Designing health headquarter workers general competency model for the national level: A multiple qualitative study

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Abstract

Background

An effective health headquarter worker has behaviors, knowledge, skills, and motivations which are behavioral, technical, and motivational prerequisites for successful performance in a job. This study aims to identify the general competencies of health headquarters workers to meet the needs of the health system.

Methods

We used multiple qualitative methods to facilitate a consensus-building process on developing core competencies. First, we used systematic review and meta-synthesis to identify the dimensions and components of core competencies. Using a critical case sampling, we interviewed twenty-six participants and analyzed the information with thematic content analysis. In the third phase, we divided the health headquarters workers into three levels. Then, to present the initial model of competencies, the Mini Delphi method was used. Finally, in the fourth phase, to reach a consensus on the importance of each competency and determine the level of competencies required for each level of health headquarters workers, three-step Delphi method was used, and we presented the final model.

Results

We presented a competency model for three levels of health headquarters workers. The main competencies are (1) leadership and management (12 components), (2) analysis, interpretation, and reporting (6 components), (3) interpersonal relationships (4 components), (4) individual competencies (7 components), (5) cultural and community competencies (5 components), (6), and administrative competencies (4 components). All competencies are needed for the third level of health headquarters workers. In general, second and third levels of health headquarters workers need high and middle level of required competencies that mean these workers' levels should have all competencies before using them in top of national health organizations.

Conclusion

The competencies were extracted due to the levels of health headquarters workers, as well as the level of competencies required by each group of experts, could act as a guide for policy-makers and managers related to human health resources in the health sector, and help them adopt appropriate strategies to employ and train health headquarters workers.

Background

Health care in any country is a complex task that must be tailored to society's needs to be effective. In this regard, human resources for health (HRH) are considered a key factor to achieve the effectiveness in universal coverage and sustainable development goals (SDGs), ensuring a healthy life, and promoting public welfare. Due to the global strategies of HRH, by 2030, there will be no desirable health system without an effective workforce(1). However, in many Eastern Mediterranean countries, which the World Bank classifies as low- and middle-income countries, there is limited the knowledge of nature, territory, composition, and HRH needs (2). However, the issue of competencies was addressed in the civil service laws of developed countries such as the United States, Canada, the United Kingdom, Germany, Sweden, and Japan(3).

In today's world, every country to increase the governance capacity and increase its services' efficiency and effectiveness needs competent experts who can provide better services to citizens based on public interests. These experts should improve their capabilities and competencies in proportion to the increasing growth of changes(4, 5). In this situation, it is important to pay attention to the competencies required by the health headquarters workers (HHW) as influential forces working at the top of the staff pyramid at the health national level(6). Failure to pay attention to recruit trained human resources in proportion to the needs of organization will face the effectiveness and efficiency of programs and policies of human resources of the organization with irreparable damage. As some experts emphasize, even good education will not compensate for the wrong recruitment and employment. Research has shown that implementing an effective recruitment process is related directly to organizational performance. However, most organizations do not have a strategic plan in this regard(7).

In this regard, many developed countries worldwide try to strengthen their health organization by recruiting a skilled health workforce (8). Various plans and tasks should be integrated and aligned to ensure that the organization always has a sufficient number of experts with appropriate competencies to achieve its organizational goals in a balanced and coordinated manner(8). The technical capacity of HHW is needed to translate policies and decisions into effective executive processes. As much as the health system needs specialists and clinical experts, it needs experts with the ability to policy, plan, and use evidence and data to adopt appropriate procedures to achieve its goals. In this regard, organizational mechanisms for HRH policy, and decision makers to determine the competencies and appropriate capacity of human resources at the level of HHW are important (9).

Due to the increasing expectations of society from the public sector, it is important to focus on new approaches in human resource management. In this regards, need to establishing a competency-based management approach, increasing the efficiency and effectiveness of public services to citizens through the use of competent experts, and changing the view from a job-based approach to a competency-based approach, as well as the need for a comprehensive competency model of experts in human resource management felt (10, 11).

Although many studies are performed about health workforce competencies, especially in public health (12-14), despite HHW importance to address the goals of any health system, the lack of research on competencies for these employees exists. In addition, considering the role of this group of human resources in advancing the overall goals of health system due to the country's development programs, it can be said that one of the most important issues in the field of HRH is to pay attention to the competencies required by this group of experts. Therefore, this study was designed the aims to present a model of general competencies for the HHW.

