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Essential core competencies for health policy graduates: a multi-method consensus type study

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Abstract

Background In light of the multi-faceted challenges confronting health systems worldwide and the imperative to advance towards development goals, the contribution of health policy graduates is of paramount importance, facilitating the attainment of health and well-being objectives. This paper delineates a set of core skills and competencies that are requisite for health policy graduates, with the objective of preparing these graduates for a spectrum of future roles, including both academic and non-academic positions.

Methods The study was conducted in three phases: a scoping review, qualitative interviews and the validation of identified competencies through brainstorming with experts. In the initial phase, a scoping review was conducted on the databases. The following databases were searched: PubMed, Scopus, Web of Science and Google Scholar search engine. Additionally, the WebPages of universities offering health policy programmes were manually searched. In the second phase, 36 semi-structured interviews were conducted with students, graduates and distinguished academics from Iran and other countries. These interviews were conducted in person or via email. In the third phase, the draft version of the competencies and their associated learning objectives, derived from the preceding stages, was subjected to independent review by an expert panel and subsequently discussed. In light of the expert panel's findings, the authors undertook a subsequent revision of the list, leading to the finalization of the core competencies through a process of consensus.

Results In the scoping review phase, the analysis included six studies and nine university curricula. The results of the scoping review could be classified into five domains: health system understanding, health policy research, knowledge translation, multidisciplinary work and knowledge of public health. In the second phase, six core competencies were extracted from the interviews and combined with the results of the first phase, which were then discussed by the expert panel at the third phase. The final five core competencies, derived from the brainstorming session and presented in no particular order, encompass health policy research, policy analysis, educational competencies, decision-making and multidisciplinary work.

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Conclusions It is essential that the curriculum is appropriate and contextually tailored, as this is crucial to foster multi-dimensional competencies that complement the specific disciplines of future health policy scholars. These scholars must possess the ability to genuinely serve their health systems towards achieving health-system goals and sustainable development.

Keywords Post-doctoral graduates, Health policy, Health system, Health systems education, Interdisciplinary program, Competency

Background

Health policy is a multidisciplinary field with a principle focus on the investigation of activities and initiatives that have an impact on public health, and which are typically planned or implemented by governmental bodies [1]. A graduate in health policy must develop an interdisciplinary understanding and a set of skills that will enrich and deepen the knowledge and practice base in the healthcare system [2]. Over the past three decades, there has been a notable increase in the number of universities worldwide offering doctoral programmes in health policy. The overarching objective of these programmes is to cultivate the specific competencies and expertise required for research and teaching roles within the academic community, as well as in public and private sector organizations. While the majority of traditional programmes equip students with an understanding of the theoretical and empirical approaches, competency-based training has recently emerged as a key area of interest for educational planning experts [3, 4]. This approach incorporates the fundamental elements of core competencies, curriculum and teaching programme design, and the development of transparent, reliable, valid and defensible assessment instruments. It is of the utmost importance to create a transparent and comprehensive outline of core competencies to guarantee that the curriculum is aligned with these competencies, objectives and assessments [5].

The formulation of an appropriate educational programme may be facilitated by the adoption of certain guidelines. To illustrate, the Leadership Competency Framework, as devised by the National Public Health Leadership Development Network [6], offers a valuable set of guidelines for the development and enhancement of the programme. These include the identification of competencies and educational content; the creation of needs assessments, baselines and performance standards; and the evaluation of educational outcomes. The framework is subject to ongoing refinement and evaluation to ensure its continued relevance in the context of performance. It is recommended that the following competencies be included: transformation, legislation and politics, organization and team and group dynamics. It is possible to create society-based educational programmes that are fundamental to the functioning of third-generation universities by integrating materials and skills from a variety of perspectives [7]. Nevertheless, it may prove challenging for students to identify the optimal curriculum from the array of skills and techniques endorsed in interdisciplinary programmes[8, 9]. Core competencies are defined as a set of the necessary practical knowledge, skills and techniques that empower students and other trainers to perform the given responsibilities in an effective manner [10]. In the health sector, competency-based education is concerned with the desired performance characteristics of health professionals. This is achieved through the design and implementation of evidence-based standards, performance indicators and quality outcomes. To reach a status quo, it is necessary to review existing programmes and shift from traditional approaches to novel approaches and new forms of education [11]. Nevertheless, there has been a paucity of attention devoted to the modification of the higher education curriculum in numerous countries, including Iran [12, 13]. This has highlighted the need for an advanced education curriculum to enhance the quality of the educational system, particularly at the higher level, such as in the fields of health policy and health services research [14]. Competency-based frameworks have been developed as a practical tool for assessing students' competencies and as a basis for evaluating the effectiveness of curricula [15, 16]. Competencies are a crucial element of professional education, as they serve to identify and acknowledge the specific outcome expectations for graduates in relation to the health system's requirements [17]. The process of developing competencies is contingent upon the availability or absence of relevant pre-existing frameworks [18, 19], as well as the nature and purpose of the competencies [20]. It is customary to examine pertinent literature and existing competencies to establish a foundation for new competency frameworks [21, 22]. A variety of methods may be employed in the process of developing competencies, including a consensus-building approach, Delphi techniques [23, 24], the input of qualified experts and comprehensive consultation with stakeholders through, for example, the use of a world café design [25].

Contextualization is of paramount importance in the development of a constructivist competency-based approach to education. This is particularly pertinent in

interdisciplinary subjects such as health policy, where the challenge is to identify the courses that will best enable students to enhance their level of competency and skills [1]. Strategies such as situation-based group learning are employed to facilitate learners' development of the intrinsic resources that are essential for the integration of competencies [26]. The prioritization of educational needs can facilitate the enhancement of students' curriculum effectiveness, particularly when educational content is consistently identified by stakeholders from diverse disciplines [27]. Some scholars have proposed that the educational content of health-related disciplines be subjected to review to ensure that it responds to the societal health needs [28]. Furthermore, in light of the rapid advancements in the field of health sciences and the imperative to enhance the competencies of graduates, it is imperative for institutions to offer courses that are continuously updated. Additionally, the multifaceted and intricate nature of health challenges, coupled with the pivotal role of health in the development of health systems [29], underscores the necessity for training a cadre of experts with cutting-edge skills and a nuanced understanding of interrelated disciplines. This approach is essential to achieve an inclusive impact [30].

