies was descriptive and structured and enabled identifying and grouping recurring knowledges, skills, and attitudes into a framework with 15 specific competencies for promotion of sustainable health.

Chart 1. Included studies on public health competencies in interface with the SDGs

(ID)	Author; year	Country/ region	Study type	Objective	SDGs addressed	Synthesis of results
1	Chotchoungchatchai and collaborators; 2020 ¹²	Thailand	Narrative review	Analyze the contribution of primary health care (PHC) to the SDGs.	2, 3, 5, 6, 7, 11, 13, 16	PHC contributes to several SDGs by strengthening intersectoral and community actions.
2	Canavan CR and collaborators; 2016 ¹³	Tanzania and Ethiopia	Case study	Investigate the integration between health, nutrition, and agriculture.	2, 3, 5, 6, 13	Collaboration between sectors consolidates results in nutrition and health.
3	Taminato M and collaborators; 2023 ⁵	Brazil	Editorial	Discuss the role of nursing in the SDGs.	3, 4, 5, 6, 8, 10, 17	Nursing contributes directly to the SDGs, especially health and equity.
4	Scanlon A and collaborators; 2022 ¹⁴	International	Documentary study	Associate actions of advanced practice nurses to SDG 3 targets.	3	The strategic role of nurses contributes to all SDG 3 targets.
5	Organização Pan-Americana da Saúde; 2018 ¹⁵	International	Institutional document	Present competencies that are essential for universal health coverage.	3, 4, 10, 17	The competencies address planning, equity, and education for health.

continues...

Chart 1. Continuation

(ID)	Author; year	Country/ region	Study type	Objective	SDGs addressed	Synthesis of results
6	Williams GA and collaborators; 2023 ¹⁶	Romania	Case study	Relate health care policies to decent work.	3, 4, 5, 8, 10, 17	Investment in the health care workforce is essential for the SDGs.
7	Fonseca EM, Achcar HM; 2023 ¹⁷	Brazil/ Mozambique	Policy analysis	Discuss innovation policies and access to health care technologies.	3, 8, 9, 10, 12, 13, 17	Local production promotes equity and health sovereignty.
8	Ogujiuba K, Ojoniyi O; 2023 ¹⁸	South Africa	Case study	Analyze the impact of the National Health Insurance (NHI) on reducing inequalities.	1, 3, 5, 8, 9, 10, 17	The NHI is strategic for equity and consolidation of the health system.
9	Ramirez-Rubio and collaborators; 2019 ¹⁹	International	Narrative review	Explore the role of urban health in the implementation of the SDGs.	2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17	Healthy urban environments require intersectoral and evidence-based actions.
10	McCormack J and collaborators; 2024 ²⁰	Australia	Qualitative study	Contextualize the SDGs in the nutrition and dietetics curriculum.	2, 3, 6, 12, 13, 17	SDG-oriented curricula provide critical and engaged professionals.
11	Global Consortium on Climate and Health Education; 2023 ²¹	International	Institutional document	Define competencies for climate action in health.	3, 6, 12, 13, 16, 17	Professionals need to lead actions for mitigation of and adaptation to climate change.
12	Atanassova MR, Ktari L; 2024 ²²	International	Editorial	Relate nutrition, marine biodiversity, and sustainability.	2, 3, 9, 12, 13, 14, 17	Food systems based on marine resources are strategic for the SDGs.
13	Rosa WR and collaborators; 2021 ²³	International	Critical analysis	Address the role of nurses and midwives in the SDGs.	1, 3, 5, 13, 16, 17	Nursing and midwifery leadership promotes resilience and equity.
14	Zhang Y and collaborators; 2023 ²⁴	International	Global data analysis	Assess the progress of environmental SDGs and means toward 2030.	13, 14, 15	Integrated climate governance is essential for restoring ecosystems.

continues...

Chart 1. Continuation

(ID)	Author; year	Country/ region	Study type	Objective	SDGs addressed	Synthesis of results
15	Racioppi F and collaborators; 2020 ²⁵	Europe	Institutional report	Propose strategies for healthy and equitable environments.	1, 3, 10, 11, 13, 16, 17	Healthy local policies reduce inequalities and improve environmental health.
16	Belluzzo RCB; 2018 ²⁶	Brazil	Reflection	Analyze the interrelation between competence in information, media, and the SDGs.	4, 10, 12, 13, 16, 17	It argues that competence in information and media is essential to empower citizens as to the SDGs.

