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Identifying competency development needs of hospital managers in Iran: a national survey

Zhanming Liang[1] and Edris Kakemam[2*]

Abstract

Background A competent management workforce is crucial to achieve the effectiveness and efficiency of health service provision and to lead and manage the health system reform agenda. However, the traditional recruitment and promotion approach of relying on clinical performance and seniority provides limited incentives for competency development and improvement among hospital managers in Iran. There is limited evidence on the competency development needs of hospital managers in Iran that can guide setting training and development direction. This study aims to identify the competency development needs of three management levels (senior, mid-level, and frontline) in public hospitals and explore the difficulties that managers experienced.

Methods The study adopted a cross-sectional survey using the validated management competency assessment partnership (MCAP) tool. The MCAP tool, consisting of 82 behavioral items that measure six core management competencies, was distributed to 162 public hospitals in 19 provinces in Iran between September 2021 and March 2022. The data were analyzed using descriptive and inferential statistics including the mean and standard deviation, chi-square test, independent-samples t-test, and one-way analysis of variance.

Results In total, 1051 managers completed the survey either online or on paper. Peer and team conflict, employee performance, loss of skilled staff, and supervisor confrontation were the five difficulties most often encountered by all three levels of managers. The survey confirmed that only a small proportion of managers had the opportunities to participate in formal and informal management-related education/training, such opportunities were much lower for middle and frontline managers ($P < 0.001$). Middle managers were less confident in their demonstration of the core management competencies than that of senior and frontline managers ($P < 0.001$). Managers who completed management training organised internally by the hospitals consistently received higher mean competency scores for all competencies ($P < 0.001$).

Conclusion The study provides compelling evidence highlighting the importance of developing strategies to systematically enhance the capabilities of hospital managers, particularly mid-level managers. Incentives to encourage hospital managers to participate in both formal and informal management training, along with the commitment from hospitals to establish mechanisms that build management capacity, support managers, and guide the preparation and recruitment of management positions, are essential.

Keywords Capacity building, Health workforce, Hospital management, Management training and development, Competencies, Competency-based education

*Correspondence:
Edris Kakemam
edriskakemam@gmail.com

Full list of author information is available at the end of the article

Introduction

Increasing evidence has reinforced the critical role that health service managers play in improving health service efficiency, providing positive patient experience and better quality of care linking to better patient outcomes and cost savings [1, 2]. Considering the complex nature of the health systems, developing health managers' competency in meeting job demands and balancing the expectations between the organization, care staff and consumers is no easy task [3, 4]. The challenges facing the health systems such as the increasing number of chronic diseases, changing skills requirements of the health workforce, and the increased pressure for the adoption of innovative service models and digital health technology [5] have made health service managers' role in leading and managing changes more prominent [6].

In addition, the fast-changing healthcare landscape in meeting the demands of service continuity and accessibility, technological advancement, and the emerging political, economic, social, and environmental realities create a complex agenda for global health [5, 7], an agenda to be implemented and led by competent health managers. However, empirical evidence indicates that poor communication and lack of leadership amongst health managers have adversely affected service quality, patient outcomes, staff satisfaction, and health organization/system performance [8, 9].

The knowledge and utilisation of required management competencies is a critical strategic resource of an organization [10]. Studies revealed that managerial competencies play a significant role in improving the performance of leaders and managers and the improved competence of managers leads to positive productivity in organisations [11–13]. The results of a study conducted in hospitals in the US showed that nurse managers' lack of competencies is a predictor of inadequate and poor quality of nursing care [14]. Conversely, a positive correlation between managerial competence and organizational commitment in clinical practice has been found [15].

Despite the broad acceptance of the important role of health managers, health management has yet to be formally recognized as a profession by the health industry without established qualification, training and competency requirements [4, 16]. It is common to recruit clinicians into health management roles based on clinical excellence and seniority rather than demonstrated managerial competence in low- and middle-income countries [17–19]. In Iran, hospital management positions are not regulated without registration or credentialing requirements [20] which are filled by physicians or other clinicians at hospitals and districts and sub-district centres without prior formal or on-service training [17, 21, 22]. Health managers lack an understanding of the complexities of the health system which is critical to their roles [18]. Non-meritocratic recruitment process, short-tenure management positions, and the political interference and government policies in the appointment and replacement of managers were key factors in the mismanagement of the Iranian healthcare system [23].

