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RESEARCH ARTICLE

ASSESSMENT OF MANAGEMENT COMPETENCY AMONG SENIOR HOSPITAL MANAGERS IN NEPALESE PUBLIC HOSPITALS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Health managers often assume leadership roles with limited formal training. Health managers face ongoing constraints in accessing continuous professional development opportunities related to management competency throughout their careers. The management competency of health service managers is crucial since they perform wide-ranging complex tasks including financial oversight, workforce management, and governance for patient safety. It is thus essential to identify and assess heath managers' current competency levels to understand the development needs and plans for both organisational and system level capacity building strategies.

A review of literature revealed a lack of studies specifically focused on assessing the competency of senior hospital managers in central level public hospitals in Nepal. While two studies were identified that examined managerial competency, the scope was limited to general hospital managers across all types of hospitals, without distinguishing senior leadership roles or central level hospitals. The two studies provided useful information but are limited because they were conducted prior to the federal democratic republic system in Nepal. With subsequent changes in the Nepalese health system, it is important to understand what the current level of management competency is for senior hospital managers in Nepal.

Therefore, a quantitative cross-sectional study was conducted utilising the Management Competency Assessment Partnership (MCAP) self-assessment tool to measure the current competency level and identify the competency gaps. The data were analysed with RStudio (R 4.3.3) and SPSS (version 29 for Windows). The study highlights competency gaps among senior hospital managers in areas such as resource management, evidence-based decision making, knowledge on healthcare environment, political acumen, and transition management which further underscores the need for prioritised targeted professional development interventions in these domains. A sustained investment in competency building and development will enable senior hospital managers to negotiate the challenges of contemporary hospital systems with greater confidence and competency. Such development approaches ultimately contribute to the long-term success and sustainability of Nepalese hospital management and healthcare settings.

KEYWORDS

management competency, competency assessment, senior hospital managers, Nepal

BACKGROUND

When clinicians such as doctors, nurses and allied health professionals, move into management roles, it is important for them to apply foundational leadership and management competencies to effectively perform the tasks and fulfil the responsibilities of leading hospitals and deliver quality health services [1]. Health managers often assume leadership roles with limited formal training, and many face ongoing constraints in accessing continuous professional development opportunities related to management competency throughout their careers [2]. Management competency is defined as "the skills, knowledge, personal characteristics and behaviours needed to effectively perform a role in the organisation and help the business meet its strategic objectives" [3, p. 5]. The management competency of senior and mid-level health service managers is crucial since they perform wide-ranging complex tasks including financial oversight, workforce management, and governance for patient safety [4]. Mid-level managers typically occupy middle tiers in the organisational hierarchy senior managers with clinical or professional responsibilities, supervision of front- line staff, and reporting to senior managers. In some health systems, e.g. Australia, senior-level managers hold top-tier leadership positions within hospitals which include roles such as medical director, hospital directors, and chief operating officers. They oversee strategic planning, financial governance, workforce management and patient safety systems, often shape organisational culture, and liaise with external stakeholders and policymakers [5,6]. Competent senior health service managers need the capacity to satisfactorily integrate clinical services, management, and political domains using leadership, collaboration and team-based competencies which are crucial for better health outcomes and quality healthcare [7,8,9].

The World Health Organization recommends all countries build leadership and management capacity ensuring adequate numbers of competent managers who provide critical management support systems and an enabling working environment [10]. A study in Kenya demonstrated increased coverage of child and maternal health services after piloting a six-month leadership program for management teams [11]. A significant increase in the number of client visits was observed at the facility level in the intervention group versus comparison facilities. The leadership program contributed to improved health service delivery outcomes and the improvements were sustained for at least for six months. The performance of health managers thus can be improved by improving their managerial competency [7]. However, it is essential to identify and assess heath managers' current competency levels to understand the development needs and plans for both organisational and system level capacity building strategies.