This process involved reading full texts, based on the frequency and emphasis given by the authors to certain professional practices, such as intersectoral coordination, public policy planning, equity promotion, leadership, health education, and environmental sustainability.

Subsequently, Chart 2 presents these 15 competencies with their corresponding SDGs. It is observed that the most recurrent skills refer to intersectoral coordination, equity and social

justice, public policy planning and formulation, and promotion of health education oriented toward sustainability.

Furthermore, SDGs 3 (good health and well-being), 17 (partnerships for the goals), 10 (reduced inequalities), and 13 (climate action) were the most frequently associated with the identified competencies, demonstrating the importance of public health in the sustainable development agenda.

Chart 2. Public health professional competencies aligned with the Sustainable Development Goals (SDGs)

Mapped competence	SDGs met	ID
1. Health education and professional training focusing on population needs	1-6, 8, 10, 12-15, 17	1-4, 6, 8, 10-12, 14, 15
2. Capacity for intersectoral coordination and multiprofessional collaboration	1-17	1-3, 5-12, 14, 15
3. Planning and formulation of public policies in health care (intersectoral or local)	1-17	1, 5-12, 14, 15
4. Management and valorization of the health care workforce	1, 3, 4, 5, 8, 10	3, 4, 5, 6, 8, 13, 15
5. Promotion of equity, social justice, and gender equality	1-5, 8, 10, 12-16	1-3, 6, 7-10, 12, 13, 15
6. Management of and response to risks and emergencies in public health	1, 3, 13, 16	1, 3, 4, 11, 14
7. Management of projects of innovation and technology for health care and sustainability	3, 8, 9, 12-15, 17	7, 10, 12, 14
8. Promotion of healthy, sustainable, and biodiverse food	2, 3, 6, 9, 12-15, 17	2, 10, 12, 14
9. Provision of comprehensive and safe care to pregnant women, postpartum women, and newborns, with a focus on reducing maternal and infant mortality	1, 3, 5	4, 13

continues...

Chart 2. Continuation

Mapped competence	SDGs met	ID
10. Equitable access to sexual and reproductive health services and education, with guarantee of rights and respect for diversity	1, 3, 5	4, 13
11. Promotion of vaccination and access to essential medicines	3	4, 5
12. Evidence-based decision-making and data use for health action	1- 4, 6, 8-11, 13-17	5, 6, 8-12, 14, 15
13. Mobilization of resources and funding in health and sustainability	1, 3, 8, 9, 10, 12-14, 17	7, 8, 12, 14
14. Advocacy, leadership, and strategic communication in health, climate, and equity	1, 3, 4, 5, 10, 12, 13, 16, 17	10, 11, 13, 15
15. Healthy and sustainable urban planning based on public health	2, 3, 6-9, 11-13	9

Discussion

This study analyzed the production of knowledge on the competencies required for public health professionals to act in sustainable health promotion, taking into consideration the SDGs. The 15 competencies mapped for health care workers are widely referenced in both the national and international literature, demonstrating their relevance in the current public health context²⁷.

Health education and professional training focused on population needs are based on guidelines such as the National Policy on Permanent Health Education (PNEPS), which proposes continuous training based on territorial demands²⁸. Intersectoral coordination and multiprofessional collaboration are present in the World Health Organization (WHO) recommendations, which emphasize the joint initiative of different areas for health promotion.

As for public policy formulation, it is noted the crucial role of local and cross-cutting planning, as upheld by the SUS and guidelines of the Pan American Health Organization (PAHO) and WHO²⁹. Management and valorization of the health care workforce are priority capacities in documents such as the Organic Health Law (Law 8,080/1990³⁰) and studies on health care human resource management.

Equity and social justice constitute another competence addressed in several global and national frameworks, such as the UN's 2030 Agenda

and the National Policy for Health Promotion (PNPS). The administration of and response to risks and emergencies, especially in public health, are fundamental in health crisis policies, such as PNEPS and in the global plans of the WHO for rapid outbreak responses³¹.

Also noted in strategies of the WHO and public policies is technological innovation in health and sustainability, in addition to the promotion of healthy eating, included in the National Food and Nutrition Policy (PNAN) and as a global health strategy.

