



Knowledge and Skills Needed for Future Health Administrators: A Systematic Review

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Abstract

Background: The educational needs of future health administrators, prioritizing their needs, and developing a relationship between these needs and the needs of the community are very important to provide better responsiveness. We aimed to identify the knowledge and skills required for health care management students as future managers of the health community.

Methods: In this systematic literature review, all studies conducted between 1990 and 2021 were searched in such databases as MEDLINE, Scopus, Web of Science, ProQuest Iran Medex, Magiran and Scientific Information Database (SID), and the collected data were analyzed via the thematic analysis method.

Results: Findings of this study were divided into two main categories and fourteen subcategories, including knowledge-related factors (awareness of the structure and processes in the field of health and knowledge of management science) and skill-related factors (planning, coordination, organization, leadership, control and evaluation, management of financial resources and budgeting, service management, communication and information management, human resource management, implementation of participatory and team activities, crisis management, entrepreneurship, innovation, marketing, policymaking, and decision-making).

Conclusion: By identifying the knowledge and skills that students need, it is possible to empower them through necessary education. Therefore, by providing responsive education, developing skills, and improving capabilities, we can take an effective step to improve the quality of health system services.

Keywords: Knowledge; Skills; Students; Health services; Education; Responsive education

Introduction

Nowadays, education, especially for managers, is one of the main strategies for achieving human

capital and positive adaptation to changing conditions, which are considered as two competitive ad-



vantages of an organization, and therefore, its position and strategic importance in the survival and development of an organization has become manifest (1).

Hospitals, meanwhile, are complex and challenging institutions with the most capital, specialized knowledge and skills, and health equipment. Therefore, management and health are of paramount importance in terms of managing financial resources in these organizations (2). Although most students still put primacy on the qualification purpose of higher education, the integration of these three purposes will have an impact on how education quality may be more clearly understood, better assessed, and more intentionally pursued (3). Considering that hospital managers have a major role in supervising and directing human resources and promoting the efficiency and effectiveness of hospital activities and the ultimate goal of this group is to maintain and ensure the health of the community, we have to mention that these people should have skills and competencies related to hospital management (4).

Health care organizations, especially hospitals, are constantly challenged by internal and external environmental forces such as demographic change, the use of new and expensive technologies, changes in the health market and economic conditions, and reforms in health systems (5). These advances and changes challenge managers' capabilities in the field of health care and require them to review the required competencies and skills (6). Because in recent years, the attention of policymakers and senior managers in the field of health to managerial positions and necessary capabilities for obtaining managerial positions, especially hospital management, has increased, the need for a study on the skills required by management students is becoming more apparent given today's requirements. In this article, based on the review of the available literature, managers' competencies were grouped into four dimensions: technical, cognitive, interpersonal and intrapersonal. Furthermore, the specific competencies underlying each of the dimensions were classified into basic and functional categories, and those that are criti-

cal to the implementation of evidence-based management in hospital settings, including open-mindedness, knowledge and research skills, ethics in research, planning, and relationship management (7). This systematic review was conducted to identify the knowledge and skills required by students in the field of health care management.

Methods

In this systematic review, all studies from 1990 to 2021, in which the knowledge and skills of the participants were the most important variables (either dependent or independent), were examined.

Ethical approval

The study was approved by the National Agency of Strategy Research Medical Education, Tehran, Iran with the code of ethics IR.IUMS.REC.1400.107.

Data extraction

The search strategy was based on the electronic search and hand searching. The main keywords in this systematic review were 'Knowledge, Skill, Education, and Health administrator'. Such databases as MEDLINE (PubMed), Scopus, Web of Science, ProQuest, Google Scholar, Iran Medex, Magiran, and SID were searched.