In Iran, secondary and tertiary healthcare services are provided by nearly 956 hospitals among which 600 (62.7% of total hospital beds) are affiliated and funded by the Ministry of Health and Medical Education (MoHME) [24]. These hospitals are usually controlled through government hierarchies [25] and run bureaucratically by a chairman and manager without a governing board with limited authority in decision-making over the human and financial resources and strategic management of the hospital. Like many public hospitals in low-medium income countries, public hospitals in Iran face financial constraints, challenges of poor management, and deteriorating infrastructure. The lack of resources and equipment has hampered hospitals' ability to provide a reasonable standard of health care [25, 26]. In Iran, training and education in health management was first offered as a short-term training course in 1983 in the Faculty of Medicine, Tehran University. Health management was approved as one of the majors of the medical group at the undergraduate level. Nowadays, health services management (HSM) is taught as a major in 12 medical universities in Iran. The curriculum of the major was revised in 1996 and again in 2002, and its course credits were changed to better meet the needs of the workforce and health system [27, 28]. Currently, degree programs in healthcare management/health administration are offered by 15 universities in Bachelor, Master, and Doctorate level with an estimated annual enrolment of 200, 150 and 60 respectively. However, no competency framework based on international standards that suits the local context has been utilized to guide management training design [29]. Degree programs and curriculum have not been revised via a formal / rigorous process for two decades [17, 27].

Some informal training programs are also offered to health managers by the MoHME and other organization locally and internationally since the late 1990s [20, 30, 31, 32]. In collaboration with the World Health Organization (WHO), the MoHME initiated a comprehensive program focusing on leadership and managerial skills in 2016. The program has contributed in developing over 700 hospital managers' capacity in improving performance and productivity critical to the achievement of Universal Health Coverage by 2025 in Iran [32, 33]. However, whether the formal and informal training and development of health managers have addressed the competency development needs of health service managers [30] and improved their managerial performance were never evaluated.

Managers' lack of preparation for the management roles and the general perception of senior managers

having acquired the ability in implementing clinical governance and improving clinical performance management have negatively affected the manager-clinician working relationships. It has resulted in the reluctance of clinicians in taking on management roles and participating in the strategic decision-making process [34–37]. In addition, the common perception of low quality of care in public hospitals [38], the low staff job satisfaction [39], and the health workforce shortages have further demotivated the uptake of hospital management roles [26]. Public hospitals' management capacity in quality care delivery is under questioned.

To develop hospital management capability, the current management competency gaps and management competency development needs much be confirmed to guide determining targeted actions? This paper will draw on the data from a large-scale management competency study completed with managers in Iranian public hospitals to answer the following three questions.

- Are hospital managers adequately equipped with required competencies core to their management roles?
- Are there significant management competency gaps between different management levels?
- How relevant are the training received by hospital managers in addressing the challenges that they face and the management competency developments needs that they have?

Materials and methods

Study design and setting

This cross-sectional study collected self-reported data from managers in Iranian public hospitals by adopting a validated questionnaire survey instrument. Iranian public hospitals include non-teaching and teaching hospitals which are under the supervision of universities of medical sciences. There are nearly 600 public hospitals spreading across 31 provinces in Iran. In total, 162 hospitals (approximately 27% of all hospitals) from 19 provinces agreed to participate in the study.

Population and sample

The target population was senior, middle and frontline managers from public hospitals. The three management levels were classified based on reporting structure. For example, a middle manager reports directly to a senior manager. Senior level managers consisted head of hospital/Chief Executive Officers, Chief Operating Officer and Director of Nursing/Matron. At the middle level, there are different positions such as nursing supervisors, quality improvement managers, medical records/IT managers, administrative affairs managers, human resources managers, and finance managers. Frontline managers included head nurses, department managers, and laboratory managers. Only managers who have had at least 1 year of management experience in the current position were included in the study to ensure that they have acquired an adequate understanding of their current management roles. The convenient sampling techniques were utilized for the recruitment of managers.

Instrument

Data were collected by adapting a validated managerial competency assessment partnership tool (MCAP Tool) [4, 40] consisting of the following three components:

i) Demography (age and sex), educational background (education level and discipline), work experience (years of experience in the hospital system and current management position and as a health service manager), current position/employment (management level, current management position in the hospital), and hospital characteristics (teaching status and hospital size),
ii) Management-related training completed and management difficulties encountered (14 items), and.
iii) Perceived importance and self-assess level of the following six core management competencies and associating 82 behavioral.