Methods

Study design

This study mainly aimed to designing health headquarters employee's general competency model. The focus of this study was on staffs, which perform their duties at the national health organization level. To facilitate a consensus-building process on developing the general competencies of staff, [we used multiple qualitative](#) methods (systematic review and meta-synthesis, interview, mini-Delphi and Delphi). In the first phase, to identify the dimensions and components of the general competencies of HHW in the available electronic resources based on existed science, we used a systematic review and meta-synthesis method. (for more information, refer to the article published in this phase of the study)(15). Due to the small number of articles available on this study objective, and for in-depth understanding of competencies, we conducted semi-structured interviews with experts in health worker's competencies and human health resources in the second phase. In the third phase of this study, we used the Mini-Delphi method to integrate the results obtained from the first two phases and present the initial model of competencies. Finally, in the fourth phase, to finalize the criteria, reach a consensus on the importance of each competency for HHW, and determine the level of competencies required by each group of HHW our team used the Delphi method. Method section is summarized in Table1.

Table 1Phased method summary

Phase number	aim	Methodology	Study sampling/participants	Tools	Data collection	Data analysis
Phase 1	To identify Existing competencies	Qualitative (systematic review and meta-synthesis)	Developing search strategy to achieve all studies related to the research topic/Studies	Critical appraisal tool results for qualitative studies/ extraction forms	1. Searching for all articles 2. Finding Relevant articles 3. Doing Quality appraisal	Thematic synthesis
Phase 2	To obtain in-depth understanding of competencies	Qualitative (Interview)	Critical case sampling /Experts	1. open-ended questions	1. Determining the time of the interview 2. Contact the interviewee 3. Introductory talks about the research and the researcher's goals 4. Request for an interview 5. Schedule an appointment and provide contact information for the interviewer Interview 6. Doing interviews 7. Write the text of the interviews	Thematic synthesis
Phase 3	To present the initial model of competencies	Qualitative (Mini-Delphi)	Critical case sampling /Experts	1. Open-ended questions	1. Holing meeting 2. Asked to confidentially answer questions 3. Free discussion	Thematic synthesis
Phase 4	To: 1. Finalizing the criteria 2. determining competencies required by each group of health headquarters 3. determining the required level of each competency 4. presenting final model	Qualitative (Delphi)	Critical case sampling /Experts	1. Round 1 and 2: twd-choice questionnaire (yes/no) 2. Round3: questionnaire with a three-point Likert scale	Round 1 and 2 for finalizing the criteria 2. Round3 for determining competencies required by each group of health headquarters	Categorizing based on competencies scores

Phase 1: systematic review and meta-synthesis

At this phase, the research team first adjusted the search strategy using appropriate keywords derived from the research question and title to achieve all studies related to the research topic, and all words synonymous with them:

"TITLE ("Competence*" OR "Capabilities" OR "Abilities" OR "Skills") AND ("Headquarters" OR "Staff" OR "Health worker*" OR "Employees" OR "personnel" OR "Support worker") AND ("Healthcare organizations" OR "Health organization*" OR "Health sector" OR "Public health organization*" OR "Public health sector") " (15).

Then, we searched and retrieved the electronic databases of PubMed, web of science, Scopus, and Embase. We performed a manual snowball search by backward and forward tracing to ensure access to all related studies. In addition to what we did, Manual search in key journals related to the topic by

reviewing the titles of all printed articles in the last 5 years. Our team used Expert guidance to obtain gray resources, which are published for a specific audience, with a specific purpose, and at a very limited level, but may not be accessible via the web. After searching for all articles, first, duplicate data was removed. Then, two reviewers, due to the title and abstract of the articles, evaluated and identified the related studies. Relevant articles were selected by considering the inclusion and exclusion criteria of the study.

For inclusion criteria, reviewers selected all studies that focus on HHW or leveled competencies for public health workers that published between 1980 (competency management first time introduced during the 1980s) and 2019. Besides, studies with all languages included.

For quality appraisal, three authors independently used the Standards for Reporting Qualitative Research (SRQR) checklist to evaluate the quality of qualitative studies. Due to the lack of consensus on the performance and role of quality assessment of qualitative studies(16), no study was excluded by the research team. Figure one showing the PRISMA diagram for this study.

At this phase, we used thematic synthesis procedure described by Thomas & Harden to analyze the obtained data(17). This procedure has three steps. In the first step, three researchers independently extracted and coded the text of selected studies. After coding, at the next step, descriptive themes were developed. Finally, we compared and deliberated data in the research meeting, and then the analytical themes were produced. For more information, read the article published from this phase(15).

Phase 2: Semi-structured interviews with experts

We carried out this phase from April to July 2020. Due to the limited accessible participant with sciences and international experiences in the field of HRH, at first, our team used critical case sampling (the type of purposive sampling technique) to select between university presidents and deputies, general managers of human health resources, heads of general human resources departments and HHW, and experts with international research activities. We used inclusion criteria to identify experts who in the past or at the time of the study had these positions for at least 3 years in the health department.