Search strategy

Our initial search syntax for SCOPUS was as follows:

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(ALL("Knowledge and skills" ) OR TITLE-ABS("health administers") OR TITLE-ABS("Education")) OR AND (TITLE-ABS (Tearing) OR ALL(Education) OR ALL(skills) OR TITLE-ABS ("Knowledge Education") OR ALL("Knowledge management") OR ALL("skills Education") OR ALL("Student Education") OR ALL("Student skills ") OR TITLE-ABS ("Tearing Students ") OR ALL("health administers Education ") OR TITLE-ABS (Students)OR ALL(skills) OR ALL("Knowledge management") OR ALL("Student") OR TITLE-ABS (Tearing) OR ALL("Student Knowledge management") OR
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ALL(“Knowledge management”) OR ALL(“Education”) AND (PUBYEAR < 2021 AND PUBYEAR > 1990).

After that, the search was performed, and the articles were selected based on the titles and abstracts.

After screening, the full text of all the articles was examined. The extraction of relevant information was based on the PRISMA flow chart (Fig. 1).

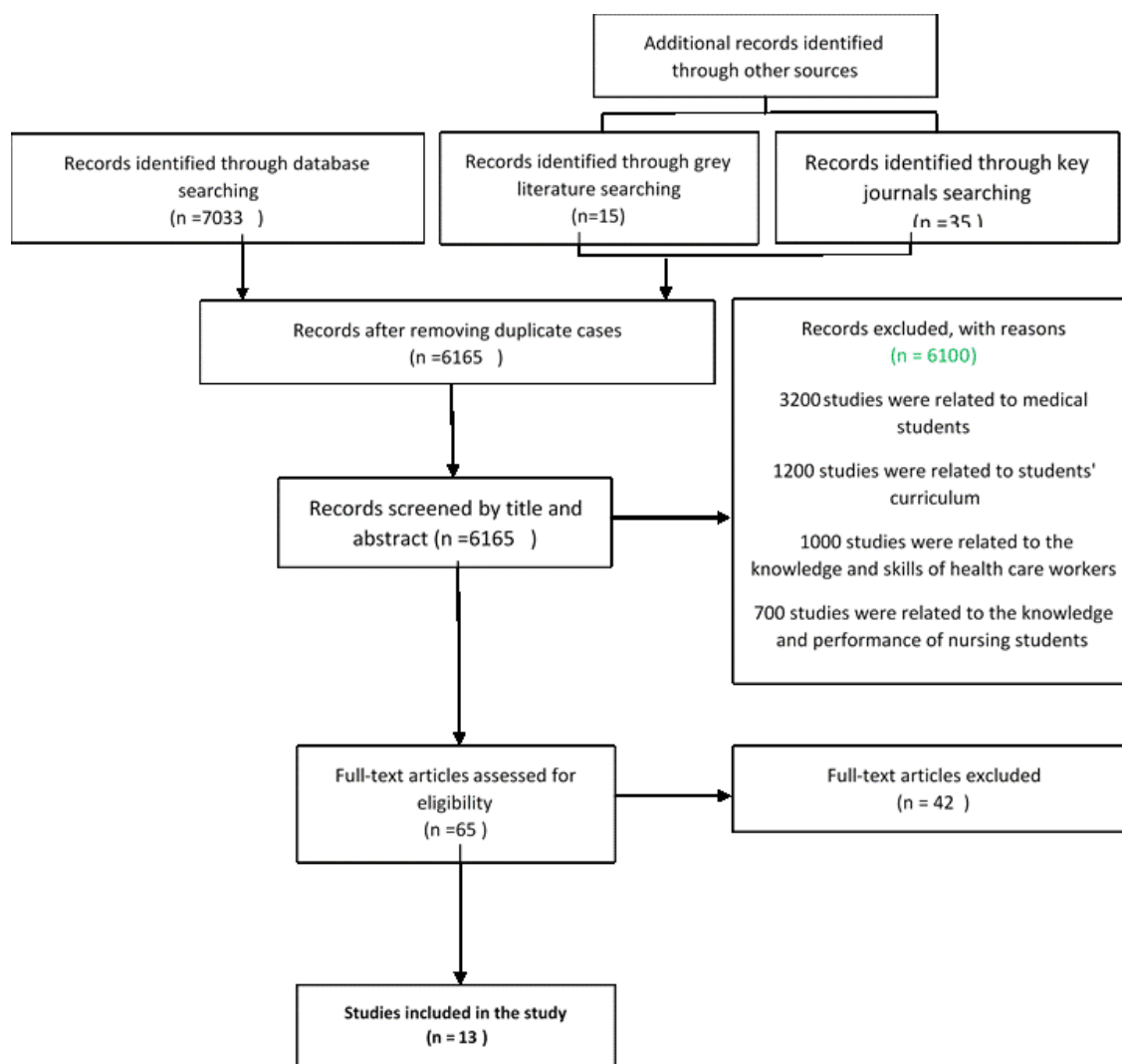


Fig. 1: PRISMA Flow chart: the identification of the knowledge and skills required for the field of health care management

Inclusion and exclusion criteria

In all the studies searched in this systematic review, knowledge and skills were taken into account by the researchers, and the studies related to knowledge, attitudes and skills of students or health care workers were not considered. Therefore, all studies related to health-care workers,

nurses, and curricula were excluded from the study. This study also focused on the knowledge and skills of health care management students, and thus all unrelated studies were excluded (i.e., the knowledge and skills of health care workers and the knowledge and performance of nursing students).

Quality assessment

In this study, all the searched studies were transferred to EndNote software (EndNote X7™, Thomson Reuters) and duplicate references were removed. Afterwards, two authors independently screened the original articles. In this way, first the title and abstract of the articles were reviewed and then the selected articles were divided into three groups: relevant, irrelevant, and unreliable.

