



OPEN ACCESS

EDITED BY

Talal Ali Alharbi,
Qassim University,
Saudi Arabia

REVIEWED BY

Bushra Alshammari,
University of Hail,
Saudi Arabia
Ebtsam About Hashish,
Alexandria University,
Egypt
Fryal Alqahtani,
Imam Abdulrahman Bin Faisal University,
Saudi Arabia

*CORRESPONDENCE

Katarzyna Dubas-Jakóbczyk
✉ Katarzyna.Dubas@uj.edu.pl

SPECIALTY SECTION

This article was submitted to
Health Economics,
a section of the journal
Frontiers in Public Health

RECEIVED 22 December 2022

ACCEPTED 08 March 2023

PUBLISHED 23 March 2023

CITATION

Ndayishimiye C, Dubas-Jakóbczyk K,
Holubenko A and Domagała A (2023)
Competencies of hospital managers – A
systematic scoping review.
Front. Public Health 11:1130136.
doi: 10.3389/fpubh.2023.1130136

COPYRIGHT

© 2023 Ndayishimiye, Dubas-Jakóbczyk,
Holubenko and Domagała. This is an open-
access article distributed under the terms of
the [Creative Commons Attribution License
\(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction
in other forums is permitted, provided the
original author(s) and the copyright owner(s)
are credited and that the original publication in
this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted which
does not comply with these terms.

Competencies of hospital managers – A systematic scoping review

Costase Ndayishimiye¹, Katarzyna Dubas-Jakóbczyk^{1*},
Anastasia Holubenko² and Alicja Domagała³

¹Department of Health Economics and Social Security, Institute of Public Health, Jagiellonian University Medical College, Kraków, Poland, ²Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland, ³Department of Health Policy and Management, Institute of Public Health, Jagiellonian University Medical College, Kraków, Poland

Hospital managers around the world work under constant pressure to adapt their organizations to new challenges and health policy goals. This requires a comprehensive set of competencies. The objective of this scoping review was to identify, map, and systematize the literature on hospital manager competencies. The review involved six steps: (1) defining research questions; (2) identifying relevant literature; (3) selecting publications; (4) data extraction; (5) data analysis and result reporting; and (6) consultations. A total of 57 full-text publications were included (46 empirical studies, six literature reviews, four expert opinions/guidelines, and one dissertation). Interest in this topic has grown in recent years, with most of the identified studies published since 2015. The empirical studies fall into three major groups: 34.8% (16/46) examined hospital managers' competencies in terms of their types or classifications; 30.4% (14/46) focused on their measurement; and 30.4% (14/46) examined both aspects. In majority of studies, both 'hard competencies,' such as specific technical knowledge or skills acquired through practical training, and 'soft competencies,' e.g., adaptability, leadership, communication, teamwork, are echoed for effective hospital management. These point out the importance of both 'external' formal education trainings as well as 'internal' peer-support and/or coaching as complementary competency improvement approaches. This scoping review helps build a knowledge base around the topic and provides implications for future research. The latter can involve: a targeted systematic review addressing the methods for measuring the level of competence of hospital managers or studies focused on identifying the need for new types of competencies.

KEYWORDS

hospital manager, competencies, skills, hospital administration, hospital management

1. Introduction

Healthcare systems around the world are constantly facing multiple challenges, including the growing healthcare needs of an aging population, shortages of healthcare professionals, and the rising cost of healthcare services. In recent years in particular, the pressure on healthcare systems has increased tremendously. The COVID-19 pandemic has accelerated and forced further rapid change, as well as the need for resilient adjustments at both the system and organizational levels (1, 2). Hospitals are unique and complex types of organizations that constitute the core of health care providers. They function in a highly regulated environment

and operate under pressure to adjust to changes in both health policy objectives and external determinants (2, 3). These challenges influence the demand for developing and/or enhancing hospital managers' competencies, which are critical to effectively manage and improve hospital productivity. Currently, healthcare managers are operating in a vastly changing hospital environment, including tremendous workforce shortages (4), changing models of care (4, 5), pressures related to cybersecurity issues (6), and the "green hospital" movement (7). Hence, the need to examine and develop the competencies with which they should be equipped to address recent realities in hospital management. The competency-based approach is based on the level of knowledge, skills, and abilities of employees (8). The evidence suggests the existence of a core management competencies model for hospital managers (9–12).

Guided by the general objectives of scoping reviews, we aimed at identifying, mapping, and systemizing the literature on hospital manager competencies (13, 14). Our objective was to review the existing studied by classifying identified items by a pre-defined set of criteria (e.g., when, where and what type of studies were published; what was their main focus; what methods were applied, etc.). We aimed at exploring the breadth of existing literature (15), including empirical research, technical reports, expert opinions, dissertations, etc., and identifying potential research gaps. Several thematically related literature reviews have already been published. However, these either focused on specific types of competencies and/or included only certain types of empirical research (12, 16, 17) or were narrowed to a limited number of countries (18). As such, our aim was to provide a comprehensive overview and to map the existing literature into three predefined categories: (1) type/classification of competencies (were existing competency models used?); (2) their measurement (what instruments were used?); and (3) the relationship between hospital managers' competencies and hospital-level outcomes (what metrics were used?).

2. Methods

A systematic scoping literature review was conducted following the methodological guidelines developed by Arksey and O'Malley (19) and updated by Levac et al. (20). The work involved six sequential stages: (1) definition of specific research questions; (2) identification of relevant literature; (3) selection of evidence; (4) extraction of evidence; (5) data analysis, summary and reporting of findings; and (6) consultations. The review protocol was registered with the Open Science Framework (21). Results were reported using the PRISMA-ScR checklist (22).