It is also worth noting the care for pregnant women and newborns, focused on reducing maternal and infant mortality, which are part of programs such as the Family Health Program and of the WHO itself^{32,33}. Still within this scope, equitable access to sexual and reproductive health services is reaffirmed in global policies (WHO/UN), which advocate it as a matter of social justice. Promotion of vaccination and access to essential medicines are also addressed by these organizations with guidelines oriented toward ensuring universal coverage and reduction of preventable diseases^{1,4,29}.

Evidence-based decision-making, resource mobilization and funding for sustainability of health systems²⁹, advocacy, leadership and strategic communication in health, climate and equity are other central issues in the strategies of the WHO, PAHO and sustainability agendas^{1,2}.

Although competence mapping reinforces the importance of comprehensive and intersectoral

training, there are gaps in the analyzed literature. Some competencies, such as technological innovation, resource allocation, and climate health leadership, are still underexplored, especially in low- and middle-income countries.

Furthermore, planetary health-related SDGs (SDGs 14 and 15) were little explored, showing the need for expanding the integration of environmental dimensions into public health practice. These findings indicate that, to reinforce professional commitment to the 2030 Agenda, it is necessary to foster new educational approaches, review curricular guidelines, and encourage in-depth studies on emerging and contextually sensitive skills.

Although our study identified recurring competencies such as leadership, communication, work management, and decision-making, it is important to acknowledge gaps in the literature on the development of public health competencies. MacKay and collaborators³⁴ found a predominance of studies focused on the development of frameworks of fundamental competencies and the professional development of public health workers in general. However, the authors note the need for further studies on the specificities of the different disciplines that compose the field of public health, including the development of competencies and frameworks for specialized areas of practice.

This gap reinforces the importance of advancing from general frameworks to approaches capable of addressing specific competencies related to different fields of practice and emerging public health challenges.

On the other hand, the political and educational implications of these competencies are robust. In the context of health policy graduates, Doshmangir and collaborators³⁵ argue that public policy analysis, impact assessment, governance, and critical thinking skills are as essential as technical competencies, but are often underrepresented in curricula.

Soto-Schulz and collaborators³⁶, on the competencies that are necessary for the work of primary health care managers, note the importance of training in health associated with knowledge in administration and the use of management indicators. The fundamental competencies for

the role notably include leadership, teamwork, training, communication, and the ability to recognize the skills of other professionals. According to the authors, these competencies, associated with flexible and autonomous attitudes, favor the performance of managers when facing the different needs and challenges in the various contexts of primary health care.

Furthermore, new challenges require the expansion of the scope of public health competencies. Recent studies indicate the need for developing capacities related to climate change, extreme weather events, and environmental resilience, considering their growing impacts on the health of populations³⁷. Therefore, future studies should consider, in addition to traditionally recognized competencies, those related to innovation, climate, and resilience, to respond to the new demands and the different contexts of practice in public health.

Similarly, constant technological transformations require that public health workers develop skills geared toward innovation and interdisciplinary collaboration. Therefore, we propose that future studies consider not only already traditional competencies, but also those related to innovation, climate change, and resilience, to enhance the professional capacity to respond to emerging challenges in public health.

Final considerations

The current public health challenges require competencies aligned with the principles of the 2030 Agenda, taking into consideration ethical, political, communicational, environmental, and educational aspects. A remarkable gap is the lack of integration of some of these competencies into the training curricula for health care workers in Brazil, especially in areas such as public management, technological innovation, team coordination, resource mobilization, advocacy, and urban planning.

These skills require interdisciplinary capacity-building, generally provided in graduate programs or courses. Also recommended is the integration of these competencies into public health curricula and into processes of continuous education, performance assessment, and public policies,

fostering interdisciplinary practices committed to the SDGs, to create more resilient and equitable health care networks.

This study has limitations such as publication bias, as unpublished studies with less significant results may not have been found by the search strategy. The methodological heterogeneity of the included articles also posed challenges for

comparative analysis, making it difficult to identify more robust patterns among the findings.

Furthermore, we observed a geographical concentration of publications in certain countries, which may compromise the generalization of results to contexts with less representation in the literature, especially in low- and middle-income regions.

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Eduardo Neves da Cruz de Souza: conceptualization; data curation; formal analysis; investigation. Michele dos Santos Hortelan: conceptualization. Maria de Lourdes de Almeida: interpretation of results; writing – review & editing. Juana Elvira Suárez Conejero: content review. Aida Maris Peres: methodology; writing – review & editing.

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