The articles found to be irrelevant by two reviewers were removed from the study, and then each reviewer reviewed the full text of the remaining articles and compiled a list of articles he/she had included. Afterwards, the two lists were compared and the discrepancies between them were discussed. In cases where no agreement was reached, the third person from the team made the final decision to include the article.

From each study included in this systematic review, such pieces of information as the author's name, year of publication, purpose, and the most important findings of the study were extracted, as shown in Table 1. Then, the knowledge and skills of health care management students were obtained according to the researcher's data extraction form

The questions in this checklist consist of four main sections: author's name, type of study, findings, and year. All studies included in this systematic review were independently reviewed based on the questions in this checklist CASP.

As can be seen in the PRISMA flow chart, out of 7083 studies that were searched with the syntax search term in the databases, based on the compliance of the title and abstract of the articles with the inclusion and exclusion criteria of this study, the full text of 6165 articles were reviewed, and finally 13 articles were included in this study. Therefore, the knowledge and skills of health care management students were extracted from the findings of these studies, and they were analyzed by means of the thematic analysis method. Out of the total number of searched studies after removing duplicate cases, 6100 studies were excluded due to the lack of inclusion criteria. Therefore, despite focusing on the subject of knowledge and skills, the studies that did not address health care students were excluded from the present study. Finally, although 13 studies aimed at identifying the knowledge and skills of health care students were included in the search results,

The full texts of 65 studies were reviewed based on the checklist, and 42 studies were excluded due to a lack of factors related to the purpose of the current systematic review, namely identifying the knowledge and skills of health care management students. Moreover, out of 16 studies that were reviewed in full text, only three qualitative studies were identified, and they were excluded in the screening stage due to their non-compliance with the inclusion criteria. Hence, 13 studies conducted quantitatively and qualitatively were included in the study (Table 1).