2.1. Defining review questions

The following specific review questions (RQ) have been defined:

1. What periods and geographical areas are covered by the identified publications?
2. What type of publications are available?
3. What is the focus of the identified publications?
4. What methods were used in the identified empirical studies?
5. What results were obtained or what conclusions were drawn?

2.2. Identification of the relevant literature

We searched the following seven databases: (1) Medline *via* PubMed; (2) Web of Science; (3) Scopus; (4) ABI/INFORM *via* ProQuest; (5) APA PsycInfo *via* EBSCO; (6) CINAHL *via* EBSCO; (7) Business Source Complete *via* EBSCO. The search strategy was developed iteratively. We combined terms from two core themes: (1) hospital manager AND (2) competency. Multiple synonyms were used for each theme (Supplementary Table S1). We searched for terms in the title and/or abstract published since 2000. The search was conducted in June 2022. The reference lists of publications included in the review were manually searched to find additional studies of interest. In addition, websites of international organizations active in the field of health management and scientific journals on this topic were also manually searched (Supplementary Table S2).

2.3. Selection of publications

Publications were selected in two steps: screening of abstracts and assessment of full texts based on predefined inclusion and exclusion criteria. Studies were included (1) if they dealt with the competencies of senior and middle-level hospital managers; (2) if they were peer-reviewed empirical studies, theoretical papers, technical reports, expert opinions/guidelines books, chapters or dissertations; and (3) if the full text was in English. They were excluded if: (1) they did not focus on the competencies of middle- or senior level hospital managers (this exclusion covered, among others, three main subcategories: studies on first-line hospital management physicians/nurses practice managers/coordinators, clinical team managers/leaders, defined in our review as those who have having direct contact with patients; studies on managers working outside the hospital settings – e.g. in primary, community, or long-term care; studies examining the knowledge or attitudes of hospital managers, but in some narrowly defined areas such as, waste management and infection control); (2) had the incorrect type of publication (book reviews, commentaries, cover letters, conference abstracts, or other types publications that are not full texts); (3) full texts in were in another language. The justification behind decision to exclude studies on managers involved directly with patient care – e.g. case managers (defined by us as first line managers) was based both on the review's focus on hospital managers with the greatest influence/decision making power on the organization as a whole and on the pragmatic approach of not mixing organizational management competencies with those related to direct patient care, e.g., within coordinated care programs. The decision to exclude studies focusing on hospital managers' knowledge in some narrowly defined topic, like waste management was also based on our review more comprehensive approach to competencies.

Two researchers (CN and AH) participated in both phases in parallel (to compare the selection and assess the level of agreement). In case of disagreement, a third researcher (KDJ) was involved in the process, to discuss and reach a final agreement. The designated software was used (Mendeley and Rayyan).

2.4. Data extraction

Data extraction tables were developed using MS Excel forms and tailored to the type of publications included (separate tables were used

for empirical studies and other types of publications). Each section of the extraction table was matched with the specific research question. The extraction was also conducted independently by two researchers (CN and AH), then compared and finalized. [Supplementary Table S3](#) provides an example of the data extraction table for empirical studies.

2.5. Data analysis and reporting

Both quantitative and qualitative methods (thematic analysis) were used for data analysis and synthesis. The included publications were grouped according to predefined categories. The codes assigned in the extraction table were used for quantitative summaries. For example, based on the main focus of empirical studies, three categories were distinguished: (1) studies on the types or classifications of hospital managers' competencies; (2) measurement of competencies; and (3) the relationship between competencies and hospital-level outcomes. The results of the review were compiled in the form of tables.

2.6. Consultations

The preliminary findings were presented at the internal seminar at the authors' institution in December 2022, attended by 40 hospital managers and healthcare management experts. The purpose of the consultation was to validate the results and provide directions for further, in-depth research.