MANAGEMENT COMPETENCY ASSESSMENT

Management competency assessment is an important step in performance management [12]. Competency assessment can identify gaps in knowledge and skills which, in turn, may be used to design development programs that address these gaps and consequently maintain organisational competitiveness and resilience [13]. This also ensures employee competencies are in sync with the evolving needs and objectives of the organisation [14,15]. Research evidence suggests that a person's self-judgement of their own knowledge, skills and abilities positively relates to their ability to improve current and learn new competencies. [16]. Research studies also reveal that such judgements provide managers with an opportunity to evaluate their strengths and weaknesses, and plan training based on their identified needs [17]. Therefore, effective tools for assessing management competency of health managers have implications for health service management workforce development.

Management competency assessment tools are important in identifying healthcare management strengths and weaknesses, enhancing managerial development, leadership, decision-making, succession planning and talent management, and ultimately ensuring compliance and quality [18,19]. In the healthcare context, three major types of management competency assessment are used: 360-degree feedback, competency-based interviews, and self-assessment [20,21,22,23]. 360-degree feedback provide a holistic assessment of a manager's competency based on feedback from subordinates, peers, and supervisors. This offers a comprehensive view of a healthcare manager's strengths and development areas and helps to identify blind spots and further enhancing leadership effectiveness [20, 21]. The feedback coming from multiple perspective, offers a broader, unbiased evaluation of managerial strengths and

weaknesses. However, a key disadvantage of 360-degree feedback is its complexity, it needs well-designed processes and implementation, while poor execution may lead to confusion and resistance among staff [21].

Competency-based interviews involve structured interviews that assess managerial competency through behavioural questions, allowing organisations to evaluate leadership skills based on real-world decision-making [22]. Competency based interviews evaluate past behaviours to predict future job performance and are often used in the hiring processes but not as much in assessing on-going management competency [23].

Self-assessment competency tools offer advantages such as personal reflection which fosters self-awareness, insights into areas for development, and require health managers to evaluate their competency across different management domains [19]. Unlike 360-degree feedback, which includes external opinions, self-assessments produce unfiltered introspection without external biases. Although self-assessment can be limited by individual biases and might lack the comprehensive perspective offered by 360-degree feedback, other factors such as convenience, accessibility, cost-effectiveness, immediate insights, and privacy can make self-assessment more suitable than other competency assessment tools. Self-assessment is a culturally adaptable and reliable which makes it especially valuable in contexts where other forms of competency evaluation may be impractical or counterproductive [24].

Given the context of this research, as outlined below, it was decided that a self-assessment competency tool was most appropriate. The Management Competency Assessment Partnership (MCAP) self-assessment tool was chosen because it identified globally recognised core competencies for health managers through a systematic review and best-fit framework synthesis of studies over a two-decade period up to 2019 [25]. Although the MCAP was originally developed and validated in Australia [26,27] , it has been applied internationally in China [28, 29], India [30], Iran [31] and Finland [32] healthcare contexts, demonstrating its cross-cultural relevance and adaptability.

CONTEXT

Nepal moved from a central, unitary system of government to the Federal Democratic Republic system consisting of seven, self-governing provinces in September 2015 [33]. Although the federal system paved a new pathway for opportunities in building a better health system, the health system itself has many challenges including inefficient hospital management systems, hospital service provision, and coordination across government tiers [34].

Hospitals that are equipped with sophisticated facilities and provide speciality services are managed at the federal government level and are designated as central level hospitals [35]. There are 15 central level hospitals in three provinces, with 13 in Province No. 3 (Bagmati), and one each in Province No. 1 (Koshi) and Province No. 6 (Karnali). Central level hospitals provide complex care and the highest level of treatment services to public patients [36]. These hospitals are broadly accessible to the public because they have minimum fees, whereas private hospitals are costly and are for those who are from social and economically advantaged background.

FIGURE 1 MAP OF NEPAL SHOWING THE PROVINCES WITH CENTRAL LEVEL HOSPITALS.