Table 1: Characteristics of the studies based on the identification of the knowledge and skills of the students in the field of health care management

| <i>Findings</i> | <i>Aim</i> | <i>Country</i> | <i>Year</i> | <i>Authors</i> |
|---|--|----------------|-------------|-------------------|
| Seven core management competencies were identified, including operational, resource management and management; awareness of the health and organizational care environment; interpersonal, communication qualities and relationship management; leading individuals and organizations; empowerment and change management and professionalism. | Identifying and validating the competency requirements of managers are the first fundamental steps towards developing a competent management workforce to provide sustainable hospital services. | Australia | 2021 | Kakemam et al.(1) |

Table 1: Continued ...

| | | | | |
|---|---|---------|------|---------------------------------|
| Managerial roles in public and private health organizations, i.e. hospitals, local health units, including organizational management and strategic management | Identifying financial resources for managers based on competencies in the health system and health care systems | Italy | 2021 | Furmenti (2) et al. |
| Strategic skills, perceptual skills, human relations skills, work experience and personal characteristics are among the skills required for hospital managers | Assessing the necessary skills of hospital managers and their abilities to manage challenges in providing health facilities to patients and staff | Iran | 2020 | Moradi (3) et al . |
| Managers' competencies were grouped into four dimensions: technical, cognitive, interpersonal, and intrapersonal | Identify the best quality evidence from various sources in decision making | America | 2020 | Daouk et al. (8) |
| Skills and abilities of the hospital managers include communication, work experience, managerial knowledge, hospital knowledge, motivation and interest, systemic thinking and problem solving, personal characteristics and integrity | Determining the skills, capabilities and needs of hospital managers | Iran | 2020 | Barati et al. (9) |
| Eight key criteria including personality traits, values, basic management knowledge, hospital management knowledge, planning skills, organizing and resource allocation skills, leadership skills, monitoring and supervisory skills | Identifying and validating key management skills and competencies for designing training programs | Iran | 2019 | Mahfozpor [†] et al(4) |
| Personnel management, leadership, strategic management, and problem solving were ranked as the most important factors for efficient and effective management of hospitals. | Determining competency gaps in hospital management | Iran | 2019 | Kakemam et al.(5) |
| Identifying eight key skill issues (communication, experience, appreciation of logistics/institution infrastructure, management skills, motivation, systematic problem solving, ethics, and financial/legal awareness) among hospital managers | Identifying the skills and competencies of hospital managers | Iran | 2016 | Barati et al (6) |
| Training in strategic planning and management improves the strategic decision-making of hospital management teams. | Identifying formal and informal training programs, especially for physicians in leadership positions | Serbia | 2015 | Terzic et al (7) |
| Scientific knowledge and social processes are used to promote healthy life through active participation of citizens in mobilizing resources at the community and national levels | Identifying the knowledge and skills of managers to improve the competence of managers | Nigeria | 2013 | Adindu et al (10) |
| Results showed that the deployment of hospital CEOs and training to equip them with managerial skills may enhance measurable improvements in the performance of health facilities. | Participation evaluation is a system-based approach, hospital management initiative | America | 2012 | Kebede et al (11) |
| Organizing daily activities, motivating and guiding others, monitoring others' work, group discussion, and situation analysis. The least advances were the use of creative techniques, good work with peers, professional self-improvement, written communication, and operational planning. Identified predictors of im- | Analysis of improving the management skills of senior hospital managers after a specific management training program | Serbia | 2010 | Supic et al (12) |

Table 1: Continued ...

provement were shorter years of managerial experience, type of manager, type of profession, and understanding the importance of managerial skills in oral communication, evidence-based decision-making, and overseeing the work of others.

Evaluation should be designed to ensure that the data inform the training activities as well as the health and human resource managers who invest in the development of their staff.

Determining and developing the capacity of the National Center for Public Health Management

Iran

2019

Omar et al
(13)

Results

Thematic analysis was used to compare the finding of the article ‘in the thematic analysis after the complete extraction of the article first codes ‘sub subcategories and categories are considered to extract the data found in the articles. Findings of the present study were divided into two main categories and fourteen subcategories, including knowledge-related factors (awareness of the structure and processes in the field of health and

knowledge of management science) and skill-related factors (planning, coordination, organization, leadership, control and evaluation, financial resource management and budgeting, service management, communication and information management, human resource management, implementation of participatory and team activities, crisis management, innovation, entrepreneurship and marketing, policymaking and decision-making) (Table 2).