3. Results

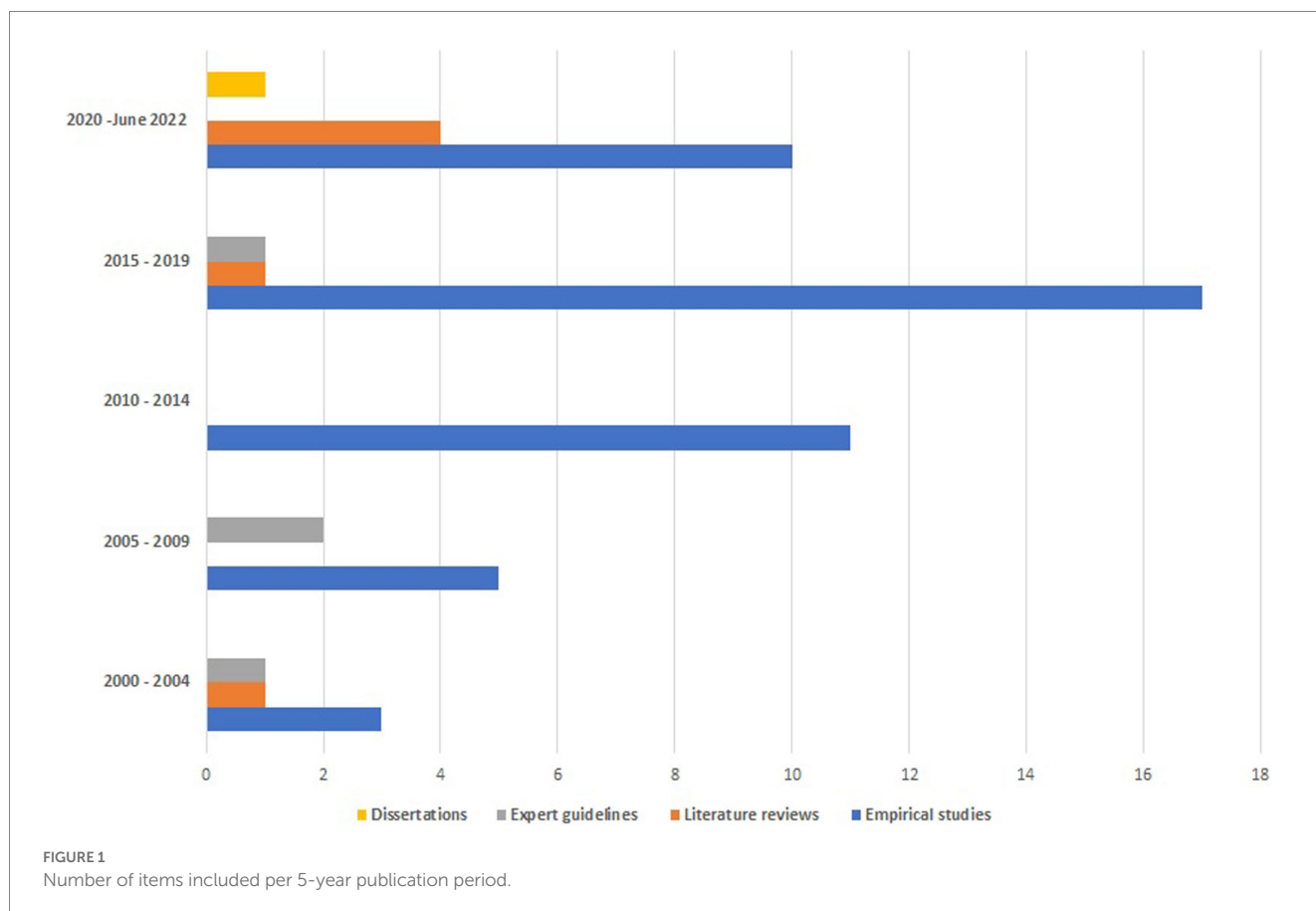
3.1. Search results

Searches in seven databases yielded 9,764 records ([Supplementary Tables S4–S10](#) show the search results for each database). A further 22 records were identified through manual searches of relevant organizations and journal websites. After removing duplicates, 4,378 records were screened for titles and abstracts, after which 189 publications were retrieved for full-text analysis. A total of 42 publications met the inclusion criteria. Screening of the reference list led to the inclusion of 15 additional articles. Thus, 57 publications were included in the final synthesis (9, 10, 12, 16, 18, 23–74). A PRISMA flow chart of the results is attached ([Supplementary Figure S1](#)). [Supplementary Table S11](#) provides a list of all included studies by year, country, and type of publication, as well as the full reference information.

3.2. Type of publications

The 57 publications include 46 empirical studies (10, 23–63, 71–74), six literature reviews (12, 16, 18, 64–66), four publications classified as expert opinions/guidelines (9, 67–69) and one dissertation (70). The publications were published between 2002 and 2022, with the majority (60% or 34/57) published since 2015 ([Figure 1](#)).

Five of the six included literature reviews have been published since 2015. Two reviews (64, 66) did not report the number of



included studies, while the others included between 12 and 33 studies. The review of various aspects of competencies of senior and middle-levels healthcare managers was the focus of all six reviews (Supplementary Table S12). Three reviews investigated the types or classifications of competencies required by hospital managers in specific thematic areas [e.g., leadership (12), value-based care (16) or general competencies in a small number of specific countries [e.g., developing countries (18)]]. One review provided a rather broad overview of issues related to *competency-based education and training* for health care managers (64). The remaining two reviews (65, 66) analyzed healthcare managers' leadership competencies. The four expert guidelines provided recommendations on general competencies for hospital management, all focused on United States (US) health system (9, 67–69). Finally, the PhD thesis (70) was also from the US and analyzed the scope of managerial competencies that drive successful change initiatives using several empirical examples.

3.3. Empirical studies classification

Table 1 shows the general overview of 46 empirical studies. Geographically, most studies were from Asian countries (36% or 16/46), followed by the Americas ($n=10$), Australia ($n=9$), Africa ($n=6$), and Europe ($n=4$) (Supplementary Figure S2). One study included countries from two different geographical regions (i.e., different continents), namely Brazil and Australia (44). When broken down by country, 57% ($n=26/46$) of all studies were from only three countries, namely Iran ($n=10$), Australia ($n=9$), and the United States ($n=7$).

Of the 46 empirical studies (shown in Table 1), 34.8% (16/46) contained information on the types/classifications of hospital managers' competencies, 30.4% (14/46) included information on their measurement, 30.4% (14/46) included both of these two aspects, and one study examined both types of competencies and their relationship simultaneously. The latter identified the levels of decision-making and problem-solving skills of hospital administrators and determined the interrelationships between these skills and other administrative skills (57). Only one empirical study focused exclusively on examining the relationships between hospital managers' characteristics (including competencies) and resource management capacity (72). Most studies (38/46) focused on the competencies of senior-level hospital managers, including 23 that analyzed the competencies of senior and middle-level managers simultaneously.