The 82 behaviour items include:

C1. Evidence-informed decision-making (Evidence) – 13 behavioral items,
C2. Operations, administration and resource management (Resources) – 17 behavioral items,
C3. Demonstrated knowledge of healthcare environment and the organization (Knowledge). – 11 behavioral items,
C4. Interpersonal, communication qualities and relationship management (Communications) – 19 behavioral items,
C5. Leading people and organizations (Leadership) – 13 behavioral items, and
C6. Enabling and managing change (Change) – 9 behavioral items.The managers' responses to each item were scored using a seven-point Likert scale ranging from 1 (May be capable of demonstrating minor aspects in my role) to 7 (Always apply appropriately in my role, with extensive experience gained from diverse management roles at executive level).

Translation, validity and reliability of MCAP Tool

The English version of the survey instrument was translated into Persian following the international guidelines for cross-cultural adaptation [41] to ensure the quality

of the translated version and its consistency of meaning to the original version. The content validity of the questionnaire was checked and confirmed using the Content Validity Ratio (CVR) and Content Validity Index (CVI). Twelve experts in the field of HSM checked the questionnaire in terms of relevance and necessity. Results of item validation showed the values of CVI and CVR are 0.85 and 0.87, respectively with accepted standards of CVI of 0.80 or greater [42]. The Persian version was pilot-tested with 25 hospital managers who completed the questionnaire but were not included in the final sample. The Cronbach's alpha was estimated to assess the internal consistency of the MCAP Tool with a value of 0.92.

Data collection

The survey was conducted between September 2021 and March 2022. The contact information of the managers including email and cellphone number was received from the training unit of hospital managers of the MOHME. Participants were provided with the options of completing the questionnaire in hardcopy or online using the Avalform survey platform. We emailed the questionnaire to the managers who preferred to complete the online survey or who did not provide the research team with their postal addresses. In total, 300 questionnaires were distributed in person, the online survey link was sent to 1,500 managers' via email or chellphone number that were provided by the respective hospitals. The Dillman Total Design Method [43] was adopted in an attempt to maximise the response rate, which entails sending out reminders and further copies of the questionnaire at planned intervals. The questionnaire was professionally printed in a user-friendly booklet format and posted out along with a cover letter, information sheet and a prepaid return envelope. The survey link distribution was also supported by authors and the online version was sent to included hospitals. There were no incentives to encourage participation in the current study. Each questionnaire took approximately 35 minuts to complete.

Data analysis

Participants' demographic data are presented as frequencies and percentages. Descriptive statistics (mean and standard deviation) of managers' competency and subscales are reported. The chi-square test, independent-sample t-test, and one-way analysis of variance (ANOVA) were used to compare demographic variables and the total competency and six core competencies. Sidak correction test for multiple comparisons was applied as a post hoc test in ANOVA. Data analysis was performed using IBM SPSS version 24, with a 0.05 decision level for significance used before the Sidak correction test.

Results

Nineteen out of 31 Iranian provinces provided permission to approach their hospitals for data collection. In total, 1051 managers (response rate = 58.4%) from 162 hospitals (27% of all hospitals in Iran) including 93 teaching and 69 non-teaching hospitals completed the survey. These managers include 222 senior managers, 482 middle managers and 347 frontline managers. Out of 1051 questionnaires completed by managers, 816 questionnaires were completed online (77.6%) and the rest (235) were completed on paper (22.4%).

Demographic, educational, and organizational characteristics of hospital managers by management level

Table 1 provides the distribution of demographic, educational, and organizational characteristics of managers by management level. The gender ratio is different between management levels. At the senior level, slightly more than half of the managers were male (57.7%), while at the middle and frontline manager levels, a larger proportion of managers were female (64.9% and 81.3% respectively; chi-square = 91.00, $P < 0.001$). There was a significant difference in education level across management levels. The higher the management level, the higher proportion of managers who have acquired postgraduate qualifications: 75.2% for senior managers, 51.4% for middle level and 20.1% for the frontline (chi-square = 284.9, $P < 0.001$). In addition, the higher the management level, the higher proportion of mangers have acquired management related degrees: 31.1%, 39.6%, and 2.0% for senior, middle and frontline managers respectively (chi-square = 155.4, $P < 0.001$). There was no significant difference in the proportion of managers from different levels acquiring postgraduate and management-related qualifications between hospital types ($P > 0.05$).