Table 2: Identification of the knowledge and skills of health care management students based on a systematic review

| <i>Codes</i> | <i>Sub theme</i> | <i>Theme</i> |
|---|------------------------|--|
| Introduction to Management Sciences | Management science | knowledge |
| Up-to-date managerial knowledge | knowledge | |
| Familiarity with managerial tasks and functions | | |
| Resource Management Knowledge | | |
| Health management knowledge | | |
| Knowledge of Health Economics* | | |
| Knowledge of quality improvement | | |
| Familiarity with data research and analysis | | |
| Introduction to systematic thinking | | |
| Introduction to critical thinking | | |
| Process recognition and management | Awareness of the | structure and processes in the field of health |
| Introduction to different wards of hospital | structure and pro- | |
| Understanding the organization and organizational structure | cesses in the field of | |
| Awareness of medical equipment | health | |
| Familiarity with medical terms | | |
| Medical knowledge | | |
| Possession of pharmaceutical information | | |

Table 2: Continued ...

| | | |
|--|---|--------|
| Familiarity with national and international standards | | |
| Introduction to management support services | | |
| Familiarity with existing laws | | |
| Strategic planning skills | planning | Skills |
| Operational Planning | | |
| Contingency and organizational planning | | |
| Organizing skills | Organize | |
| Coordination skills | Coordination | |
| Leadership and capacity building | Leadership | |
| Staff guidance | | |
| Evaluation of hospital performance | Control and evaluation | |
| Monitoring and evaluation of projects and programs | tion | |
| Supportive monitoring | | |
| Organizational accreditation | | |
| Clinical governance | | |
| TQM | Quality management | |
| Analysis of indicators of TQM | | |
| Quality assurance of health services | | |
| Evaluating and improving quality | | |
| Change management | | |
| Process management and improvement | | |
| Budgeting skills | Financial resource | |
| Health economics and financial resource management | management and budgeting | |
| Health financing | Communication and | |
| Data management | information management | |
| Establishing effective communication | agement | |
| Simulation and virtual training | Human resources | |
| Skills of working with information software | management | |
| Negotiation skills | | |
| Intra-sector communication | | |
| External communication | | |
| Understanding organizational behavior and perceiving behaviors | Crisis Management | |
| Ability to communicate with human resources | | |
| Human resource management and development | | |
| Training and promotion of human resources | Implementation of participatory and team activities | |
| Emergency and crisis management | | |
| Situation Analysis | | |
| Self-management | | |
| Team building and teamwork | | |
| Ability to work with peers | | |
| Motivating and guiding others | | |
| Social marketing | | |

Table 2: Continued ...

| | |
|---|--|
| Innovation and the use of new methods | Innovation, entrepreneurship and marketing |
| Ability in policymaking and decision-making | Policy making and decision making |
| Ethical issues | |
| Evidence-based decision-making | |
| Justice in health | |
| Ability to analyze and solve problems | |
| Prediction and foresight | |
| Problem prioritization skills | |

Discussion

Based on the findings of this study, the following knowledge and skills required for health care management students were identified.

Knowledge-related factors

Education is the systematic acquisition of skills, rules, concepts or attitudes and is one of the most important components of any organization's strategy. Awareness of the structure and processes in the field of health and knowledge of management sciences is one of the factors related to knowledge in the field of health services.

Knowledge of management science

There is a growing demand for formal and informal education programs, especially for physicians in leadership positions (6). Education for strategic planning and management was effective in the strategic decision-making of hospital management teams (7). These skills are the needs for hospitals in an increasingly competitive, complex and challenging context. For the first time, half of the public hospitals involved in team education have developed a formal strategic plan. The positive effects of the formal education program justify further investment in future education (5, 7). In a study by Barti et al., hospital as the most important organization in providing health services needs effective and efficient management more than other organizations, and the skills and abilities of hospital managers are considered important issues, and hospital management requires special skills and abilities. Therefore, health decision-makers and

policymakers should select the hospital manager based on these skills (3). Moradi et al.'s study considered the managers' competence in terms of management skills as one of the most important factors for the continuous success of any organization. They also stated that the use of such skills is positively helpful in the effectiveness of the organization and improvement of staff performance in line with organizational goals (8).