Our research team prepared the interview guideline (Appendix 1) due to study's objectives and due to the theoretical foundations of the subject and review of studies and texts in a semi-structured manner with the least possible questions. Then, questions were designed in such a way that by focusing on them in the interviews, the desired data on the views of participants could be obtained. Besides, we assessed the usefulness and comprehensibility of the guide's questions during practical studies through three interviews, and some questions were changed and corrected. At first, to set a time, two researchers phoned to interviewees. The interviews were performed at interviewee's workplace. The researchers asked *the* interviewee to sign a written consent form, ensuring that individuals could refuse to participate at any interview stage. Two recorder devices recorded interviews, and researchers made notes during the interview. Each Interview lasted from 30 minutes to one hour. If it was needed, the follow-up questions were used to obtain additional information on this study's topic. The face-to-face interview process continued until saturation was reached(18) (no new information was obtained).

In data analysis, [thematic content analysis](#) was used by following King & Horrock interview guide(19). Firstly, two researchers performed repeated data retrieval and active data reading independently (i.e., search for meanings and patterns). Then, they generated the initial codes from the data, and then they reviewed all coded text. Then, various codes were categorized into potential sub-themes, and all encoded data summaries were sorted into specified sub-themes. Then, the researchers started analyzing his sub-themes and tried to figure out how to combine different sub-themes to create a general theme. Then, the themes created by the researchers were reviewed. This review consisted of two stages: reviewing and refining the themes. The review was at the level of coded summaries, and the validity of the themes was associated with the data set. Meanwhile, we engaged interviewees with primary findings to strength our deduction and access to trustworthiness. In the end, we finalize analysis and writing of the final report. In addition, in all part of analysis, researchers tried to evaluate data to ensure that no pre-assumptions exist and for avoiding researcher bias, research team reviewed findings (20).

In the end, we finalize the analysis and writing of final report. To increase the validity and quality of the results, we sent a draft report from the analysis and interpretation of the study participants for feedback, and possible cases were applied. MAXQDA10 software was also used for data analysis.

Phase 3. Mini-Delphi

In this phase, due to the interviews with experts, at first, we divided the HHW into three categories: First-level HHW who perform low-level staff duties, with the nature of daily and routine duties, Second-level HHW who perform middle-level staff duties, and third-level HHW who perform high-level staff duties.

We used a mini-Delphi technique to integrate the findings of the two first phases of this study(21). Using Critical case sampling, five experts were selected from HRH specialists who also had experience in the health sector's international activities. The data collection tool was a questionnaire containing four open-ended questions and a list of dimensions and components obtained from the systematic review and semi-structured interviews phases (duplicated themes and sub-themes were removed). In the meeting, we asked individuals to confidentially answer four questions to take their suggestions about categorizing competencies at the subtheme and theme levels, as well as the required competencies due to the HHW levels. After receiving the answers, a free discussion took place among the participants, and the participants expressed their opinions about the research questions.

Two researchers then analyzed the recorded information by [thematic content analysis](#) by following King & Horrock guide, as mentioned in the interview phase (20). Finally, by aggregating and creating the final themes and sub-themes, the selected and named themes were arranged in three-phase of the systematic review, interview, and Mini-Delphi methods. We used MAXQDA10 software for data analysis.

Phase 4: Delphi surveys

To use the opinions of experts in HRH, we selected a group of 18 experts, using critical case sampling.

Delphi Phase's research tools in the first and second round were a two-choice questionnaire (yes/no), including sub-themes that they were brained from Mini-Delphi phase. In the first round, after Coordination with participants, the first questionnaire was sent to the experts to confirm which extracted subthemes are required for each level of HHW. After reviewing the responses, the sub-themes were agreed upon by more than 75% of the participants were finally approved. If this percentage was lower than 75%, to achieve stability in the received responses, we entered the mentioned sub-themes to the second round of Delphi, and the sub-themes that received less than 75% of the total scores in this round were rejected. Finally, the required competencies of each level were determined by performing the second round of the Delphi.

Then, in the third round, to determine the level of required competencies for each level of HHW, we used a questionnaire with a three-point Likert scale (3 = high level, 2 = medium level, 1 = low level). Besides, due to the experts' opinions that we obtained from the mini-Delphi phase, we determined the level of required competencies for each level of HHW. In such a way that if the competencies scores equal to or higher than the 70th percentile of the average, each level of HHW need high-level competency. If the competencies scores were between the 40th and 70, they need medium-level, and if the competencies scores equal to or lower than the 40th percentile, they need low-Level competencies. Due to the response of 15 people from the research sample at this round, scores above 31.5 indicated corresponding high-level, between 22.5 and 31.5 medium-level, and less than 18 low-level competencies. Finally, by interpreting the information obtained from these phases of this study, the results were combined, and the results design a competency model for the HHW.

Findings

In this part, at first, we separately present the themes and sub-themes obtained from meta-synthesis, and semi-structured interviews phases, then, in the third phase, after combining findings, we present combined competencies, and in the fourth phase, after integrating all findings, we show finalized health headquarters employee's general competency model.