The first health policy curriculum in Iran was developed over a decade ago by a group of scholars, all of whom had obtained their degrees from pioneering universities in the United Kingdom. The doctoral programme was developed for a four-year period and comprised a minimum of 48 core credit courses, including health economics and economic evaluation, health policy analysis, public policy, basic and advanced research methods, qualitative research methodology, health policy seminar, global health, health insurance, and health financing. Additional courses were incorporated into the curriculum on the basis of students' backgrounds and needs. The curriculum was drawn from a range of disciplines, including nursing, medicine, midwifery, health education, social welfare and rehabilitation, health services management and other management and paramedical sciences. The doctoral programme was initially established at the School of Public Health in Tehran University of Medical Sciences, and the School of Health Management and Medical Information in Iran University of Medical Sciences. Two further medical universities (Tabriz and Kerman) subsequently joined the programme.

In Iran and other countries with comparable contexts, graduates in health policy are frequently unable to secure positions that align with their qualifications and training. Alternatively, if they are placed, they may lack the requisite competencies. A review of the literature reveals that no previous study has investigated the core competencies required of health policy scholars in the future. The objective of this study is to identify the skills and competencies required for health policy graduates to prepare them for a spectrum of future roles, including both academic and non-academic positions. The findings presented herein may assist policy-makers and educational planners in Iranian higher education institutions in developing competency-based health policy curricula, thus enabling them to respond to the evolving societal needs pertaining to the sustainable development of health in Iran, and possibly in other settings.

Methods

Design

This is a multi-method study comprising three phases: a scoping review, qualitative interviews and validation and finalization of identified competencies through face-to-face expert consensus. A schematic representation of the research phases is provided in Fig. 1.

Phase 1: Scoping review

In the first phase of this study, we conducted a scoping review in accordance with the guidelines set forth by the Joanna Briggs Institute [31]. The objective was to synthesize the essential competencies for health policy graduates as delineated in the scientific literature. Given the exploratory nature of this research, which aims to identify the core competencies for health policy graduates, a scoping review was deemed a more appropriate methodology than a systematic review. The findings from the initial phase, in conjunction with those from the subsequent phase, were then presented to the expert panel for the purpose of finalizing the core competencies. The search was conducted on the following databases: PubMed, SCOPUS, Web of Sciences and Google Scholar search engine (the first 100 results were screened). The search strategy employed was as follows: (graduat*[Title/Abstract]) AND ((((competenc*[Title/Abstract]) OR (skill*[Title/Abstract])) OR (capability[Title/Abstract])

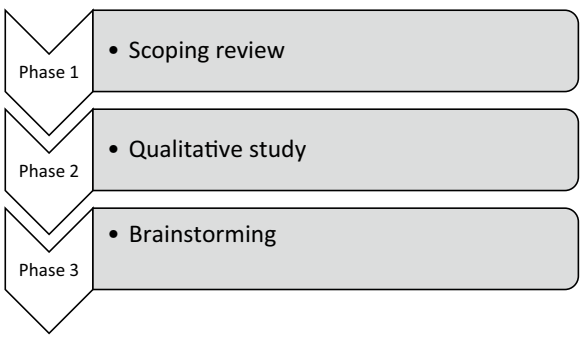

Fig. 1 Schematic diagram of research phases

AND ("health policy"[MeSH Terms]) OR ("health policy"[Title/Abstract]) OR ("health policies"[Title/Abstract]). The databases were selected on the basis of their relevance to the topic and the researcher's access to them. The inclusion criteria were defined in accordance with the Population (P), Concept (C), and Context (C) (PICO) criteria, which are pertinent to the conduct of scoping reviews. The population under consideration were those who had completed a course of study in health policy. The concept of interest was the set of skills and competencies that are typically required of individuals who have completed such a course of study. The inclusion criteria for the context were all universities and countries in which individuals who have completed a course of study in health policy are found. The search was limited to English-language sources and no date restrictions were imposed. The review included journal articles comprising both quantitative and qualitative published studies. Furthermore, we requested the assistance of known faculty members in health policy, who were asked to nominate universities offering health policy programmes or related disciplines on a global scale. The resulting nominations were then subject to a manual search of the Internet using search engines, with the aim of identifying schools offering health policy programmes. A total of nine universities (seven from the United States, one from Canada, and one from the United Kingdom) were selected for review of their education programmes, including Johns Hopkins University, University of Kansas, The George Washington University, Harvard University, McMaster University, Swansea University, Temple University, The Pennsylvania State University and University of Illinois. A descriptive qualitative content analysis approach was employed to summarize the textual data on health policy graduates' competencies, extracted from this phase in narrative form. This phase of the study was reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist. The categories extracted in the preceding phase were then subjected to discussion in the third phase, with a view to reaching a consensus on the core competencies. A database search and a hand search were conducted in April 2023 and updated in May 2024. Two independent authors (N.K. and L.D.) undertook the initial screening of the search results in accordance with the pre-established inclusion and exclusion criteria. The same authors conducted an independent extraction of the pertinent data from the included studies, utilizing a standardized data extraction form. The extracted data comprised the following elements: citation, publication year, country, aim of the study, study design, study methods, participants and sample size. The primary conclusion that was reached was the identification of the core competencies for health policy graduates.

Phase 2: Qualitative study

In this phase, a qualitative study was conducted on the basis of semi-structured interviews with health policy professionals and students, as well as other stakeholders from different levels of the health system. The COREQ Checklist for reporting qualitative research was completed and is provided in the supporting information. (Supplementary 1).

A heterogeneous sampling and snowball approach was employed to identify well-known experts in the field of health policy. These experts were selected on the basis of their scientific journal publications, media interviews and teaching courses, as well as their involvement in developing health-related policies at the national level, particularly in Iran. The majority of these experts are currently employed in executive governmental roles. Furthermore, interviews were conducted with students engaged in the study of health policy, as it was thought that this approach might facilitate the identification of relevant competencies. The interviews with Iranian participants were conducted in person. Due to logistical constraints, participants from other countries were interviewed via the online platform Google Meet, as physical access to them was not feasible. In the case of virtual interviews, permission was sought to record the session on video. Foreign interviewees were invited via email. A follow-up email was also sent to participants on three consecutive occasions, requesting feedback. All participants completed the informed consent form. The interview guide was developed on the basis of the study objectives and was piloted and adapted in the first three interviews. The interview guide was developed using the results of the initial phase of the study, as well as the input of research team members and three health policy academics. The characteristics of interviewees are presented in Table 1.