Awareness of the structure and processes in the field of health

Health care organizations are complex and dynamic systems that enhance interactions between multiple patient-related factors, health care physicians, health care teams, physical and social environments, organizational contexts, legislation, and accreditation. They affect the quality and results of care with a wide range of problems that the health care sector faces today, such as increasing the medical needs of the community and reducing the budget of health care managers and their decisions. In addition, technology has had a significant impact on the availability and accessibility of data for health care managers. Access to data is a timely strategic step that can enable managers to better cope with the complexity of health care organizations by relying on the best available evidence to improve their decision-making, resulting in better organizational outcomes (3, 6, 9, 13).

Factors related to skills

Identifying and validating competency requirements of core management are the first fundamental steps towards developing a competent

management workforce to provide sustainable hospital services. Skill-related factors include planning, coordination, organization, leadership, control and evaluation, financial resource management and budgeting, service management, communication and information management, human resource management, implementation of participatory and team activities, crisis management, innovation, entrepreneurship and marketing, policy-making, and decision-making. (6, 12)

Planning

Strategic management and contingency planning involve the implementation and evaluation of cross-functional decisions that enable the organization to achieve its long-term strategic goals. Changes in the external environment (i.e. demographic and epidemiological transmission, economic fluctuations, and public and political expectations) and within the health care system (i.e. health market, demands, costs, new technologies, and regulations) have exerted pressure on hospital managers (12, 13). Implementing strategic management programs to meet environmental challenges. Leadership development using organizational plans implies that a strategic plan must exist in order to achieve these goals with the mission, vision, strategic goals, and operational plans of the organization. A hospital develops strategies that must be derived from a situational or strategic analysis, often by analyzing strengths, weaknesses, opportunities, and threats (1, 6, 12).

Organization and coordination

The greatest advances in operational management skills are the organization of daily activities, internal and external coordination, motivation and guidance, monitoring, group discussion, and situation analysis. Identified predictors of improvement include fewer years of managerial experience, type of manager, type of profession, understanding the importance of managerial skills (such as oral communication), evidence-based decision-making, and supervising the work of others. Some studies indicated that certain types of managers, such as deputies, and certain occupations, such as

economists or head nurses, showed less improvement in some managerial skills, including group discussions, supervision, internal and external coordination, motivating and guiding others and the use of ethical techniques. In recent years, studies have shown that the active participation of physicians in strategic decision-making and in teamwork leads to improved hospital performance, achievement of organizational goals and higher quality of care (1, 9, 12).

Leadership

The role of the hospital managers as the main leaders of the hospitals is undeniable. The manager is the official representative of the organization and is responsible for coordinating and increasing the effectiveness of the organization. On the other hand, the success of an organization depends on achieving goals. Managers as key decision-makers play an important role in dealing with organizational issues and problems (1, 12, 13). Managers should have the most competence in legal and ethical issues, health provision, planning, and change management. People management, leadership, strategic management, and problem solving are ranked as the most important factors for efficient and effective management of hospitals. Studies have shown that the biggest gaps are strategic leadership, management, and problem solving, and the smallest skill gap is in the areas of legal and ethical issues, health care delivery, and change management (2, 6, 12).

Control and evaluation

Health managers at every level need education to acquire the knowledge, skills, and attitudes required to manage complex health organizations. In addition, public health including the application of scientific knowledge and social processes, control and evaluation, accreditation, clinical governance, and supervision is effective in promoting healthy life through active participation in community and national resource mobilization for health measures (2, 13). Monitoring during the management and evaluation of the taken measures can increase the quality of health services, which

in itself can indicate the competence of managers in the health system (12, 13).