Source: Nations Online Project. (n.d.). *Map of Provinces of Nepal*. Retrieved January 2023, from https://www.nationsonline.org/oneworld/map/nepal-administrative-map.htm

Senior hospital managers (SHMs) positions in central level hospitals are generally occupied by senior doctors with extensive clinical experience but without formal management education [8,37]. These positions encompass both clinical and non-clinical SHMs, reflecting the multidimensional leadership structure within hospitals. These professionals hold critical responsibilities, such as overseeing clinical service delivery, managing hospital resources, and coordinating operational activities to ensure consistent and effective health service provision. A review of literature revealed a lack of studies specifically focused on assessing the competency of SHMs in central level public hospitals in Nepal. While two studies were identified that examined managerial competency, the scope was limited to general hospital managers across all types of hospitals, without distinguishing senior leadership roles or central level hospitals [8,37]. These two studies, in 2012 and 2014, identified the need for in-service management training for SHMs and a lack of development strategies for managerial competency; one of the factors that limits effective and efficient hospital service provision [8,37]. The two studies provided useful information but are limited because they were conducted prior to the federal democratic republic system. With subsequent changes in the Nepalese health system, it is important to understand what the current level of management competency is for SHMs in Nepal.

Therefore, the aim of this study was to identify the current management competency level of SHMs in central level public hospitals in Nepal.

METHODS

This study utilised quantitative cross sectional survey design as the first part of a larger mixed methods research project. Data was collected from October to December 2023 using a paper-based questionnaire.

TARGET POPULATION

The target population was SHMs in the 15 central level public hospitals in Nepal. SHMs are hospital directors and chiefs of various departments employed at level eight through to eleven. These levels are distinct tiers within the government organisational hierarchy that classify employees' relative rank, responsibilities and authority. Examples of SHMs include chief medical officer, chief finance officer, chief of administration services, head of gynaecology, chief hospital pharmacist, head of dentistry, head of radiology, head of paediatrics, and the head of nursing.

The decision to include only public hospitals in this study was guided by the policy framework set out by the Ministry of Health and Population (MoHP) of Nepal, which holds primary responsibility for developing strategies, guidelines, and standards for public hospitals and health services [38]. Since MoHP does not extend regulatory authority or strategic development to private healthcare institutions, focusing on public hospitals ensures alignment with national health policy directives and allows the research to generate findings that are directly relevant to government-led health system improvements.

On review of the 13 central level hospitals in Bagmati Province, three were excluded because one was run by the army, one was run by the police, and one was an Ayurveda hospital providing a holistic medical system utilising herbal medicine, diet, nutrition, detoxification, yoga and meditation. As ayurveda emphasises balance between body, mind and spirit to heal imbalances of three doshas that represent biological energies governing physical and mental functions-Vata (air and space), Pitta (fire and water) and Kapha (earth and water) [39] and thus are different to other hospitals run by the Ministry of Health and Population. Contact information could only be obtained for six of the remaining ten central level public hospitals in Bagmati Province. Thus, a total of eight central level hospitals were invited to participate in the survey. However, the central level hospital in Koshi province and three central level hospitals in Bagmati Province did not respond to the request for participation in the study. The four remaining central level public hospitals that provided letters of acceptance to participate were:

1. Paropakar Maternity & Women's Hospital (PMWH) Kathmandu, Bagmati Province (Province No. 3)
2. Kanti Children Hospital (KCH), Kathmandu, Bagmati Province (Province No. 3)
3. Sukraraj Tropical and Infectious Disease Hospital (STIDH), Kathmandu, Bagmati Province (Province No. 3)
4. Karnali Academy of Health Sciences (KAHS), Jumla, Karnali Province (Province No. 6).

All the estimated 59 SHMs from the participating hospitals were invited to take part in the survey.

ETHICS APPROVAL

Ethics approvals were obtained from both Nepal Health Research Council (NHRC-545/2023) and James Cook University Australia Human Ethics Research Committee (H9203). Also, where applicable, hospital institutional ethics review committee (IERC) approval was obtained from the participating hospitals prior to data collection.