Of the 45 studies that focused on the types and/or measurement of hospital managers' competencies, 60% (27/45) used quantitative methods (mostly surveys and questionnaires, followed by statistical analyses), 17.8% (8/45) used qualitative methods (interviews with thematic analysis), and 22.2% (10/45) used a mixed-methods approach. Majority of studies reported that both 'hard competencies' such as specific technical knowledge (44, 48) or skills acquired through practical training (41, 44, 63, 72), and 'soft competencies,' e.g., adaptability (63), leadership (30, 43, 48, 67, 69), effective communication (9, 30, 44, 45, 48, 67, 69), teamwork (9, 30, 44), time management (43–45, 72), creativity (43, 44, 48), and decision-making (43, 67), are needed for effective hospital management. As a consequence, many researchers pointed out the importance of both 'external' formal education training/certificates as well as 'internal' peer-support, mentoring, and/or coaching as complementary competency improvement approaches.

The majority of studies that focused on measuring the level of hospital managers' competencies applied a quantitative approach (79%, or 22/28). The researchers either developed their own questionnaire/survey for the purpose of their study ($n=15/28$) or used existing tools ($n=10/28$). Examples of existing, validated tools included the Management Competence Assessment Tool for Health Care Managers (MCAP) used in three studies (38, 39, 41), and the questionnaire designed by the International Hospital Federation (IHF) used in two studies (28, 54). The first includes elements related to professionalism and is divided into six core competencies: (1) evidence (evidence-based decision-making); (2) resources (operation, administration, and management of resources); (3) knowledge (knowledge of organizational health environments and communications); (4) interpersonal communication skills and relationship management; (5) leadership (leadership of people and organizations); and 6. change (enable and manage changes). The IHF questionnaire consists of 80 competencies contained within five domains, namely: (1) business, (2) communication and relationship management, (3) health and healthcare environment, (4) leadership, and (5) professional and social responsibility. In all studies, the measurement of the level of competencies was "subjective" – hospital managers themselves rated their competencies. An additional 'cross-check' component was added in five studies (36, 38, 39, 56, 61). The latter included either an additional survey conducted among supervisors (61) or a 360-degree feedback process (36, 38, 39, 56). In the latter case, hospital managers' competencies were also assessed by their peers [e.g., community managers (36)].

4. Discussion

Our review identified and systematized the literature on hospital manager competencies. Between 2000 and June 2022, a total of 57 full text English publications were published, including 46 empirical studies (10, 23–63, 71–74), six literature reviews (12, 16, 18, 64–66), four expert opinions/guidelines (9, 67–69) and one doctoral dissertation (70). The review showed increasing interest in the topic, with most studies released since 2015. Most of the 46 empirical studies were from Asian countries (36% or 16/46), followed by the Americas ($n=10$) and Australia ($n=9$). Also, all expert opinions/guidelines were from the United States. The geographical distribution of the identified publications indicates a research gap in both theoretical/conceptual and empirical research on hospital manager competencies in European settings. This finding is partly in line with the results of other studies showing that there is a lack of research on hospital financial management in Europe compared to the US (75). This may be related to the traditionally less market oriented health system structures in European countries and the slower adaptation of most up-to-date management solutions.

The empirical studies focused primarily on the competencies of senior-level hospital managers and included an analysis of their types or classification (definition of the main dimensions of competencies) or measurement (subjective assessment of the level of competency). The review found a research gap in terms of empirical studies focusing on the relationship between hospital managers competencies and hospital-level outcomes. However, the latter, may be the result of our inclusion criteria for the review. As we excluded studies that focus on hospital managers' knowledge in some specific, narrowly defined topic

TABLE 1 Empirical studies overview.

Ref. no	Abbrev.	Country	Study main topic ^a	Type of managers ^b	Type of study ^c
(63)	Abdi et al. (2022)	Iran	T	Not stated	QL
(74)	Barati et al. (2016)	Iran	T	S	QL
(23)	Collins et al. 2015	US	T	S	QN
(24)	Dadgar et al. (2012)	Iran	T	M	QL
(10)	Garman et al. (2011)	US	T	S, M	QN
(30)	Kakemam et al. (2021)	Iran	T	S, M	QL
(34)	Leggat (2007)	Australia	T	S	QN
(35)	Lehr et al. (2011)	Germany	T	S	QN
(37)	Liang et al. (2010)	Australia	T	S	Mix
(39)	Liang et al. (2018)	Australia	T	S, M	Mix
(43)	Mahdavi et al.(2020)	Iran	T	M, S	QL
(50)	Pillay (2008)	South Africa	T	S, M	QN
(55)	Shewchuk et al. (2005)	US	T	S	Mix
(58)	Van Tuong and Thanh (2017)	Vietnam	T	M, S	Mix
(62)	Wallick (2002)	US	T	S, M	QL
(59)	Wongprasit (2014)	Thailand	T	S	QL
(73)	Babinski (2016)	US	T, M	S, M, N	QN
(26)	Guo (2003)	US	T, M	S	QL
(61)	Howard et al. (2018)	Australia	T, M	S, M	QN
(28)	Jafari et al. (2019)	Iran	T, M	S, M, N	QN
(32)	Khadka et al. (2014)	Nepal	T, M	M, S	QN
(40)	Liang et al. (2013)	Australia	T, M	M, S	mix
(41)	Liang et al. (2020)	China	T, M	S	mix
(42)	MacKinnon et al. (2004)	Canada	T, M	S, M, N	QN
(44)	Martins et al. (2022)	Australia, Brazil	T, M	S	mix
(46)	Messum et al. (2016)	Australia	T, M	M	QN
(51)	Pillay (2008)	South Africa	T, M	S	QN
(53)	Pillay (2010)	South Africa	T, M	S	QN
(54)	Ramirez et al. (2019)	Mexico	T, M	S, M	QN
(56)	Shojaei et al. (2011)	Iran	T, M	S, M	QN
(57)	Toygar and Akbulut (2013)	Turkey	T, A	S, M, N	Mix
(71)	Aini (2018)	Indonesia	M	S, M	Mix
(25)	Fanelli et al. (2021)	Italy	M	M	QN
(29)	Kakemam and Dargahi (2019)	Iran	M	S	QN
(31)	Kalhor et al. (2016)	Iran	M	S	QN
(33)	Landry et al. (2012)	US	M	S, M	QN
(36)	Liang et al. (2016)	Australia	M	M	QN
(38)	Liang et al. (2017)	Australia	M	M	QN
(27)	Liang et al. (2018)	Australia	M	M	QN
(60)	Lockhart and Backman (2009)	Canada	M	S, M	mix
(45)	Mehrnoosh et al. (2020)	Iran	M	S, M, N	QN
(47)	Ogbonnia et al. (2018)	Nigeria	M	S, M	QN
(48)	Okonkwo et al. (2020)	Nigeria	M	M	QN
(49)	Patnaik et al. (2017)	India	M	S	QN
(52)	Pillay (2008)	South Africa	M	S, M	QN
(72)	Aktan and Sahin (2021)	Turkey	A	S, M	QN