Two female researchers, both of whom held PhD degrees and occupied academic positions, were responsible for conducting the semi-structured interviews. They were conversant with qualitative interviews and utilized an interview guide. All interviews were conducted at the interviewees' workplaces, with no other participants or researchers present. The interviews averaged approximately 50 min in length and were recorded and transcribed verbatim. The point of data saturation was reached when the most recent interviews yielded no new information. A total of 36 semi-structured interviews were conducted using an interview guide. A preliminary phase was initiated with the administration of three pilot interviews. Following the analysis of the pilot interviews, only minor amendments were made to one question.

Table 1 Characteristics of interviewees

Organization	Number of participants	Gender		Academic discipline	
		Female	Male	Other disciplines	Health policy
Management and planning organization	6	2	4	4	2
Health insurance companies	5	2	3	4	1
Ministry of Health and Medical Education	7	3	4	5	2
Tabriz University of Medical Sciences	10	6	4	3	7
Kerman University of Medical Sciences	9	4	5	4	5
Shiraz University of Medical Sciences	9	3	6	3	6
Tehran University of Medical Sciences	12	5	7	3	9
Kashan University of Medical Sciences	5	1	4	2	3
Mazandaran University of Medical Sciences	5	2	3	1	4
Universities in other countries	6	1	5	0	6
Total	36	29	45	29	45

The interviewees in the second phase are included in this table.

The interviews were recorded digitally and subsequently transcribed. Field notes were taken during and after each interview. A qualitative content analysis was conducted as part of the data analysis process. The transcripts were subjected to a process of coding and categorization by two authors, resulting in the identification of seven core competencies and their associated learning objectives for health policy students. The findings from phases 1 and 2 were collated and a final list of core competencies was prepared. In the third phase, the expert panel convened to finalize the core competencies required for health policy graduates on the basis of the list that had been previously discussed.

Phase 3: Brain storming

Two brainstorming sessions were conducted to finalize the list of competencies. The principal criterion for participation in the expert panel was expertise in health policy and the requisite competencies.

The expert panel was invited to review the draft version of the final competencies, which included 11 competencies (5 from the first phase and 6 from the second phase) and their associated learning objectives. The panel comprised four experts from the Iranian Ministry of Health and Medical Education, three health policy professionals and two health policy scholars. The same individuals participated in both brainstorming sessions. In the initial session, participants evaluated the 11 competencies in terms of their perceived importance, necessity, and relevance on a scale of 1–9, with 1 indicating the lowest level of compliance and 9 indicating the highest. The findings were collated by one of the researchers and the final list of competencies, along with their respective scores for each criterion, were presented in the second session of brainstorming for discussion. In the second session of the expert panel, any discrepancies were resolved by one investigator, and six core competencies were consolidated with others. The authors subsequently revised the list, and the final version of the core competencies was derived by consensus and is presented in this manuscript.

The study objectives were explained to all participants, and informed consent was obtained from all interviewees and experts in phases 2 and 3. Furthermore, participants were informed that their responses would be anonymous and that any information disclosed during the course of the interview would be kept strictly confidential.

Results

Phase 1

In the initial phase of the scoping review, a total of 623 documents were identified through the primary search. Following the removal of duplicates, a total of 529 titles and abstracts were subjected to screening, and 44 were deemed eligible for full-text review. Of these, 29 were excluded for various reasons, including the absence of relevant data, the presence of a systematic review protocol, the use of a non-English language and the unavailability of the full text. In conclusion, the scoping review phase included six journal articles and nine university curricula. Figure 2 illustrates the process of study selection, while Table 2 outlines the key characteristics of the included studies and their principal findings. In light of the findings from this phase, the core competencies for health policy graduates can be grouped into five domains: health system understanding, health policy research, knowledge translation, multidisciplinary work and knowledge of public health policy. Additionally, Table 3 presents the essential competencies for doctoral graduates in health policy, as identified by the selected universities.