Results

Results of the systematic review and meta-synthesis phase

These 12 studies were published over 12 years, from 2005 to 2017. These studies were conducted in 6 developed countries (including the United States, Australia, Canada, Ireland, Spain, and the United Kingdom) (13, 14, 22-30) and one developing country (Iran) (31). The focus of this study was on health working in the health sector. Two studies of the studies focused on global health competencies (22, 26), and 10 of the studies focused on national level (13, 14, 23-25, 27-31).

Due to the results of this phase of the study, seven main themes were obtained. The competencies contained leadership and management (14 sub-themes), analysis, interpretation, and reporting (6 sub-themes), public health knowledge (7 sub-themes), Interpersonal relationships (5 sub-themes), individual competencies (8 sub-themes), Cultural and community competencies (8 sub-themes), and global health competencies (3 sub-themes). Table 2 shows a summary of the information obtained from this phase (see the published article for more information)(15).

Table 2 Mapping of competencies across International studies

Themes	studies												Number of codes	Percentage of codes
	Ablah et al (22)	Akbar et al (23)	Bornstein et al (24)	Conejero et al (57)	Council on Linkages (58)	Damari et al (31)	Joqerst et al (26)	Lamb et al (27)	Margaret et al (28)	Rodriques et al (29)	Whittaker et al (30)	Wright et al (14)		
Leadership and management	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.		1.	261	41.6
Analysis, interpretation, and reporting	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.		1.	99	15.8
Public health knowledge competencies	1.	1.	1.	1.	1.	1.						1.	48	7.6
Interpersonal relationships competencies	1.	1.	1.	1.	1.	1.		1.		1.		1.	67	10.7
Personality competencies				1.	1.	1.	1.	1.	1.	1.		1.	45	7.1
Cultural and community competencies	1.	1.	1.	1.	1.	1.		1.		1.		1.	87	13.1
International/global health competencies			1.			1.							19	3

Descriptive results (interview) - Competencies of HHW

To find the competencies of HHW from the experts' point of view, the data were saturated by interviewing twenty-six participants. Three people refused to participate because of their responsibility in health organization during the covid-19 pandemic. All participants had experience in the field of HRH. Finally, six main themes and thirty-four sub-themes were extracted. Most of the duplicate codes related to leadership and management competencies, analysis, interpretation and reporting competencies, and individual competencies, each of which is described below.

First theme: Leadership and management competencies

Leadership competencies in an organization are the effective abilities by which a person can create an inspiring picture of the future, motivate people to follow the organization's vision, and ultimately effectively guide people toward the organization's goals.

- **Leadership and related skills**

Since the leadership is a key factor to improve the organizational performance, the success or failure of the organization depends on the effectiveness of leadership at all levels. One of the key points about leadership is the ability to motivate other experts.

"The ability of a health headquarters to motivate and persuade subordinate units, that is, to lead, and manage them is very important" (P4).

- **Policymaking and related skills**

Policy-making in the health system is a combination of economics, sociology, anthropology, political science, public health, and epidemiology that provides a comprehensive picture of how health systems comply with health policies and seek to understand and improve collective health achievement goals.

"we all have no doubt that policy-making is necessarily a headquarter task" (P23).

- **Planning and related skills**

Planning skills are the best solution for sharing critical and limited resources.

"A health headquarters which plan at the macro level should be able to plan based on international and upstream policies" (P10).

- **Organizing and related skills**

The organizing is defined as identifying and categorizing required activities, grouping essential activities into achievable goals.

"Headquarters should be familiar with the skill of labor division in a department to avoid interfering and overlapping responsibilities" (P11).

- **Financial management and related skills**

The lack of financial skills in the HHW of the Ministry of Health will lead to decisions that affect the entire health system.

"Since many of the decisions which have been made in healthcare organizations have important outcomes, especially in the field of finance, the health headquarters should have financial management skills" (P7).

- **Control management and related skills**

Control is an ongoing process to ensure that actual results are in line with planned schedules.

"What is certain is that control and supervising activities are necessarily the duties of health headquarters, so we should see what skills are needed to monitor and control" (P25).

- **Change management and process improvement skills**

Change management is a skill used to prepare, equip, and support individuals to successfully adapt to change. "The ability to manage changes, especially in health organizations that face various issues and challenges, and to be able to make the changes made at the system level" (P19).

- **Time management skill**

Time management skill is one of the acquired skills that lead to improving people's working life.

"Sometimes, the small tasks assigned to the experts are so delayed that it becomes a problem" (P4).

- **Empowerment and counseling and related skills**

In personal productivity, the organization uses the set of potential talents and abilities of the individual to advance the organization. Therefore, effective management of these valuable resources is necessary to achieve the goals of the organization.

"The issue of empowering others to be able to transfer their competencies to other people is very important" (P5).

Second theme: Competencies related to analysis, interpretation, and reporting

The set of the skills of this category to collect, process, analyze, interpret, and reporting data provides significant assistance to HHW. Due to the interviews with their experts, these skills are classified into the following six sub-themes:

- **Basic analysis skills**

A basic acquaintance with statistics is essential for HHW.