^aT, type; classification; M, measurement; A, associations; O, other. ^bS, senior; M, middle; N, nursing. ^cQL, qualitative; QN, quantitative, mix.

we have also excluded studies that could, for example, assess the association between hospital managers' knowledge in financial management and hospital financial metrics outcomes.

Studies on hospital managers' competencies are related to their main tasks and challenges. Currently, hospital managers are focused on many pressing priorities, including the expansion of care delivery, significant staff shortages, the rapid development of new medical technologies, and the use of Big Data. Based on the results of the study conducted in 2022 among 3000 managers from 15 countries, the three core priorities for hospital leaders have been indicated as follows: (1) improving the staff experience (including job satisfaction and retention); (2) bridging the gap between the promise of predictive analytics and current usage (as an opportunity to improve the quality of care, reducing costs, and speed healthcare delivery); (3) addressing threats to healthcare data security (76). Such fundamental changes require urgent shift in managers' priorities, a reassessment of their training needs, and the acquisition of a range of new competencies. Hospital managers and experts who participated in our consultations also emphasized the need for a stronger focus on soft skills. The development of these capabilities is necessary for effective human resources management (including staff motivation, protection of employees' well-being and mental health, team building, and management of interprofessional and age-diverse team management) and successful collaboration with different stakeholders. These recommendations are in line with the latest World Health Organization report on health workforce (4).

The main strengths of our review compared to previously published reviews, e.g., Kakemam et al. (12) or Walsch et al. (16), are: a broader scope of sources searched (seven databases plus a screening relevant organizational websites and journals); broader inclusion criteria (e.g., inclusion of grey literature; inclusion of studies on the association between competencies and hospital outcomes); and provisions of geographical classification of the published literature. The main limitations are that only English-language publications were included and that the quality of the included studies was not assessed. While the latter is in line with the guidelines for conducting scoping literature reviews (13), it limits our ability to formulate implications for policy makers. In addition as mentioned earlier, for the feasibility of the study, this review excluded studies that focused on a narrowly defined scope of hospital managers knowledge.

Despite these limitations, our scoping review contributes to building a knowledge base around the topic of hospital managers' competencies and provides implications for further research. For example, a future, targeted systematic review could address the methods used to measure hospital managers' competency levels. Such a systematic review could ask a narrow research question about the use of 360-degree feedback to evaluate competencies. This model provides an objective, multi-sourced and comprehensive assessment (77) and its application in healthcare setting is growing (78). More evidence on how to adequately measure hospital managers' competencies is a prerequisite for planning research on the impact of

these competencies. New, appropriately planned original research could focus on identifying the needs for upgraded competencies that arise from the current problems and challenges facing health systems. The latter could include emergency and disaster risk management (79), cyber security (6), and changes in health workforce structures (4, 5). Finally, the deficits in theoretical and empirical work on hospital managers' competencies in the European context represent an important research gap that deserves further investigation.

Author contributions

KD-J: conceptualization and supervision. KD-J and AD: methodology. KD-J, CN, and AH: acquisition of data and data analysis. KD-J, CN, and AD: findings interpretation and manuscript writing. KD-J, AD, and CN: manuscript review and revision. All authors meet the authorship criteria and agree to the submission of the manuscript, made substantial contributions to the conception or design of the work, according to the International Committee of Medical Journal Editors (ICMJE) and to the Committee on Publication Ethics (COPE).

Funding

This publication arises from the project funded by National Science Centre Poland (No 2022/06/X/HS4/00040) entitled: Hospital managers competencies – a systematic scoping review.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpubh.2023.1130136/full#supplementary-material>

References

1. European Observatory on Health Systems and Policies Anna S, Webb E, Azzopardi-Muscat N, de la Mata I, Martin M, et al. *Health systems resilience during COVID-19: Lessons for building back better*. Copenhagen: World Health Organization (2021). 108 p.
2. Ndayishimiye C, Sowada C, Dyjach P, Stasiak A, Middleton J, Lopes H, et al. Associations between the COVID-19 pandemic and hospital infrastructure adaptation and planning—a scoping review. *Int J Environ Res Public Health*. (2022) 19:8195. doi: 10.3390/ijerph19138195