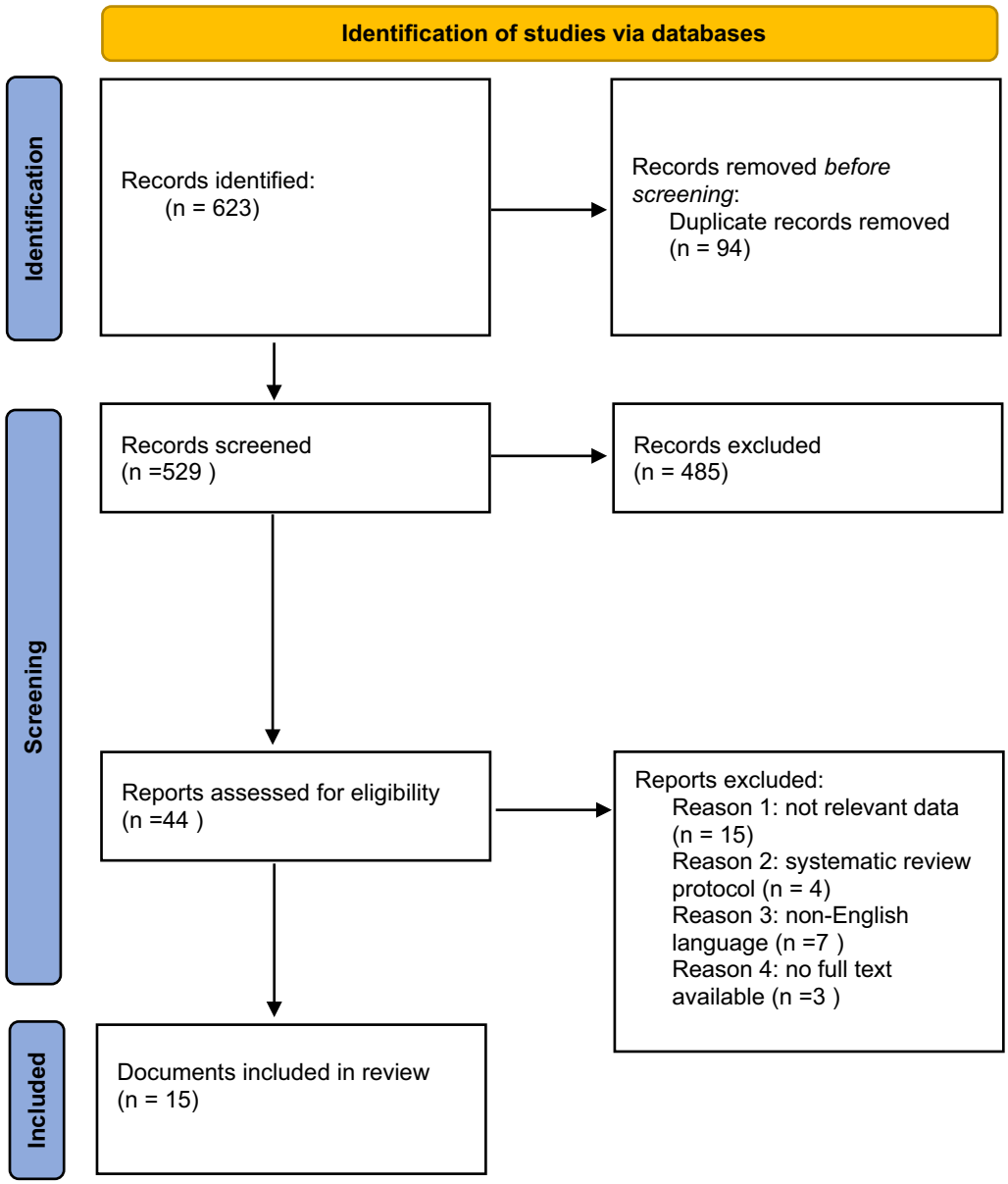

Fig. 2 PRISMA flow diagram for study selection and inclusion process

Phase 2

In phase 2, six core competencies were identified as being essential for graduates in health policy, namely, research, education, policy analysis, decision-making, globalization and communication.

Research

The qualitative interviews revealed a significant discrepancy between researchers and decision-makers, which impedes the establishment of a unified language for planning and implementing health-related programmes.

"It is evident that there is a necessity to cultivate a shared vocabulary between researchers and policy-makers. On occasion, policy-makers have well-considered plans for implementation, but they are unable to present their ideas in a manner that is accessible to a scientific audience" [P14: a senior health policy-maker].

It was anticipated that the graduates would be able to identify relevant databases and conduct a systematic search through the appropriate use of quality data relevant to policy issues, while assessing the methodology and quality of research results.

Table 2 Main characteristics of included studies in the scoping review

First author, year	Country	Study design	Aim of the study	Participants	Sample size	Data analysis method	Main findings (core competencies)
AlMubarak 2023 [32]	Saudi Arabia	Mixed method approach	To explore students experiences with the role playing activity	Graduate -level students of master of science in healthcare quality and patient safety Program	Six female students	Descriptive statistics for quantitative data and content Analysis for qualitative data	Developing an evidence-based policy brief
Barreto 2023 [33]	General	Rapid umbrella review	To identify elements of competency (knowledge, skills and attitudes) for evidence-informed policy-making	Review studies	10 reviews	Meta-aggregative narrative synthesis	– Knowing the health system context – Knowing the organizational context – Knowing basic aspects of health policies – Knowing the fundamentals of academic research – Knowing group facilitation techniques – Knowing communication techniques – Knowing KT methods – Having prior formal education – Gaining proficiency in research skills – Gaining proficiency in management of KT activities – Knowing how to pose relevant questions – Knowing how to contextualize evidence – Knowing how to apply evidence – Knowing how to support the use of evidence by institutions and their key actors – Knowing how to communicate evidence to relevant target audiences – Knowing how to manage organizations – Knowing how to manage people – Knowing how to manage networks and engage stakeholders – Knowing how to manage projects in the public sector – Knowing how to design public policies – Knowing how to implement public policies – Knowing how to do advocacy – Knowing how to evaluate public policies – Knowing how to establish good interpersonal relationships – Knowing how to promote cooperative actions – Knowing how to lead processes and projects – Having basic computer skills – Acting with professionalism – Valuing research – Valuing learning – Reflecting carefully – Acting with creativity – Acting with confidence in one's own abilities – Trusting the other actors in the system – Appreciating teamwork – Appreciating the possibility of change Acting with motivation and initiative

Table 2 (continued)

First author, year	Country	Study design	Aim of the study	Participants	Sample size	Data analysis method	Main findings (core competencies)
Bornstein 2018 [34]	Canada	Qualitative (multi-method: literature review and qualitative)	To develop an enriched set of core competencies for health services and policy research (HSPR) doctoral training	Leaders of doctoral training programmes, healthcare decision-makers, research funders and graduate students	16	-	– Analysis and evaluation of health-related policies and programmes – Analysis of data, evidence and critical thinking – Understanding health systems and the policy making process – Knowledge translation, communication and brokerage – Networking – Dialogue and negotiation – Project management – Interdisciplinary work – Change management and implementation – Leadership, mentorship and collaboration
Hearne 2008 [35]	Unknown	Practice article	Describing a potential model curriculum for introductory health-advocacy theory and skills based on the course	Not mentioned	Not mentioned	Not mentioned	– Assess a public health problem and articulate the health, fiscal, administrative, legal, social and political implications of solving the problem with policy strategies versus behavioural education – Analyse the public health laws, regulations and policies related to public health problems, and identify what policy options should be targeted for advocacy efforts – Develop plans for implementing policy campaigns, including goals, tactics and partners – Use the media to communicate information on advancing health policies – Effectively present accurate demographic, statistical, programmatic and scientific information for policy-makers and lay audiences
Longest 2010 [36]	United States	Review	Describing some of the key steps that public health schools can take to help their faculties be more influential in public health policy	Not mentioned	Not mentioned	Not mentioned	How they can be influential in each of the three phases of policy-making: "influencing policy formulation" phase: 1. defining and documenting public health problems, 2. developing and assessing possible solutions to public health problems, 3. testifying at legislative hearings as public health policy is considered, 4. participating in the drafting of public health legislation "influencing policy implementation" phase: 1. providing formal comments on draft rules and regulations, 2. serving on and providing input to rule-making advisory bodies, 3. Conducting studies and analyses of policy implementation experiences "influencing policy modification" phase: 1. documenting the case for modification through formal evaluations 2. Performing evaluations of options for changing or modifying policies
Schleiff 2022 [37]	USA	Multi-method study of four phases: literature review, key informant interviews and group discussions with HPSR educators and webinars with pre-post surveys	To identify an agreed set of core competencies for HPSR researchers				– Understand health systems, their complexity and policy process – Assess health system-related policies and programmes – Critically appraise data and evidence related to health systems, analyses the data and synthesize knowledge – Ethical reasoning and practice – Lead and mentor – Build partnerships and networks – Communicate, translate knowledge and apply – Health systems evidence