"Health headquarters should be familiar with the statistics to some extent (basic for lower levels and advanced for higher levels)" (P22).

In the field of research, familiarity with the methods of conducting quantitative and qualitative research was another important issue for experts.

"The policymaker should be able to conduct qualitative studies and be fully acquainted with them" (P9).

- **Topic or subject recognition skills**

Understanding the problem and separating it from other similar concepts, and analyzing different types of problems from different points of view is crucial for problem-solving.

"Health headquarters that feed the policymakers and can identify issues in-depth have a very important status, especially in the service sector" (P20).

- **The skills of collecting, analyzing, and interpreting data**

If information collection is done regularly and correctly, the work of analyzing and concluding the data will be done with good speed and accuracy.

"The health headquarters should be able to collect and process information" (P16).

The analysis is the analyst's mental effort to simplify complex concepts, understand the components of a phenomenon, examine the relationship between the analyzed phenomenon and other phenomena, and predict future developments.

"A very important characteristic which both executive experts and health headquarters should have is analytical skills, that is, to be able to analyze issues well" (P24).

Interpretation is expressed by taking a critical position on a particular event or incident. By in-depth examination, the interpreter presents various and relatively invisible aspects of the event to the audience. "This skill is the ability to reveal hidden layers that are vaguely formed in analyzes and topics and require further explanation" (P13).

- **Problem-solving, solution-providing, and decision-making skills**

Problem-solving skills and abilities help people to solve problems, which have occurred in their career path.

"They should be able to identify solutions to those problems. Furthermore, they should know how to achieve these solutions" (P14).

Decision-making skills are the process of choosing a course of action from various actions.

"Sometimes, the managers do not allow this skill to be strengthened in experts. That is, managers think that an expert should only have the power to support decisions, but in my opinion, an expert should also have the ability to make decisions" (P3).

- **Follow-up analysis and getting feedback on implemented solutions**

Feedback is information that people receive due to their performance. This information includes the messages sent by the sender of message to the recipient of message.

"Receiving feedback from the manager, colleagues, and people who are influenced by the decisions, especially in the subordinate units, is very effective in improving an individual's performance" (P11).

- **Reporting and related skills**

Reporting is the writing of news, information, facts, causes of problems, and their logical and sequential analysis to achieve the correct solution. The report should be concise and clear.

"In many cases, the managers do not know what they want. If the headquarter is a creative one, he/she can create a decision feed for his/her managers" (P8).

Third theme: Competencies related to interpersonal relationships

Carrying out any activity, including planning, organizing, coordinating, leading, and supervising, requires establishing these relationships.

- **Communication skills**

Communication skills refer to the ability to communicate information to others effectively and efficiently.

"If an HHW is unable to communicate with the subordinate units, he/she cannot convey his/her messages and instructions to them" (P1).

- **Teamwork skills**

Teamwork is one of the skills used to meet the challenges of today's competitive environment as a way to increase organizational flexibility and achieve other benefits.

"Teamwork is not related to levels and status. Thus, all workers should have this ability" (P3).

- **Networking skills**

The skill of building effective and constructive relationships is networking.

"High-level health headquarters should know networking and should be able to identify and use different networks because, at these levels, works cannot be done without networking" (P21).

- **Establish effective international communication and related skills**

Due to the issue of health is one of the topics for which no boundaries can be imagined, it is necessary to have skills related to communication at the international level.

"Diseases exist all over the world. Therefore, we should be in constant interaction with the whole world and have the ability to communicate to exchange information" (P26).

- **Forth theme: Individual competencies**

Individual skill is learnable and teachable and is acquired and improved through experience. Sometimes this ability relates to an individual's thoughts and vision and is not physical.

- **Creative thinking skills**

Creative thinking means the power to develop new solutions to problems, and it is other expression outside the framework of thinking.

"The characteristics of this skill is that it helps other skills as well, meaning that the person is not content with just his own experiences and his thoughts are flexible so that he can try to create new things" (P12).

- **Systemic thinking skills**

System thinking helps people examine the relation between structures, patterns, and events, and not just pay attention to the observations.

"They should have a holistic and systematic view that is, look at the issue through the entire health system and see their place in the health system" (P8).

- **Critical thinking skills**

Critical thinking means correct thinking in the pursuit of relevant and reliable knowledge about the world.

"One of the most important things is to have the ability to think critically" (P3).

- **Skills related to ethics and moral values**

The issue of ethics has always considered due to its scientific place in the culture of societies.

"Some competencies, such as ethics, seem to be common to all people working in the health system" (P2).

"Responsibility and accountability are needed at all levels, but accountability is more needed at higher levels. It is something that many people do not have" (P3).

- **Skills to develop individual capabilities**

Personal development is an effort and investment to develop individual skills. One of the experts said:

"Science is constantly changing. As a result, the health headquarters must be able to use the new sciences" (P9).