There are significant differences between the mean age of managers between management levels ($P < 0.001$). Post Hoc Sidak test showed that senior managers were significantly older than middle and frontline managers (F = 16.711, $P < 0.001$). Additionally, there is a significant difference between participants' years in 'all management positions' and management levels (P < 0.001). The number of years that senior managers had been employed in all management roles was significantly longer than middle and frontline managers (F = 13.137, P < 0.001). Regarding work experience in hospital, senior and frontline managers had been employed in a hospital significantly longer than middle managers (F = 7.097, P = 0.01). While no significant difference was noted between years in the current management position and managerial level. (p > 0.05)

Table 1 Demographic, educational, and organizational characteristics of hospital managers by management level ($n=1051$)

Variables	Frontline manager ($n=347$)		Middle level ($n=482$)		Senior level ($n=222$)		*P*-value*
	n	%	*n*	%	*n*	%	
Gender							
Male	65	18.7	169	35.1	128	57.7	*<0.001*
Female	282	81.3	313	64.9	94	42.3	
Education level							
Associate degree	5	1.4	4	0.8	2	0.9	*<0.001*
Bachelor's degree	272	78.4	230	47.7	53	23.9	
Master's degree	64	18.4	213	44.2	98	44.1	
General practitioner	0	0.0	1	0.2	14	6.3	
Medical specialty	1	0.3	1	0.2	24	10.8	
PhD	5	1.4	33	6.8	31	14.0	
Discipline							
Health management and non-health management	7	2.0	191	39.6	69	31.1	*<0.001*
Clinician	340	98.0	291	60.4	153	69.9	
Hospital type							
Teaching	208	59.9	252	52.3	117	52.7	0.074
Non-teaching	139	40.1	230	48.5	105	47.3	
Bed numbers of hospital							
Less than 100 beds	52	15.0	108	22.4	59	26.6	*0.001*
100 t0 249 beds	122	35.2	204	42.3	88	39.6	
250 to 499 beds	96	27.7	99	20.5	49	22.1	
More than 500 beds	77	22.2	71	14.7	24	11.7	
Hospital location							
Provincial capital	263	75.8	311	64.5	138	62.2	*< 0.001*
County hospital	84	24.2	171	35.5	84	37.8	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**P-value ****
Age	41.0	6.8	40.1	7.5	43.4	6.3	*< 0.001*
Years in hospital	16.8	6.7	15.0	7.7	16.4	7.2	0.001
Years as manager in all positions	8.5	6.3	9.5	6.4	11.3	6.4	*< 0.001*
Years in current management position	5.9	5.1	6.3	5.0	5.6	4.8	0.173

*chi-square; ** one-way analysis of variance

Table 2 Competency scores by management level

Competency	Senior level[a]	Middle level[b]	Frontline manager[c]	F (*P*-value)	Post-hoc test
	Mean (SD)	Mean (SD)	Mean (SD)		
C1 Evidence	5.64 (0.85)	5.28 (1.11)	5.52 (0.98)	11. 142 (< 0.001)	b < a,c
C2 Resources	**5.31 (0.94)**	**4.85 (1.22)**	**5.17 (1.24)**	14.321 (< 0.001)	b < a,c
C3 Knowledge	5.67 (0.89)	5.20 (1.17)	5.48 (1.13)	15.280 (< 0.001)	b < a,c
C4 Communication	**5.86 (0.78)**	**5.65 (1.09)**	**5.83 (1.00)**	4.858 (< 0.001)	b < a,c
C5 Leadership	5.74 (0.85)	5.40 (1.11)	5.61 (1.04)	9.058 (< 0.001)	b < a,c
C6 Change	5.75 (0.85)	5.39 (1.14)	5.63 (1.07)	10.437 (< 0.001)	b < a,c
Combined competencies	5.66 (0.75)	5.30 (1.03)	5.54 (0.96)	12.919 (< 0.001)	b < a,c

Competency scores by management level

Table 2 includes details of the mean scores for the six competencies by management level. All six competencies received a score between 5 and 6 for all management levels except for Competency 2 Resources received a mean score of 4.85 among middle managers. Based on the MCAP competency scale, receiving a score between 4 and 5 indicates that managers are competent but requiring occasional support. Significant differences in the mean scores received for different management levels have been found ($p<0.05$). Sidak`s post-hoc tests indicated that senior and frontier managers had given themselves higher scores than middle managers. Consistently, C4 Communication received the highest mean score amongst six competencies across three management levels. Conversely, C2 Resources received the lowest score.