Table 3 Required competences for health policy graduates asserted by universities

University	Country	Health policy graduate's competencies
Johns Hopkins University	United States	– Public health problem identification and providing policy solutions – Public health policy process – Critical comparison of policy-making theories – Knowing the main stakeholders in policymaking of national, regional and local levels – Criticizing the policy-making process – Assessing organization of public health services – Critical analysis of literature and gap analysis for further research – Knowing research methodologies – Assessing health policies using statistical analysis, epidemiology and surveys – Knowledge translation
University of Kansas	United States	– Healthcare-related research skills – Ability to define significant research questions – Designing studies, data analysis, data collection and managing data – Knowledge translation
The George Washington University	United States	– Critical assessment of political, legal, philosophical, economical and social aspects of health policies – Critical recognition of theoretical knowledge in support of health policy research, choosing appropriate research designs – Understanding and analysis of health systems and payment models and provision and assessment on health inequalities – Critical assessment of political issues – Policy analysis – Research abilities in health policies
Harvard University	United States	– Knowledge of theories of political participation, legislative organization, formation of interest groups and political communication – Applied topics including public opinion, political ideology, public health law and media – Knowledge in the field of interaction between the executive, legislative and judicial branches; and the role of federalism, including state and local government, in influencing health policy outcomes – Research methods include quantitative statistical methods suitable for large-scale databases, survey methods and qualitative or mixed methods – Teaching – Conducting research on healthcare policies – Collaboration with government, professional groups in research projects related to public policies in the fields of public health and health services
McMaster University	Canada	– Economic analysis of health policies and health systems, (allocation of health resources, health human resources, economic evaluation of policy options, public and private financing of health care, social investments in health production) – Analysis of the political aspects of health policy including the effects of political institutions, actors, values and ideas that operate in the spheres of state and global power – Analysis of social influences leading to the production of health (and disease), the organization of services and health systems and policies related to them. (Production and use of information to inform policies, political economy of health and its production, social factors of health) – Methods of research and analysis of health policies by qualitative and quantitative methods and by theoretical and practical methods – Integration of theoretical knowledge and practical skills to solve health policy problems

Table 3 (continued)

University	Country	Health policy graduate's competencies
Swansea University	United Kingdom	– Creating, interpreting, analysing and developing knowledge through research – Dissemination of new knowledge obtained through original research – Applying research skills and thematic theory in research – Ideation, design and implementation of projects with the aim of creating new knowledge or programmes in health policies – Making informed judgments about complex health policy issues – Adhering to the correct ethical principles in research, respecting the integrity of individuals and in accordance with the codes of professional conduct – Appropriate response to unforeseen problems in project design by making appropriate modifications – Communicate complex research findings clearly, effectively to expert audiences using a variety of media and appropriate events, including conference presentations, seminars and workshops – Correct selection, interpretation and application of relevant techniques for research and advanced scientific research – Creating networks and bases of research and development in this field – Advanced research skills – Use of information in research – Exercising personal responsibility and initiative in complex and unpredictable situations in professional environments
Temple University	United States	– Familiarizing with health policy theories, comparative health policy, public health policies and legal issues, current and emerging issues in public health and health professions – Research method: biostatistics, and research methods in health policies – Advocacy for public health
The Pennsylvania State University	United States	– Research on the organization and delivery of health services – Health care financing and policy: topics covered include various arrangements for financing and paying for healthcare, current issues in healthcare payment and reimbursement and other public healthcare finance issues – Research methods in health services research – Health data analysis for research
University of Illinois	United States	– Knowledge in the field of health services research and its role in the public policy process and providing theoretical frameworks, data sources, research methods and basic findings on the major issues of health services research, access, quality and cost, financing and effectiveness of health services – The ability to apply the philosophy of science and theories and models related to health services research – Organization, development and financing of the health service system and its components and the definition of health and its broader determinants – Advanced statistical methods suitable for studying secondary data – Cost–benefit analysis in the evaluation of health programmes and policies – Program evaluation and policy analysis including secondary analysis of available datasets – Designing public health research – Economic evaluation of healthcare interventions

"I am able to search the internet, but I would prefer to do so in a systematic and effective manner, which would allow me to gain insights from the experiences of other countries and health systems" [P8: a ministry advisor].

Education

Transitioning to methods that focus more on students, such as actively engaging them in learning tasks and providing training on contemporary teaching methods to enhance interactions with students and other learners, was suggested as a strategy to move away from the traditional teacher-centred approach in post-graduate education. Numerous participants in the study labelled the classroom as an ideal representation of the "real world" and emphasized the need to equip students with the abilities to effectively manage the class as a way to handle public matters in line with advancements in knowledge and globalization.

"I believe that, at the doctorate level, students desire more critical feedback from their mentor in order to develop their own perspectives on various topics" [P11: a faculty member].

Policy analysis

Analysing policies is a challenging skill that involves understanding theories and critically evaluating the process of policy-making, including identifying issues, creating policies, considering rules and regulations, examining