- **Individual management and related skills**

These skills help a person to manage and control himself/herself in a variety of situations. One of these skills is anger management that is, learning to control anger and the skill of maintaining calm and composure. Another skill is stress management. This skill refers to a wide range of techniques and methods

designed to control individual stress levels. "It is very important for professionals working at this level to be familiar with stress management skills because they constantly face various pressures" (P11).

In addition, conflict management can increase creativity and promote innovation and change or waste the organization's energy and resources. Another related skill is self-motivation skill. Self-motivation means the ability to motivate oneself to move forward. This issue was also of interest to the experts (P8) (P10).

Fifth theme: Cultural and community competencies

Culture is defined as a complex set of knowledge, beliefs, arts, laws, ethics, habits, and whatever one learns as a community member.

- **Familiarity with community health culture**

A health culture is a coherent and systematic set of goals, values, beliefs, customs, and norms of a people belonging to a large community, ethnicity, or nation that leads to effective unhealthy and healthy behaviors.

"Familiarity with the overall health culture program, which is a set of values, beliefs, and norms that meet the needs of everyday life, is crucial" (P7).

- **Knowledge about the health system**

The health system consists of all organizations, institutions, and resources that provide services to maintain and promote the health of individuals.

"The health headquarters should be familiar with the structure of the health system" (P9).

- **Advocacy and related skills**

Many health programs designed to change behavior are not possible without reforming decision-makers' minds and changing public policy. "They should seek support and advocacy from and interact with other existing social organizations so that they move them in the direction of health goals" (P6).

- **Familiarity with the structure of international health**

The health systems of each country affected by international organizations involved in the field of health.

"They should follow the news of World Health Organization, and they are aware of the information and news inside the country so that they can update their information" (P10).

Sixth theme: Competencies related to administrative activities in the health sector

Working in the public health environment requires a set of skills, abilities, and knowledge that the lack of any of them can lead to dysfunction of experts.

- **Familiarity with the related rules, regulations, and guidelines**

Familiarity with the related rules, regulations, and guidelines provides a clear picture of duties and responsibilities.

"Since health headquarters prepare regulations in the organization, so they must be familiar with the legal basis of the creation of these documents; otherwise the organization will face problems" (P6).

- **Familiarity with administrative correspondence**

Administrative correspondence is the organization's official language, and it could lead to the organization's success and development. "Familiarity with administrative correspondence and knowing the hierarchy of correspondence is of the most important skills" (P4).

- **Familiarity with computer science and related software**

Every employee, regardless of his/her position, should be familiar with a series of specific skills to use technology practically. One of the experts said in this regard:

"Another important issue is the familiarity of health headquarters with different software" (P10).

The skill of honoring the customer

Proper communication of the experts of public and private organizations with the client and providing services to them through desirable and appropriate methods plays an effective role in improving the quality of services and customer satisfaction and correction of their view toward the relevant organization.

"Being customer-oriented, the customer of here can be experts in other areas, and not just outsiders, so this is also important." (P10).

Phase 3: Descriptive results of the third stage: designing a proposed model of competence of HHW

Due to the results obtained from the analysis of the results of the previous steps, the competencies extracted for each level of HHW were determined. The summary of results obtained from this stage of the research has shown in Table 3.

Table 3 Competencies that are needed for any level of health headquarter workers based on mini- Delphi phase findings

	Leadership and management											
	Knowledge management	Performance management	Resource management	Time management skill	Empowerment and counseling and related skills	Control management and related skills	Change management and process improvement skills	Financial management and related skills	Organizing and related skills	Planning and related skills	Policymaking and related skills	Leadership and related skills
Level 3 Headquarters												
Level 2 Headquarters												
Level 1 Headquarters												

Phase 3: Validation of the proposed model of general competencies of HHW by Delphi method

After sending questionnaires, 15 questionnaires were completed and collected. After analyzing the results obtained from the first round of Delphi, regarding the competencies required by the experts of the third level of HHW, all (100%) of the competencies were approved (average agreement scores above 75%). Regarding the competencies required by the second level of HHW, 29 competencies out of 38 items were approved in the first round of Delphi (65.8% of the competencies). Nine competencies entered the second Delphi stage for this group (average agreement scores below 75%), and finally, seven competencies were approved. Also, two items "Planning and related skills" and "Problem-solving, solution-providing, and decision-making skills" were removed from the set of competencies required for this category (average agreement scores less than 75%). Also, regarding the competencies required by the first level HHW, all 13 categories of competencies were agreed upon by the respondents in the first Delphi round.

Finally, in the third round of Delphi, to determine the level of competencies required by each expert group, three-level questionnaires (high level, medium level, and low level) were designed and sent. Fifteen answers were obtained at this stage. Then, based on each competency's mining score, the level of each competency required by each level of HHW was determined. Fig. 2 shows the final model of the general competencies of the HHW that obtained and confirmed in the Delphi phase.