Quality management

Low-income countries do not show much information about major efforts to improve the quality of hospital management, although these efforts are a key component of improving health care delivery. Health management education programs include capacity building, service quality control, process management and improvement, and benchmarking, which are deemed basic principles. In addition, the educational activities of health managers are very effective in resource development (2, 12, 13).

Financial resource management and budgeting

Operations, management and resource management, awareness of health care environment and organization, communication quality and management of relationship, leading individuals and organizations, empowerment and change management and professionalism, health economics and financial resource management, budgeting skills, and financing in the field of health are identified as the main managerial competencies required by the managers of mid-level and senior hospitals. However, the ability of individuals, organizations and society must be considered as a whole for management at three levels of individual, organization and society (2, 13). At the individual level, capacities focus on the skills and knowledge of individuals. By providing facilities such as IT equipment and access to magazines and financial resources, organizations provide a framework for individuals' capacities to connect and achieve collective goals. Larger systems provide an environment in which organizations can operate. (6, 7, 13)

Communication and information management

One of the pillars of the integrated development strategy of managers is communication and information management, which is taken into account to achieve organizational goals and is the most appropriate solution to meet the needs of effective communication and communication management in managers (1, 13). One of the main factors in a

workplace that limits the transfer of learning is the lack of participation of senior managers (8). Educational programs should be characterized by the principles of good practice, namely focusing on the accurate assessment of educational needs, proper selection of participants, learning outcomes, content and methods, and evaluation. (3, 7, 12, 13)

Human resource management

Human relation skills depend on the ability to create an environment for coordination and cooperation, to delegate tasks to others, to have effective activities as a group member, to understand individuals' motivations, and to influence behavior (14). Teamwork in solving organizational problems and making decisions leads to better efficiency and performance (3). Studies have shown that educating managers for strategic management and planning, human resource management, and strategic decision-making improves hospital management teams. Human resource management is one of the most important and complex institutions in health care systems that all managers should consider (11, 12, 13).

Crisis management

Crisis management in an emergency is one of the skills required by hospital managers. Studies have shown that the most important skills and competencies required for nursing managers are effective relationships in emergencies (9). Other studies have also emphasized the importance of relationship skills for managers of health centers, especially hospitals (2). Managers' skills lead to an increase in their acceptance and attractiveness among employees, resulting in a reduction in employees' stress and an improvement in their performance in emergencies (8). A systemic mindset is a conceptual framework for problem solving that occurs by focusing on problems and during execution. Problem solving in this method is achieved by finding a pattern to increase organizational perception and to focus on problems (13).

Implementation of participatory and team activities

Achieving the performance goals of any organization depends on many factors, including resources, organizational structure, organizational and group communication, teamwork, organizational culture and norms, information systems and most importantly the management of that organization. Therefore, the development of managerial skills and teamwork is one of the requirements for the development and progress of organizations (13). Any development and change in the organization necessitate providing training for the managers of that organization. Health care organizations, especially hospitals, are constantly challenged by internal and external environmental forces such as demographic change and the use of new technologies, and this in turn challenges the capabilities of managers in the organization, requiring them to review and revise their competencies and skills (2, 12, 13).

Innovation, entrepreneurship and marketing

One of the managers' competencies is the use of innovation and entrepreneurship. The ability to establish professional relationships with individuals in order to facilitate public relations is to understand effective needs and motivations. Team leadership will lead to the ability to direct individual and group activities towards a goal (7, 12, 13).