Table 4 The core competencies for health policy doctoral graduates

Category	Sub-categories	Skills
Health policy research	Identification, access and evaluation of evidence to identify research gaps in health and healthcare systems	– Exploring databases and journals to retrieve relevant articles and documents – Reviewing documents by critically appraising scientific work and determine gaps for further investigation – Assessing status quo to identify research needs and priorities – Developing hypotheses and appropriate interventions – Formulating research questions relevant to health policy – Interpreting results and identifying strengths and limitations of research
	Designing and implementation of basic and advanced research in health policy	– Transforming research question into a well-designed study – Evaluating strengths and weaknesses of experimental, quasi-experimental and observational studies – Ability to use advanced research methods in the design, implementation and interpretation of independent research projects – Using applied knowledge of qualitative and quantitative paradigms in the design of research, including data collection and analysis techniques such as content analysis – Using applied knowledge of inferential and descriptive statistical analysis and its application in health-related research – Ability to prepare and analyse big data, use conceptual frameworks to conduct research related to health policy – Capability to select and implement appropriate analytical techniques from advanced epidemiological, statistical, economic, qualitative and survey methods (e.g. structured systematic review, meta-synthesis and meta-analysis, causal models, logistic and multiple linear regression, general linear models, longitudinal and multilevel models, cost-effectiveness analysis, cost–benefit analysis and cost-utility analysis) for a specific research question – Ability to develop and evaluate research proposals and policy summaries, interpret the results of studies related to health policy and present findings in both research and operational contexts – Capability to determine, evaluate and specify most appropriate sources of data for a specific research question; select valid and reliable data, analyse the validity and reliability of data; and collect valid and reliable qualitative and quantitative data – Ability to use information technology, both in data gathering and analysis
	Application of ethical principles to research	– Consider social and cultural values and prioritize societal needs – Avoiding scientific distortion and misleading evidence in research endeavours – Observing ethical principles in treatment of subjects to achieve research objectives
	Translation and effective presentation of findings	– Presenting study findings, orally or in written form, to various ranges of stakeholders – Ability to publish research evidence
	Identifying and examining the policies and problems	– Determine, describe and analyse health-related problems by critically comparing and applying the theories of policy process in the study of health-related problems – Having a good understanding of public health paradigms (national and international) – Understanding the process and evolution of national health policies and how they are related to the policies of other health systems around the world
Policy analysis	Analysing and interpreting policies	– Ability to describe the stages of the policy process, including problem identification, policy formulation, implementation and evaluation – Identify, describe, analyse and evaluate issues and policies related to the health care system and public health using tools and models of policy-making and policy analysis – Identify the key sectors, institutions and stakeholders involved in the policy process at the national, regional and local levels – Critique the policy process, including the central role of rules, regulations and lawsuits; the role of stakeholders; the difference between national laws and local policies; and the effect of academic research on the policy process – Capability to collect and analyse data for health policy analysis; apply ethical principles to health policy-making; extract and interpret the results of policy formulation process, identify inputs and determine the effectiveness of agendas; and determine and predict potential outcomes of health policy strategies

Table 4 (continued)

Category	Sub-categories	Skills
Educational competencies	Education- theory and practice	– Ability to perform educational needs assessment; use curriculum review models; apply teaching principles, techniques and styles; implement teaching and learning principles; develop lesson plans and course plans; develop educational content; manage and lead educational activities; perform strategic and operational planning in education; use and develop modern technologies in education; effectively communicate and motivate learners; assess teaching performance; assess the performance of learners; evaluate curricula; manage courses and classrooms; apply concepts related to other specialized disciplines; and review curricula and educational scholarships
Decision-making	Leadership and management	– Ability to successfully manage organizations and promote public health; lead the process of determining priorities and allocating resources necessary for achieving organizational goals – Ability to interpret and aggregate the findings from qualitative and quantitative data in operational projects and programmes of the organization – Ability to determine goals and objectives of programmes; and use evidence to inform decision making – Considering current and future trends (financial, social, political and health-related trends) in developing and monitoring strategic plans for the organization – Adopting methods to minimize internal and external barriers to provision of services by analysing the barriers, and the ways forward – Capable to select best options among policies, programmes and services; and manage programmes within the boundaries of current and future budgets – Effectively manage the implementation of policies and procedures of government agencies overseeing the organizations – Developing performance management systems – Interacting with other health-related organizations at the national, regional and global levels – Collecting relevant information to select policy options, programmes and strategic plans – Participate in the development of new strategies and policies that help adjust or improve current policies – Developing evidence-based policies using scientific data and consider all ethical and legal considerations as well as the interests of various stakeholders – Use the results of applied research and evaluation methods to implement strategic public health and healthcare plans more effective – Develop strategic plans to improve public health (describe measurable outcomes, make decisions about necessary changes in policy and appoint groups and individuals responsible for implementing these plans) – Ability to apply the principles of strategic planning, program development and performance measurement to public health initiatives that utilize effective partnerships between organizations and communities – Develop policies to expand international cooperation

Table 4 (continued)

Category	Sub-categories	Skills
	Evaluation	– Assess the health needs of a population and provide strategies for solving health problems at various organizational and societal levels – Use appropriate and accurate methods to predict the outcomes of health policies as well as general policies that affect health, including biological and epidemiological statistics, mathematical techniques and simulations – Analyse key concepts such as health indicators, patient demand for healthcare services and health financing, with emphasis on the critique of the effects of alternative financing methods and organization of healthcare services on costs, quality, access and public health – Evaluate the main components of the policy-making process that affect the functions of health systems, including: financing, stewardship, resource generation and delivery of healthcare services – Use proper and accurate empirical methods to evaluate the financial, political, legal and/or geographical factors influencing health – Perform cost-effectiveness and cost–benefit analysis of innovative healthcare initiatives and public health policies – Assess the performance and composition of institutions, actors and processes in the development of public health policies – Evaluate the role of public health policy-making at the national, regional and international levels – Evaluate the organization and financing of public health and medical services, and critique their impact on accessibility, utility and quality of healthcare, costs and outcomes – Critically evaluate the effect of health policies on organization, provision and financing of public health services – Analyse the access and utilization of healthcare services, costs, outcomes and performance of the health system using the results of applied research – Analyse financial interactions within the health system and their impact on organizations and stakeholders – Evaluate structures, duties, powers and responsibilities in public health organizations – Collect information for evaluating strategic policies and plans – Analyse the applications of strategic policies, plans and programmes – Use financial analysis methods in decision-making about strategic policies, plans, and programmes – Assess the financial, political, legal and geographical feasibility of policies, plans and programmes – Ability to identify, develop and select strategic policies, plans and programmes; use health informatics in evaluation of strategic policies, plans and programmes; and employ appropriate and accurate techniques in evaluation of policy option to recommend appropriate policy action
Multidisciplinary work	Consultation	– Ability to create teams to achieve strategic goals and plans; write a memorandum of understanding where goals are clearly defined; effectively communicate to promote public health; create opportunities for cooperation with different organizations with the goal of promoting public health; establish bilateral relations with stakeholders, policy-makers and related groups; interact with other health organizations at the local, regional and international levels; cooperate with government agencies that have the power and authority to influence public health; use evidence-based models of communication and negotiation to disseminate findings; establish compelling and information-based communications with various health policy audiences and professionals; and consult other health specialists and policy-makers to formulate innovative public plans and programmes
	Advocacy	– Capability to advocate for the use of evidence in decision-making; engage in policies and programmes outside the health sector; provide public health financing mechanisms; justify budgets and programmes; obtain information for the formulation of contracts and agreements; negotiate contracts and agreements; explain financial analysis techniques (cost-effectiveness, cost–benefit, cost-utility and return on capital) for strategic policies, plans and programmes

stakeholders and implementing and reviewing policies. Health policy graduates must possess a strong grasp of public health paradigms to evaluate how health policies interact with the policies and procedures of other disciplines.