The study indicates that there are a proportion of managers (ranging from 5.7 to 17.1%), regardless of

Table 3 The proportion of the managers in four different competence groups

Competency	Total (%)	Senior level (%)	Middle level (%)	Front-line manager (%)
Incompetent (< 4)				
C1 Evidence	8.5	5.9	12.0	5.2
C2 Resources	***17.7***	***9.9***	***23.4***	***14.7***
C3 Knowledge	10.0	5.9	13.3	8.1
C4 Communication	5.7	3.2	7.5	4.9
C5 Leadership	7.6	5.4	10.2	5.5
C6 Change	7.7	4.1	10.0	6.9
Competent but need occasional support (4 - <5)				
C1 Evidence	18.3	13.1	20.5	18.4
C2 Resources	***24.3***	***23.9***	***26.3***	***21.6***
C3 Knowledge	18.6	12.2	22.6	17.0
C4 Communication	11.7	8.6	13.5	11.2
C5 Leadership	15.6	8.1	17.6	17.6
C6 Change	14.1	9.0	17.6	12.4
Competent (5 - < 6)				
C1 Evidence	36.0	41.0	35.1	34.0
C2 Resources	32.6	41.0	28.6	32.9
C3 Knowledge	34.5	39.2	33.6	32.9
C4 Communication	33.9	39.2	33.6	30.8
C5 Leadership	36.8	43.7	37.6	31.4
C6 Change	37.6	41.4	38.0	34.6
Highly competent 6 – 7				
C1 Evidence	37.3	40.1	32.4	42.4
C2 Resources	25.4	25.2	21.6	30.8
C3 Knowledge	36.9	42.8	30.5	42.1
C4 Communication	48.7	49.1	45.4	53.0
C5 Leadership	40.0	42.8	34.6	45.5
C6 Change	40.6	45.5	34.4	46.1

management levels, perceived themselves as incompetent in demonstrating the required core competencies. Consistently, a higher proportion of managers (17.7% vs. 10%) from all levels perceived themselves as incompetent in C2 Resources followed by C3 Knowledge. Table 3 includes details of the percentage of managers from all levels who perceived themselves as incompetent (< 4), competent but requiring occasional support (4-<5), competent (5-<6), and highly competent (6–7) for each of the core competencies.

Informal training received by different management levels

Hospital managers were provided with the opportunities to participate in management or non-management-related training organized internally by the hospitals or externally by other organizations. Table 4 shows the proportion of managers from different management levels participating in various types of training for more than 10 h per year in the past three years. A higher proportion of senior managers had participated in management-related training than Frontline and middle managers (46.8%, 36.4% and 33.1%, respectively).

Common management challenges facing different management levels

Managers were asked to confirm the challenges/problems that they encountered in their management role in the past three years by selecting no more than 5 out of 14 pre-identified challenges/problems [44], results are included in Table 5 showing considerable variation between management levels. Senior managers faced more challenges/problems than the other two management groups. Peer conflict was the difficulty selected by more than half of the managers from all three level (62.5%). Other difficulties that were selected by no less than 30% of managers from at least two levels included employee performance (37.2%), loss of skilled staff (36.4%), team conflict (34.0%), and supervisor confrontation (32.8%).

Figure 1 shows a comparative view between management levels on five challenges/problems most commonly encountered by managers.

Importance of the six core competencies

Managers were asked to indicate the importance of each of the six core competencies to their management roles. Overall, 90% of all managers agreed with the importance of each of the competencies, ranging between 88 – 96% of managers from different management levels across different management competencies.