3. Durán A, Wright S. *Understanding hospitals in changing health systems*. 1st ed. London: Palgrave Macmillan (2020).
4. WHO Regional Office for Europe. *Health and care workforce in Europe: Time to act*. Copenhagen: World Health Organization. Regional Office for Europe (2022).
5. World Health Organization. *Continuity and coordination of care: A practice brief to support implementation of the WHO framework on integrated people-centred health services*. Geneva: World Health Organization (2018).
6. Argaw ST, Troncoso-Pastoriza JR, Lacey D, Florin M-V, Calcavecchia F, Anderson D, et al. Cybersecurity of hospitals: discussing the challenges and working towards mitigating the risks. *BMC Med Inform Decis Mak.* (2020) 20:146. doi: 10.1186/s12911-020-01161-7
7. Global Green and Healthy Hospitals. Acting together for environmental health. Available at: <https://greenhospitals.org/>
8. Arifin MA. Competence, competency, and competencies: a misunderstanding in theory and practice for future reference. *Int J Acad Res Bus Soc Sci.* (2021) 11:755–64. doi: 10.6007/IJARBS/v11-i9/11064
9. Calhoun JG, Dollett L, Sinioris ME, Wainio JA, Butler PW, Griffith JR, et al. Development of an interprofessional competency model for healthcare leadership. *J Healthc Manag.* (2008) 53:375–89. doi: 10.1097/00115514-200811000-00006
10. Garman A, Scribner L. Leading for quality in healthcare: development and validation of a competency model. *J Healthc Manag.* (2011) 56:373–84. doi: 10.1097/00115514-201111000-00005
11. Calhoun JG, Vincent ET, Baker GR, Butler PW, Sinioris ME, Chen SL. Competency identification and modeling in healthcare leadership. *J Health Adm Educ.* (2004) 21:419–40.
12. Kakemam E, Liang Z, Janati A, Arab-Zozani M, Mohaghegh B, Gholizadeh M. Leadership and management competencies for hospital managers: a systematic review and best-fit framework synthesis. *J Healthc Leadersh.* (2020) 12:59–68. doi: 10.2147/JHL.S265825
13. Peters MDJ, Godfrey CM, Khalil H, McInerney P, Parker D, Soares CB. Guidance for conducting systematic scoping reviews. *JBI Evid Implement.* (2015) 13:141–6. doi: 10.1097/XEB.0000000000000050
14. Munn Z, Pollock D, Khalil H, Alexander L, McInerney P, Godfrey CM, et al. What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. *JBI Evid Synth.* (2022) 20:950–2. doi: 10.11124/JBIES-21-00483
15. Peters MDJ, Marnie C, Tricco AC, Pollock D, Munn Z, Alexander L, et al. Updated methodological guidance for the conduct of scoping reviews. *JBI Evid Synth.* (2020) 18:2119–26. doi: 10.11124/JBIES-20-00167
16. Walsh AP, Harrington D, Hines P. Are hospital managers ready for value-based healthcare? A review of the management competence literature. *Int J Organ Anal.* (2020) 28:49–65. doi: 10.1108/IJOA-01-2019-1639
17. Karsikas E, Meriläinen M, Tuomikoski A-M, Koivunen K, Jarva E, Mikkonen K, et al. Health care managers' competence in knowledge management: a scoping review. *J Nurs Manag.* (2022) 30:1168–87. doi: 10.1111/jonm.13626
18. Malmoon Z, Tourani S, Maleki M, Jafari M. Future competencies for hospital management in developing countries: systematic review. *Med J Islam Repub Iran.* (2020) 34:15. doi: 10.47176/mjiri.34.15
19. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol Theory Pract.* (2005) 8:19–32. doi: 10.1080/1364557032000119616
20. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci.* (2010) 5:69. doi: 10.1186/1748-5908-5-69
21. Ndayishimiye C, Dubas-Jakóbczyk K, Holubenko A, Domagala A. Competencies of hospital managers - a systematic scoping review. Open Science Framework Registration. (2022). Available at: <https://osf.io/7qz8f/>
22. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med.* (2018) 169:467–73. doi: 10.7326/M18-0850
23. Collins SK, McKinnies R, Collins KS. Leadership characteristics for health care managers. *Health Care Manag.* (2015) 34:293–6. doi: 10.1097/HCM.0000000000000078
24. Dadgar E, Janati A, Tabrizi JS, Asghari-Jafarabadi M, Barati O. Iranian expert opinion about necessary criteria for hospitals management performance assessments. *Heal Promot Perspect.* (2012) 2:223–30. doi: 10.5681/hpp.2012.027
25. Fanelli S, Pratici L, Zangrandi A. Managing healthcare services: are professionals ready to play the role of manager? *Heal Serv Manag Res.* (2022) 35:16–26. doi: 10.1177/09514848211010264
26. Guo KL. An assessment tool for developing healthcare managerial skills and roles. *J Healthc Manag.* (2003) 48:367–76. doi: 10.1097/00115514-200311000-00005
27. Liang Z, Howard PF, Leggat S, Bartram T. Development and validation of health service management competencies. *J Health Organ Manag.* (2018) 32:157–75. doi: 10.1108/JHOM-06-2017-0120
28. Jafari M, Nemati A, De Roodenbeke E. Competencies of hospital managers: Iran's case study. *Int Hosp Fed (IHF) World Hosp Heal Serv J.* (2019) 55:21–8.
29. Kakemam E, Dargahi H. The competencies gap in Hospital Management in Tehran, Iran: a cross-sectional survey. *J Health Manag.* (2019) 21:451–64. doi: 10.1177/0972063419884412