"The objective of health policy graduates is to analyse the current health plans in the health system and to interpret the probable consequences of the plans" [P22: a faculty member].

The capacity to interpret and analyse policies and plans can be enhanced through the acquisition of the requisite skills through training. A considerable number of policies are formulated without due consideration of the various underlying factors, including context, process, content and actors. As indicated by the respondents, the majority of policy-makers and key decision-makers lack sufficient knowledge regarding the formulation of policies based on diverse information and evidence.

Decision-making

The capacity to make effective decisions is a fundamental competency. It is similarly crucial for policy-makers to be able to utilize contemporary data to make well-informed decisions. It was highlighted that graduate students of health policy should be able to engage with stakeholders (including political and social actors) during the decision-making processes in a timely manner. *"The health system involves various individuals who play essential roles in reaching population health objectives, therefore it is important for us, as prospective health policy graduates, to identify these key stakeholders and engage with them professionally"* [P18: a health system specialist].

Communication and globalization

The health sector engages with a diverse array of stakeholders from a multitude of sectors and policy-making arenas. It is essential that there are well-established relationships (effective consultation and advocacy) within and across organizations and entities whose actions or inactions influence health.

"Therefore, not having strong connections with various entities, organizations, and individuals while working in a global community is not considered a political act, it is an essential requirement in today's world" [P27: a health insurance specialist].

The present phase of globalization has increased health risks worldwide and made public health more complicated, leading to a greater need for global cooperation and coordination among all stakeholders. Health policy graduates need to work together and communicate effectively to develop a strong diplomatic response that will influence global policy.

Phase 3

During phase 3, five core competencies were chosen after considering the competencies identified in earlier phases, forming the basis for the initial core competencies drafted. Table 4 provides a summary of the main skills, additional skills and necessary abilities. Additionally, Fig. 3 shows the steps of discovering and solidifying skills in each of the three stages.

Discussion

The present study employs a multi-method consensus approach to identify the core competencies required of health policy graduates. In light of the findings, five core competencies were identified as follows: health policy research, policy analysis, educational competencies, decision-making and multi-disciplinary work. The capacity to conduct original research or to communicate effectively with researchers represents a fundamental skill for those pursuing a degree in health policy. It is evident that proficiency in knowledge management and an understanding of research methodologies are indispensable for those pursuing careers in health policy [38]. In recent years, there has been a proliferation of literature on the topic of translating research evidence into policy and practice. This literature aims to address the specific concerns of policy-makers to facilitate the process of knowledge translation and transfer [39, 40]. Nevertheless, a discrepancy persists between researchers and policy-makers regarding the methods for producing and utilizing evidence-based research to inform decision-making processes [41]. One potential solution for bridging the traditional gap between researchers and policy-makers is to equip health policy graduates at the doctoral level with the skills and tools to leverage research in support of evidence-based decision-making at both national and global levels [42].

The capacity of a government to address the health requirements of its population is contingent upon the proficiency of the entities and authorities responsible for the planning, management and ongoing enhancement of healthcare services [43]. The enhancement of the knowledge and abilities of healthcare professionals [44] and the refinement of the educational content within health-related disciplines may facilitate the fulfilment of the health requirements of the population [45]. It would be beneficial for those who have obtained a degree in health policy to possess the requisite educational and teaching skills to enhance the knowledge of the various target populations within the health system.

The findings of the present study indicate that policy analysis represents a fundamental competency requisite for those pursuing a degree in health policy. To