Comparison of core competency means by training types

Table 6 compares the mean scores received for each core competency means between managers based on the types of training completed (as in Table 4). In general, a significant relationship was observed between the types

Table 4 The proportion of managers undertaking informal training for more than 10 h per year in the past three years

Training Type	All managers	Frontline manager ($n = 347$)	Middle level ($n = 482$)	Senior level ($n = 222$)	*P*-value*
Internal non-management	28.0%	33.4%	27.8%	15.3%	*<0.001*
Internal management	24.3%	26.8%	***19.9%***	29.7%	
External non-management	5.6%	4.3%	6.4%	5.9%	
External management	12.1%	***6.3%***	***13.9%***	17.1%	
Self-study on management-related topics	20.9%	15.6%	22.8%	25.2%	
Lack of participation in training courses	10.1%	13.5%	9.1%	6.8%	

* chi-square

Table 5 Challenges / problems encountered by percentage of managers by management level in the last three years

Challenges and problems	All managers	Frontline manager (*n* = 347)	Middle level (*n* = 482)	Senior level (*n* = 222)	*P*-value*
Peer conflict	62.5%	58.2%	64.7%	64.4%	0.137
Team conflict	34.0%	23.6%	38.4%	40.4%	*<0.001*
Staff turnover	18.1%	16.4%	17.4%	22.1%	0.215
Patient conflict	19.6%	20.7%	15.6%	26.6%	*0.004*
Innovative teamwork	21.2%	14.1%	24.1%	26.1%	*0.001*
Staff hiring	19.1%	13.5%	19.1%	27.9%	*< 0.001*
Loss of skilled staff	36.4%	38.6%	34.6%	36.9%	0.501
Team skill building	12.4%	10.4%	12.7%	14.9%	0.274
Unethical practice	13.2%	10.7%	13.5%	16.7%	0.116
Doing something incorrectly	20.4%	18.7%	17.4%	29.3%	*0.001*
Supervisor confrontation	32.8%	28.2%	33.0%	39.6%	*0.018*
Employee performance	37.2%	33.4%	35.9%	45.9%	*0.008*
Decision-making & change	26.5%	23.3%	27.2%	29.7%	0.214
New skill acquisition	24.1%	18.7%	25.5%	29.3%	*0.01*

* chi-square

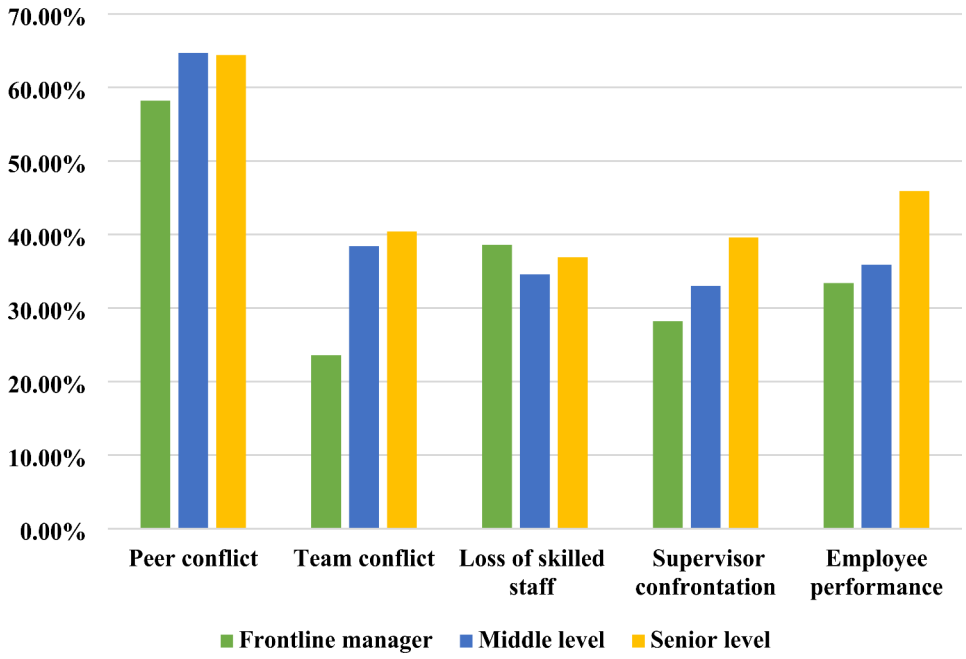

Fig. 1 The most common problems across the management level

of training and the mean competency scores ($P < 0.001$). Managers who completed management training organised internally by the hospitals consistently received higher mean competency scores for all competencies. Managers who did not complete any training organised internally and externally received the lowest competency scores across all six competencies in comparison with managers who completed one of more trainings regardless whether they are organised internally by the hospitals or by external organizations.