30. Kakemam E, Janati A, Mohaghegh B, Gholizadeh M, Liang ZM. Developing competent public hospital managers: a qualitative study from Iran. *Int J Work Health Manag.* (2021) 14:149–63. doi: 10.1108/IJWHM-07-2020-0120
31. Kalhor R, Tajnesaei M, Kakemam E, Keykaleh MS, Kalhor L. Perceived hospital managerial competency in Tehran, Iran: is there a difference between public and private hospitals? *J Egypt Public Health Assoc.* (2016) 91:157–62. doi: 10.1097/01.EPX.0000508180.48823.cd
32. Khadka DK, Gurung M, Chaulagain N. Managerial competencies—a survey of hospital managers' working in Kathmandu valley. *Nepal J Hosp Adm.* (2014) 3:62–72. doi: 10.5430/jha.v3n1p62
33. Yarbrough Landry A, Stowe M, Haefner J. Competency assessment and development among health-care leaders: results of a cross-sectional survey. *Heal Serv Manag Res.* (2012) 25:78–86. doi: 10.1258/hsmr.2012.012012
34. Leggat SG. Teaching and learning teamwork: competency requirements for healthcare managers. *J Health Adm Educ.* (2007) 24:135–49.
35. Lehr B, Ostermann H, Schubert H. Competence-based demands made of senior physicians: an empirical study to evaluate leadership competencies. *Z Evid Fortbild Qual Gesundheitswes.* (2011) 105:723–33. doi: 10.1016/j.zefq.2010.08.006
36. Liang Z, Howard PF, Leggat SG. 360° management competency assessment: is our understanding adequate? *Asia Pacific J Hum Resour.* (2017) 55:213–33. doi: 10.1111/1744-7941.12108
37. Liang Z, Howard PF. Competencies required by senior health executives in New South Wales, 1990–1999. *Aust Health Rev.* (2010) 34:52–8. doi: 10.1071/AH09571
38. Liang Z, Howard P, Wollersheim D. Assessing the competence of evidence-informed decision-making amongst health service managers. *Asia Pacific J Heal Manag.* (2017) 12:16–23. doi: 10.24083/apjhm.v12i3.53
39. Liang Z, Blackstock FC, Howard PF, Briggs DS, Leggat SG, Wollersheim D, et al. An evidence-based approach to understanding the competency development needs of the health service management workforce in Australia. *BMC Health Serv Res.* (2018) 18:1–12. doi: 10.1186/s12913-018-3760-z
40. Liang Z, Leggat SG, Howard PF, Koh L. What makes a hospital manager competent at the middle and senior levels? *Aust Health Rev.* (2013) 37:566–73. doi: 10.1071/AH12004
41. Liang Z, Howard P, Wang J, Xu M, Zhao M. Developing senior hospital managers: does "one size fit all"? – evidence from the evolving Chinese health system. *BMC Health Serv Res.* (2020) 20:281. doi: 10.1186/s12913-020-05116-6
42. MacKinnon NJ, Chow C, Kennedy PL, Persaud DD, Metge CJ, Sketris I. Management competencies for Canadian health executives: views from the field. In: *Healthcare management forum*. Los Angeles, CA: SAGE Publications (2004). 15–20.
43. Mahdavi A, Ardabili FS, Kheirandish M, Ebrahimpour H, Daryani SM. Presenting a model of managerial practical wisdom in hospitals. *Manag Pol.* (2020) 24:20–48. doi: 10.2478/manment-2019-0045
44. Martins JM, Isoard G, Malik AM, Freshman B. Senior manager perceptions of the human dimension of health services management: Australia and Brazil. *Asia Pacific J Heal Manag.* (2022) 17:36–45. doi: 10.24083/apjhm.v17i1.929
45. Mehrnoosh J, Maher A, Sheikhi M. Transformational management properties among managers of private and public hospitals in Gonbad-e-Kavus City. *J Med Life.* (2020) 13:362–70. doi: 10.25122/jml-2018-0066
46. Messum DG, Wilkes LM, Jackson D, Peters K. Employability skills in health services management: perceptions of recent graduates. *Asia Pacific J Heal Manag.* (2016) 11:25–34. doi: 10.24083/apjhm.v11i1.235
47. Ochonma GO, Nwankwor CA, Henry-Arize I, Igwe SE, Nwodoh CO, Ingwu JA, et al. Managerial competency among hospital managers: does experience on the job matter. *Int J Soc Sci Manag Res.* (2018) 4:88–102.
48. Okonkwo U, Ekpeyoung B, Ndep A, Nja G. Managerial competencies—a survey of healthcare managers in a tertiary hospital in Calabar. *South-South Nigeria Niger J Clin Pract.* (2020) 23:988–94. doi: 10.4103/njcp.njcp_667_19
49. Kant S, Gupta SK, Patnaik SK, Pillay R. Analyzing competencies of Indian health care leaders: way forward for next generation. *Int J Res Found Hosp Healthc Adm.* (2015) 5:47–53. doi: 10.5005/jp-journals-10035-1075
50. Pillay R. The skills gap in hospital management in the south African public health sector. *J Public Health Manag Pract.* (2008) 14:E8–E14. doi: 10.1097/01.PHH.0000333890.68140.61
51. Pillay R. Managerial competencies of hospital managers in South Africa: a survey of managers in the public and private sectors. *Hum Resour Health.* (2008) 6:4. doi: 10.1186/1478-4491-6-4
52. Pillay R. Defining competencies for hospital management a comparative analysis of the public and private sectors. *Leadersh Health Serv.* (2008) 21:99–110. doi: 10.1108/17511870810870547
53. Pillay R. The skills gap in hospital management: a comparative analysis of hospital managers in the public and private sectors in South Africa. *Heal Serv Manag Res.* (2010) 23:30–6. doi: 10.1258/hsmr.2009.009015
54. Ramirez CL, Ramirez B, Antonion HB. Public-private partnerships (PPPs) in healthcare: gauging leadership competencies of hospital managers. *Int Hos-pital Fed (IHF) World Hosp Heal Serv J.* (2019) 55:29–33.