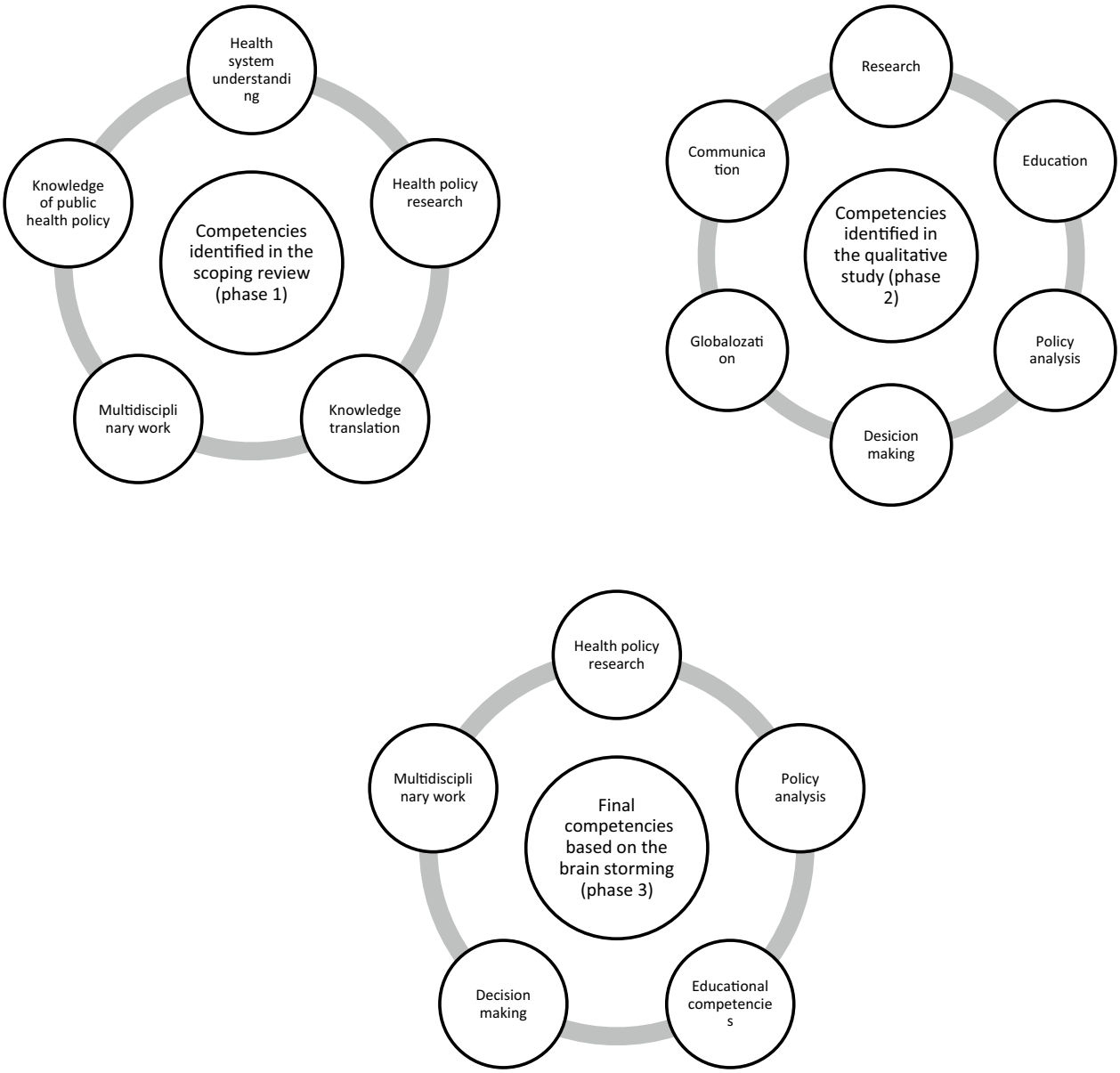

Fig. 3 Process of identifying and finalizing competencies in three phases

reinforce the evidence-based approach to policy-making, it is essential to enhance the individual and institutional capabilities with regard to the knowledge of policy-making and policy analysis [46]. In 2009, the Association of Schools of Public Health (ASPH) put forth a model of core competencies deemed suitable for doctoral-level education in public health (DrPH). The team, comprising academics and practice participants, identified five core competencies, which encompass seven domains of skills. The aforementioned competencies are as follows: advocacy, communication, community/cultural orientation, critical analysis, leadership, management, professionalism and ethics. Furthermore, the findings were linked to doctoral-level education in public health, the analysis of the model presentation process and its implications, the potential future use of the model and the challenges associated with introducing and implementing it within academic settings. The ASPH's objective is to stimulate public debate about the core competencies required by public health graduates to address public health challenges and to redefine the DrPH degree in a more optimal

manner [47]. Our findings indicate that a number of universities have developed lists of core competencies that students and graduates of the field should possess. To illustrate, the core competencies of the health policy and management programme at Johns Hopkins University (United States) are broadly comparable to the research and educational competencies identified in our research [48]. In contrast, the list of core competencies of the health policy and management programme at the University of Kansas is more general [49]. Furthermore, studies have demonstrated a notable correlation between the educational content and the occupational competency of graduates from higher education institutions [50]. Additionally, there have been advancements in the development of core competencies for health policy and enhanced population health [51]. The findings of our study indicate that specific competencies, namely research and education, are applicable to all graduates. However, they appear to be of particular importance in the context of health policy studies, given the dynamic and evolving nature of health-related challenges faced by these graduates. To achieve sustainable health development, it is essential to consider "interdisciplinary/cross-cutting competencies" in comparison with "discipline-specific" competencies. These cross-cutting competencies encompass diversity and culture, professionalism, program planning, systems thinking, social and behavioural sciences and health policy and management. The formation of a global village and the existence of people of different nationalities and cultures in every society intensifies the need to foster such competencies. It appears that the cultivation of these competencies will facilitate the formulation of novel and creative strategies for enhancing community health.

Limitations and future research opportunities

The competencies identified in our study through the consensus-building process, based on the differences in country contexts, health systems and educational systems, may be subject to influence in terms of their applicability in health policy programmes. One limitation of this study was the inability to access related documents at some universities. It may be beneficial to conduct a larger number of studies to gain a more comprehensive understanding of the core competencies across a wider range of contexts. The results of the scoping review showed that few studies have been conducted in this field, as this review included only six studies, which may limit the comprehensive understanding of core competences across diverse settings. Multi-disciplinary approaches can provide valuable insights that inform the identification of core competencies and the development of curricula. Future studies could focus on the validation and refinement of competencies in a variety of health policy programmes, with the aim of evolving them over time, applying them in practice and effectively measuring their impact on health development. The development of appropriate assessment tools for the competencies of graduates could facilitate the necessary changes to health policy educational curricula and content on the basis of the workforce requirements in real-time settings and subsequent contributions to health systems. By addressing these limitations and exploring future research opportunities, researchers can contribute to the ongoing improvement of health policy education and its relevance to health system development.

Conclusions

The present study has identified the five core competencies that are required of those undertaking a health policy degree and has also shed light on specific aspects that should be included in the preparation of future scholars of health policy. The challenges facing public health are numerous, multi-faceted and complex. Effectively addressing these requires a range of cross-cutting competencies, many of which may not be adequately addressed in the current curriculum at many universities. While the majority of countries are striving for the Sustainable Development Goals or the achievement of health and well-being, it is crucial to cultivate the core competencies in health policy graduates to equip them to address the dynamic and complex nature of the policy environment along the ongoing and winding pathway towards health system goals.

Abbreviations

SDGs Sustainable development goals
ASPH Association of schools of public health
DrPH Doctoral-level education in public health

Supplementary Information

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Supplementary materials 1.

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Author contributions

All authors made contributions to conception and design of the study; L.D. and H.M. made contributions to acquisition of data; L.D., H.M., M.A. and N.K. made contributions to collection, analysis and interpretation of data; All authors made contributions to drafting of manuscript; and author A.T. revised the manuscript critically. All authors read and approved the final draft of the manuscript.

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Availability of data and materials
No datasets were generated or analysed during the current study.

Declarations

Ethical approvals and consent to participate
This study was approved by the ethics committee of Tabriz University of Medical Sciences, Tabriz, Iran (approval no.: IR.TBZMED.REC.1397.318, and IR.TBZMED.REC.1401.455). Informed consent was obtained from all interviewees and experts in phases 2 and 3.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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