Discussion

This study's model (figure 2) contains six main competencies involve (1) leadership and management, (2) analysis, interpretation, and reporting, (3) interpersonal relationships, (4) individual competencies, (5) cultural and community competencies, and (6) public health competencies that dedicated to three levels of HHW(first, second, and third-level). The required competencies were divided into three levels (high, medium, and low level). Due to the findings, the focus should be on management and leadership competencies in HHW. Due to this group of experts has a major role in supervising and directing human health resources, these capabilities were considered in many health-related and non-health-related organizations(12, 32). In this group of competencies, high-level HHW should have some special abilities such as policy-making and planning. In fact, this group of HHW should be able to formulate policies to face ongoing health challenges in this unpredictable health context. Other studies have also pointed that this ability is crucial for health professionals in high-level working (33, 34). As regards management is a task-oriented process and needs anticipatory decision-making to face health issues complexities, planning skills are essential for the high level of HHW. Many studies announce the importance of this competency as activities to achieve health system goals (35-37). Besides, the existence of other abilities such as knowledge management, performance management, counseling, control management ,change management, financial management, and organizing, resource management are necessary for third and second levels of HHW. Another competency is time management. Regarding the health sector's sensitivity and the importance of time to perform the duties of the HHW working in this sector, this competency is required for all levels of HHW. In one study, this ability was introduced to improve performance and reduce stress in experts (37). Competencies related to analysis, interpretation, and reporting are used to analyze simple or complex, structured or unstructured, and quantitative or qualitative data for specific purposes of understanding, forecasting, and optimization (38). In other words, the analysis process creates a data product - large or small - that provides input to another process (39). Since health systems have faced a multitude of management challenges and issues; meanwhile, research can play an important role in generating knowledge, information, and guidelines to solve health system problems. High-level HHW should be able to use a systematic approach to solve problems tailored to the sector's circumstances. Moreover, the third and second levels of HHW should have Follow-up analysis collecting, analyzing, and interpreting data, subject recognition, and Basic analysis competencies. Today, more information is produced in health organizations, which is used without organizing due to the weaknesses of the experts' skills in this sector. Therefore, developing skills related to information management is of considerable

importance(40). Reporting is one of the most important skills in content production, and mastering or not mastering, it can change the fate of content production activities. The preparation of the smallest organizational documents is also an example of reporting. Almost any written activity in the business environment could consider as reporting. Regarding the nature of the duties of HHW, this skill is required for all levels of HHW.

Another competency related to interpersonal skills. The proper functioning of health-related organizations requires establishing effective communication with people in the community and the use of social interactions to improve health indicators. Combining these skills helps HHW create a common sense with people in the community, communicate with them, and take steps to meet their health needs. This skill has also been emphasized in many studies and was mentioned as a prerequisite for performing tasks for health experts(41, 42). Besides, HHW at all levels should have teamwork skills. Besides, considering the nature of activity in the health sector, which requires a high ability to work in groups, as well as the existence of different and interdisciplinary specialties, various studies have pointed to the importance of this competence (43, 44). Another competency is the networking which achieves by developing and maintaining relationships with people who can create work or resources. In a study, while emphasizing the importance of this skill in experts, it is pointed to its role in creating social support and advocacy, accelerating the receipt of the required information at the organizational level, and creating more desirable job opportunities at the individual level(45).

Other main competency due to the presented model is individual skills. These competencies are not inherent; hence, they are obtained and expand through acquisition. The healthcare environment contains various social and cultural subsystems that operate in an environment full of chaos and complexity. Paying attention to the health system's components and details cannot guide HHW on how the components interact with each other and with other factors in the health environment. Therefore, the need for system thinking skills in high-level HHW is undeniable(46). The existence of creativity and innovation is also important for high-level HHW. Attention to creativity and innovation skills in HHW was emphasized in various studies(47, 48). Besides, having the skill of critical thinking - the existence of rational thinking along with rethinking - that influences decision-making about beliefs and practices is necessary for them. The results of a study show that this skill requires knowledge that a person must have acquired before entering the system(49). Furthermore, due to the need to familiarity with HHW with their strengths, weaknesses, the occurrence of many conflicts and job stresses, all HHW should have self-awareness skills, the ability to develop individual capabilities, and individual management.

Another main competency in this model is cultural and community competency. Since culture affects many aspects of human life, there is no doubt that it also plays an important role in shaping people's behaviors, beliefs, and health values. Therefore, HHW should be able to communicate effectively with different cultures to be aware of the needs of their community (50). Besides, the existence of the basic knowledge of public health is essential to have a better understanding of the conditions and governing this system. The HHW should be familiar with existing goals, strategies, structures, and procedures to help the health system achieve its overall goals by combining this knowledge with other skills (50). In addition, the health system of a country or region cannot be considered a separate part and without being affected by the global health system. Therefore, these experts should have a broad insight into global health and its factors (38). Besides, many programs designed in the field of health cannot be done without modifying the views of decision-makers. The success of the above projects requires the full support of individuals, organizations, and key sectors of society in health programs. Therefore, advocacy skills are among the important needs for high-level HHW. The issue of advocacy in health has been mentioned as one of the important skills for HHW in studies(51, 52). Moreover, gaining social participation as an effective strategy in promoting health is another required competency in this field. Studies have emphasized social participation in the development of health(53, 54).