Discussion

Overall, the study found that majority of the hospital managers from all three management levels perceived themselves as competent (with or without requiring occasional guidance) across the six core management competencies. However, it is concerning that between 13 and 33% of senior managers did not perceive themselves being capable of demonstrating the competencies independently (score 5 or higher). Highly competent managers are needed to provide adequate support to managers from the lower levels and staff across the hospitals. These results are consistent with the hospital management competency studies conducted in China and Australia

Table 6 Comparison of core competency means by type of training course taken over the last three years

Competency	Internal non-management[a]	Internal management[b]	External non-management[c]	External management[d]	Self-study of management topics[e]	Did not commit to any training[f]	F (*P*-value)	Post-hoc test ($p < 0.05$)
	Mean	Mean	Mean	Mean	Mean	Mean		
Evidence	5.43	5.57	5.53	5.40	5.42	4.94	7.94 (< 0.001)	f < a,b, c,d, e
Resources	4.90	5.34	5.04	5.02	5.11	4.67	6.29 (< 0.001)	a < b f < b
Knowledge	5.36	5.68	5.35	5.32	5.40	4.85	8.80 (< 0.001)	a < b d, e < b f < a,b, d,e
Communication	5.81	5.94	5.75	5 65	5.78	5.22	8.56 (< 0.001)	f < a,b, c,d, e
Leadership	5.55	5.73	5.57	5.54	5.57	5.01	7.23 (< 0.001)	f < a,b, c,d, e
Change	5.58	5.70	5.60	5.53	5.57	5.02	6.44 (< 0.001)	f < a,b, c,d, e
Combined competencies	5.44	5.68	5.47	5.41	5.48	4.96	8.85 (< 0.001)	a < b f < a,b, c,d, e

when a mean score lower than 5 was received from a small proportion of senior managers [3, 40, 44, 45]. This calls for immediate actions in building the management capability of senior hospital managers with a targeted approach. Considering only a small proportion of managers would have the opportunities to participate in formal and informal management-related education/training, internal support mechanisms at the organization are critical [20, 29]. However, even training program is on offer, participation from senior hospitals managers is low.

Building organization capacity in leadership and management development has become more critical allowing on-the-job coaching using a problem-based approach and mentorship by capturing management strengths and weaknesses [44, 46, 47]. Commitment to ongoing professional development should be included in the job description as one of the essential criteria so that efforts in leadership and management capability development are recognized. More importantly, organization strategies and financial investment in management capacity building must be in place to contribute to achieving the organization strategic intent and, hence be acted upon [46, 48].

The study confirmed that managers are less confident in their capability to demonstrate Competency 2 - Operations, administration and resource management (Resources), a result that is consistent with the findings from a similar study conducted in Australia and China as mentioned above [3, 40, 44, 45]. The low level of confidence is consistent across management levels and hospital sizes. Such low level of confidence in C2 coincide with the difficulties that most often encountered in the management roles which requiring skills associating with C2 in addressing: peer and team conflict, loss of skilled staff, supervision confrontation and employee performance. Skills such as developing budget, understanding and managing finances, developing indicators and mechanisms to measure performance, planning for changes, developing and managing staff and human resources, and managing and improving organization processes are core components of Competency 2 which is important to organization's sustainability in quality service provision [49–52]. For example, an empirical study has identified the association between capability in managing finances and independent decision-making and quality care improvement amongst nursing leaders [51]. These skills are unlikely adequately developed without some form of training.

The current study confirmed that middle and frontline managers in Iranian hospitals were less exposed to formal and informal training and development than senior managers. Furthermore, middle managers demonstrated a lower level of confidence in the demonstration of the core management competencies than that of senior and frontline manages. This phenomenon may partially attributed to the lack of preparation for frontline managers before being promoting to middle management role, changing from leading a small team of frontline staff to managing the day-to-day operation of a large department and multiple frontline managers and teams with substantial financial and risk management responsibilities. Middle management is key to the successful implementation of change agenda and innovation adoption [53–55] and is instrumental in improving quality patient care [56, 57] and creating a supportive work environment that has a positive effect on clinical staff retention [58, 59]. Carrying both clinical and management responsibilities, middle managers lack opportunities to develop leadership capability, resulting in their low self-confidence and low job satisfaction [60–62]. This not only attributes to high turnover amongst middle managers, but also has cascading effects upon the organisation and leads to a reduced quality of patient care and staff productivity [61, 62].