Policymaking and decision-making

Studies show that people management, leadership, strategic management and problem-solving/analysis skills, and evidence-based decision-making are of primary importance for hospital management in policymaking and decision-making (13, 15), with the largest gaps in these areas. Because hospital managers play a key role in organizational transformation and creating an accountable, efficient, and effective system, their skills need to be relevantly and appropriately strengthened. Organizations that train hospital management should design curricula and courses accordingly. The needs of the workplace and up-to-date management knowledge in the hospital have made it necessary to identify innovative approaches for training hospital managers in order to fill the existing gap in

managerial competencies and meet the needs of current and future managers (3, 7, 12, 13).

This study suffered from some limitations. Due to significant differences in such factors as age, gender, and educational level among students, it was not possible to explain the exact and definite results and to conduct a comprehensive study.

Conclusion

The study revealed a satisfactory degree of readiness and a generally positive attitude among students regarding shared learning and the value of teamwork and collaboration. Hence, it is suggested that practical and skill-based training for students in the field of health care management be highlighted to be more appropriate to meet the challenges of the real world and the needs of society. In order to have an education that is responsive and tailored to the needs of the community, it is suggested that internships as separate units in the fields of finance, disaster and human resources be implemented in management groups and that each student complete each internship with one of these goals by the end of the course. As a result, before graduation, they can become practically familiar with a set of key skills in the workplace that the current curriculum does not address.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

None declared.

References

1. Kakemam E, Janati A, Mohaghegh B, et al (2021). Developing competent public hospital managers: a qualitative study from Iran. *Int J Workplace Health Manag*, 14 (2): 149-163.
2. Furmenti M, Barbara A, Voglino G, et al (2021). Assessment of the healthcare managerial skills offered by the Italian post-graduate schools of public health. *Ann Ig*, 33 (2):141-51.
3. Moradi F, Toghroli R, Abbas J, et al (2020). Hospital managers' skills required and onward challenges: A qualitative study. *J Educ Health Promot*, 9:228.
4. Mahfoozpour S, Marzban S, Nazari-Shirkouhi S, et al (2019). Selection criteria of public hospital managers in Iran health system. *Journal of Health Administration*, 22 (2):86-98.
5. Kakemam E, Dargahi H (2019). Competencies gap in hospital management in Tehran, Iran: a cross-sectional survey. *J Health Manag*, 21(4):451-64.
6. Barati O, Sadeghi A, Khammarnia M, et al (2016). A Qualitative Study to Identify Skills and Competency Required for Hospital Managers. *Electron Physician*, 8 (6): 2458-65.
7. Terzic-Supic Z, Bjegovic-Mikanovic V, Vukovic D, et al (2015). Training hospital managers for strategic planning and management: a prospective study. *BMC Med Educ*, 15:25.
8. Daouk-Öyry L, Sahakian T, van de Vijver F (2021). Evidence-Based Management Competency Model for Managers in Hospital Settings. *Brit J Manage*, 32: 1384-1403.
9. Barati O, Kamerneya M, Sadeki A, Seyavosi E (2016). Skills, capabilities, and requirements of hospital managers: A qualitative study. *J Qual Res Health Sci*, 5(1): 17-28.
10. ADINDU A (2013). Management training and health managers perception of their performance in Calabar, Nigeria. *Management in Health*, 17 (4):14-19.
11. Kebede S, Mantopoulos J, Ramanadhan S, et al (2012). Educating leaders in hospital management: A pre-post study in Ethiopian hospitals. *Global Public Health*, 7 (2): 164-74.
12. Supic ZT, Bjegovic V, Marinkovic J, et al (2010). Hospital management training and improvement in managerial skills: Serbian experience. *Health Policy*, 96 (1): 80-9.
13. Omar M, Gerein N, Tarin E, et al (2009). Training evaluation: a case study of training Iranian health managers. *Hum Resour Health*, 7:20.
14. Moslehi S, Masoumi G, Barghi-Shirazi F (2022). Benefits of simulation-based education in hospital emergency departments: a systematic review. *J Educ Health Promot*, 11: 40.
15. Moslehi S, Manesh PA, Asiabar AS (2015). Quality measurement indicators for Iranian health centers. *Med J Islam Repub Iran*, 29 :177.