There are some obvious skills that HHW should have regardless of their level. Familiarity with administrative rules and regulations, and its observance facilitates, accelerates the circulation of administrative affairs of HHW and the administrative activities of the organization(55). Also, in Headquarters, if the HHW are not familiar with the basics knowledge of computers and do not have the knowledge to use general software and operating systems, they will create many problems for their organization over time. Another skill that HHW requires is customer orientation. Some studies have shown that customer-oriented organizations are more satisfied with their customers than organizations with this type of orientation. This competency will have long-term material and immaterial consequences for the organization(56).

The Council on Linkages(13) presented core competencies into eight domains for public health professionals for three levels (front line, supervisory, and executive). Because these competencies are presented for all public health professionals, they are very wide; then they are not usable for HHW. As well as, it is not obvious how the level of these competencies is needed for any level of health workers.

"The UK Public Health Skills and Career Framework"(14) presented to empower public health workers. This framework was designed for nine levels of workers. It contains four-core competencies and five specific competencies for them. In comparison with this study, the present model is specific for HHW, as well as this model is contain of more comprehensive context the same as leadership and management, which includes all four core competencies in UK framework (surveillance, evidence assessment, policy and leadership).

In general, the second and third levels of HHW needed high and middle-level competencies that means these levels of HHW should have all competencies before using them on the top of national health organizations. In this regard, National health managers should consider the HRH strategy to use knowledgeable and experienced HHW (recruiting from the lower level of HHW or public health workers). Besides, without experience and full knowledge and with suitable education can be recruited qualified individuals for first-level HHW who perform low-level staff duties, with the nature of daily and routine duties.

Limitations

In systematic review and meta-synthesis, the main limitation was the limit numbers of studies on the health headquarter workers competencies. We tried to overcome this limitation by using studies that in them, competencies had been graded based on level of health workers.

One limitation for this study in mini-Delphi and Delphi phases was the lack of cooperation of some experts because of covid-19. In this regards we tried to find suitable alternative for these experts. Finally, the main limitation regarding the application of the findings of this research is that using competencies obtained from this research requires the existence of a comprehensive competency-based management system in countries. Despite the efforts made by the researcher, this system maybe is not useable coherently in the health sector of many countries, which may limit the use of the results of this study.

Conclusion

The competencies were extracted due to the levels of HHW, as well as the level of competencies required by each group of experts, which can act as a guide for policy-makers and managers related to human resources in the health sector and help them adopt appropriate strategies to employ and train HHW. HHW plays a major role in supervising and guiding human resources and improving the efficiency and effectiveness of activities of health-related organizations. Therefore, taking the necessary measures to recruit high-level experts with the optimal level of leadership and management competencies is very important. However, since this competency is influenced by personal skills, interpersonal relationships, and other competencies, it is important to pay attention to all six competencies together. Another issue is that third levels of HHW are recruited to work at the highest level of the health organization. Therefore, this group of HHW should have high-level competencies to achieve the goals of the health system. However, according to expert opinions, having these high-level competencies requires knowledge and work experience in other units of the relevant health sector. In other words, third-level HHW must have experience working in related departments and have the necessary knowledge in their field of activity when they are recruited.

Abbreviations

HRH: Human resources for health

HHW: Health headquarters workers

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

SRQR: Critical appraisal tool results for qualitative studies

SDGs: Sustainable development goals

Declarations

Ethics approval and consent to participate

This article was undertaken as part of Ph.D. research. The project has been approved by Iran University of medical sciences Ethics Committee, No: IR.IUMS.REC 1397.441. All interviews were conducted under written informed consent.

Consent for Publication

“Not applicable”

Availability of data and material

The datasets used during the current study are available from the corresponding author on reasonable request.

Competing interests

“Not applicable”.

Funding

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Authors' Contributions

Data gathering+interviews: HF, MB. Analysis: HF, MB, and HG. Methodology: HF, HG and FG. Writing + original draft: HF, MB, AF, FG. Writing + review & editing: HF, MB,AF, and HG. Supervision: HG. Also, all the authors reviewed the draft and approved the final version of the manuscript. All researchers had experiences in field of HRH.

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Figures

Figure 1 Flow Diagram Showing the Different Phases of Searching for Relevant Publications in this study published by Fattahi et al in BMC Public health Journal

Figure 1

Caption in figure

Figure 2 Health headquarter workers competency model

Figure 2

Caption in figure

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