To improve hospital performance and sustain quality care provision, mechanisms need to be developed that build short term and long term management capability amongst middle managers by investing in targeted training and effective support and recognition [63–65]. Targeted training programs can create positive effects on the managerial skills, knowledge and hence competencies of hospital managers [66]. On-the-job training has been proven effective allowing managers to develop problem-solving and leadership skills in the specific organization context [54].

The study revealed that peer and team conflict, employee performance, loss of skilled staff, and supervisor confrontation are the five difficulties most often encountered by all three of managers in Iranian hospitals. These findings also consistent with that of the similar studies conducted in other countries [3, 5, 44]. Under the existing Iranian social and health system context the conflict between staff, especially between doctors and nurses, is one of the main issues attributed to the shortage and high turnover of professional staff [67, 68].

The consistent competency strengths and weaknesses across management levels and hospital size, and the positive association between management competency and informal training strongly call for workforce policy that supports the system-level investment in informal education and training. The variation of competency levels across different management competencies supports the important role of management competency assessment in identifying management competency gaps that guide the formulation of competency development strategies [3, 44]. Capturing the competency strength of hospital managers is equally important as it provides evidence to guide mobilizing the highly competent managers in providing mentorship and coaching to managers requiring support and guidance which may not be appropriate to receive from the senior level managers. The reviews of organization-based policies and strategies and health management curricula should occur in conjunction with the policy reviews at the system level.

The management competency studies conducted in Chinese public hospitals by Liang et al., suggested strategies for developing a competent hospital management workforce in the system, higher education and health organization levels [3, 44]. The current study tends to support the necessity of these strategies, in particularly, strengthening the relevance of the management training organised / offered by public hospitals. Using a problem-based approach enabling hospital managers to develop practical management skills that are applicable to their work and to solving problems that they constantly face as a manager. How to mobilize higher education providers in supporting the offering of short-term on-the-job training should be further explored.

Strengths and limitations of the study

The major strength of the study is the use of a validated survey instrument adapted to the local context, the sample size and high response rates across hospitals. Additionally, the participation of managers from large number of hospitals improve the representation of managers from public hospitals in Iran. However, there are several limitations to this study that should be considered: Firstly, the use of convenience and snowball sampling indicates that this study might not represent hospital managers in all regions of Iran. Secondly, although self-assessment has been regarded as an effective self-education process, it generates subjective data which may lead to the over or under estimation of overall competency level across the management workforce.

Conclusion

The development of the leadership and management workforce in Iran is in its infancy. By confirming the competency gaps across three different management levels, the study provides strong evidence to support the importance of developing strategies in more systematically improve hospital managers' capability, in particularly mid-level managers. Incentives in encouraging hospitals managers in taking up formal and informal management trainings are necessary. However, sustainable changes can not be achieved without hospitals' commitment to developing mechanisms that build management capacity, support managers, and guide management position preparation and recruitment. The successful implementation of such strategies would lead to the development of a culture that encourages continuous management competency development and self-improvement among hospital managers.

Abbreviations

MoHME	Ministry of Health and Medical Education
HSM	Health Services Management
WHO	World Health Organization
MCAP Tool	Validated Managerial Competency Assessment Partnership Tool
CVR	Content Validity Ratio
CVI	Content Validity Index
ANOVA	analysis of variance

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Author contributions

EK and ZL were responsible for project design, data analysis and interpretation. EK was responsible for data collection. EK and ZL contributed equally in developing, writing, reviewing and finalizing the manuscript. ZL provided critical revision and final editing of the manuscript. Both EK and ZL approved the final version for submission.

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Data availability
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study received ethics approval from the Ethics Committee of the Iran University of Medical sciences (IR.IUMS.REC.1399.1110). Written informed consent was obtained from all managers who completed the survey on paper and implied consent was obtained from those who completed the survey online. The survey started with a sentence that "completing the questionnaire by the participants is considered voluntary and informed." and only participants who consented could proceed with the online survey. All survey data were collected anonymously. The study were conducted in accordance with relevant guidelines and regulations.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Author details
[1]College of Business, Law and Governance, James Cook University, Townsville, Australia
[2]Non-communicable Diseases Research Center, Research Institute for Prevention of Non-communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran

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