55. Shewchuk RM, O'Connor SJ, Fine DJ, Tyler JL. Building an understanding of the competencies needed for health administration practice. *J Healthc Manag.* (2005) 50:32–47. doi: 10.1097/00115514-200501000-00009
56. Shojaei P, Mokhtari P, Rashvand N. Evaluation of managers competencies of teaching hospitals of Qazvin university of medical science based on 360° degree feedback 2010. *World Appl Sci J.* (2011) 13:60–5.
57. Toygar SA, Akbulut Y. Managerial skills of hospital administrators: case study of Turkey. *J Health Manage.* (2013) 15:579–94. doi: 10.1177/0972063413516228
58. Van Tuong P, Thanh ND. A leadership and managerial competency framework for public hospital managers in Vietnam. *AIMS Public Health.* (2017) 4:418–29. doi: 10.3934/publichealth.2017.4.418
59. Wongprasit N. The leadership competencies model of private hospital directors in Thailand. *HRD J.* (2013) 4:72–85.
60. Lockhart W, Backman A. Health care management competencies: identifying the gaps In: *Healthcare management forum.* Los Angeles, CA: SAGE Publications (2009) 30–7.
61. Howard PF, Liang Z, Leggat S, Karimi L. Validation of a management competency assessment tool for health service managers. *J Health Organ Manag.* (2018) 32:113–134. doi: 10.1108/JHOM-08-2017-0223
62. Wallick WG, Stager KJ. Healthcare managers' roles, competencies, and outputs in organizational performance improvement/practitioner response. *J Healthc Manag.* (2002) 47:390–2. doi: 10.1097/00115514-200211000-00009
63. Abdi Z, Lega F, Ebeid N, Ravaghi H. Role of hospital leadership in combating the COVID-19 pandemic. *Heal Serv Manag Res.* (2022) 35:2–6. doi: 10.1177/09514848211035620
64. Calhoun JG, Davidson PL, Sinioris ME, Vincent ET, Griffith JR. Toward an understanding of competency identification and assessment in health care management. *Qual Manage Health Care.* (2002) 11:14–38. doi: 10.1097/00019514-200211010-00006
65. Flaig J, Alam A, Huynh J, Reid-Hector J, Heuer A. Examining how formal leadership development programs positively influence hospital leaders' individual competencies and organizational outcomes – an evidence-based literature review. *J Healthc Leadersh.* (2020) 12:69–83. doi: 10.2147/JHL.S239676
66. Hernandez R, O'Connor SJ. The case for healthcare leader competencies: exploring the evidence. *World Hosp Heal Serv Leadersh Manage.* (2019) 55:25–8.
67. Anderson P, Pulich M. Managerial competencies necessary in today's dynamic health care environment. *Health Care Manage (Frederick).* (2002) 21:1–11.
68. Freed DH. Ten Core competencies for hospital administrators. *Health Care Manage (Frederick).* (2017) 36:108–15. doi: 10.1097/HCM.0000000000000154
69. Steff ME. Common competencies for all healthcare managers: the healthcare leadership Alliance model. *J Healthc Manag.* (2008) 53:360–73. doi: 10.1097/00115514-200811000-00004
70. Selsor W. Managerial competencies driving successful change initiatives: A multiple case study of healthcare administrators. Vol. 82, Dissertation Abstracts International: Section B: The Sciences and Engineering. ProQuest Information & Learning. (2021)
71. Aini Q. Management skill and leadership: a case study from hospital managers of charity business in health. *J Soc Sci Res.* (2018) 4:478–82. doi: 10.32861/jssr.412.478.482
72. Aktan T, Sahin B. Assessment of relationship between hospital resource management capacity and characteristics of hospitals and managers. *Konuralp Tip Derg.* (2021) 13:299–311. doi: 10.18521/ktd.912698
73. Babinski PJ. *The perceived importance of role specific competencies for health care leaders.* San Diego, California: Northcentral University (2015).
74. Barati O, Sadeghi A, Khammarnia M, Siavashi E, Oskrochi G. A qualitative study to identify skills and competency required for hospital managers. *Electron Physician.* (2016) 8:2458–65. doi: 10.19082/2458
75. Dubas-Jakóbczyk K, Kocot E, Tambor M, Szetela P, Kostrzevska O, Siegrist RB Jr, et al. The association between hospital financial performance and the quality of care – a scoping literature review. *Int J Heal Policy Manage.* (2022) 11:2816–28. doi: 10.34172/ijhpm.2022.6957
76. Philips. Future health index 2022. Healthcare hits reset: Priorities shift as healthcare leaders navigate a changed world. (2022). Available at: <https://www.philips.com/c-dam/corporate/newscenter/global/future-health-index/report-pages/experience-transformation/2022/global/philips-future-health-index-2022-report-healthcare-hits-reset-global.pdf>
77. Sureda E, Chacón-Moscoso S, Sanduvete-Chaves S, Sesé A. A training intervention through a 360 multisource feedback model. *Int J Environ Res Public Health.* (2021) 18:9137. doi: 10.3390/ijerph18179137
78. Donnon T, Al Ansari A, Al Alawi S, Violato C. The reliability, validity, and feasibility of multisource feedback physician assessment: a systematic review. *Acad Med.* (2014) 89:511–6. doi: 10.1097/ACM.0000000000000147
79. World Health Organization. Implementing health emergency and disaster risk management [internet]. World Health Organization. Available at: <https://www.who.int/activities/implementing-health-emergency-and-disaster-risk-management>