MEASUREMENT TOOL

The study utilised Management Competency Assessment Partnership (MCAP) self-assessment tool for measuring the competency level and identifying the competency gaps of SHMs [26,27]. The MCAP tool assesses six core management competencies including evidence informed decision making, operation administration and resource management, demonstrated knowledge of healthcare environment and the organisation, interpersonal communication qualities and relationship management, leading people and organisations, and enabling and managing change (Table 1) by measuring 82 behavioural items overall.

Prior to data collection, the MCAP was translated into Nepali by an official translator and pilot tested with five people in Nepal. The pilot testing participants were provided with the questionnaire via email and were requested to provide feedback on the clarity of the questions. Although the results of pilot testing demonstrated that the questionnaire was easy to understand and complete, there was a problem with translating the competency assessment descriptive scale.

In the English versions of the MCAP, the competency assessment descriptive scale is used to explain what the levels of competency mean and the related Likert scale score from one to seven. However, in Nepali an adequate distinction could not be made between the competency assessment descriptions for score 6 (*always apply in my role with extensive experience*) and 7 (*always apply appropriately in my role, with extensive experience gained from diverse management roles at executive level*). In discussion with the developer of the MCAP (ZL), it was decided to use a six-level competency assessment descriptive scale and six-point Likert scale (Table 2.A), knowing that this would make direct comparisons more difficult with other versions of the MCAP. The Nepali version used the existing five-point scale to assess the level of importance of competencies (Table 2.B). Lastly, the Nepali version did not include participant names, to help maintain confidentiality.

TABLE 1 MCAP CORE COMPETENCIES

Abbreviation	Core competency
C1	Evidence informed decision making
C2	Operation, administration, and resource management
C3	Demonstrated knowledge of healthcare environment and the organisation
C4	Interpersonal communication qualities and relationship management
C5	Leading people and organisations
C6	Enabling and managing change

TABLE 2 MCAP SCALES TO MEASURE LEVELS OF COMPETENCY AND IMPORTANCE

A. Competency assessment descriptive scale (level of competency)	
1	May be capable of demonstrating minor aspects in my role
2	May be capable of demonstrating in my role but not in all required aspects
3	Can fully demonstrate in my roles with regular guidance

4	Can generally demonstrate in my role but guidance is needed occasionally
5	Can demonstrate in my role independently without guidance
6	Always appropriately apply in my role with extensive experience
B. The level of importance to the management role	
1	Very unimportant
2	Not so important
3	Unsure whether it is important
4	Somewhat important
5	Very Important

DATA COLLECTION

A paper-based participant information sheet, consent form, and questionnaire (including the Nepali version of the MCAP, demographic questions and three open-ended questions) was supplied to each appropriate Hospital Administrator for approval and distribution to the SHMs in their hospital. An internal letter from the Hospital Administrator was also distributed inviting their SHMs to participate in the survey. Participants were asked to return the questionnaire to a dedicated collection area within the administrative department. Hospitals were requested to send reminder emails to potential participants at the end of the first week and the end of the second week to return the questionnaire. Participants were ensured of confidentiality since the questionnaire was returned in an enclosed envelope and only the researcher had access to the dedicated collection box.

DATA ANALYSIS

Upon the receipt of the returned and completed questionnaires, the data were manually entered into Qualtrics, where a matching English version of the questionnaire was set up. The data were also directly entered to an Excel spreadsheet. Data was then downloaded from Qualtrics to check for accuracy against the Excel spreadsheet. This was effective in identifying and solving data entry errors. The data were analysed with RStudio (R 4.3.3) and SPSS (version 29 for Windows). Percentage of responses for level of importance and level of competency were calculated. Kruskal Wallis test and Fisher's test were conducted to test the association between variables and competency.

RESULTS

Of the 59 SHMs invited to participate, 50 completed the survey, resulting in a response rate of 85% and a maximum margin of error of 5.5%.

MANAGEMENT EXPERIENCE

The average experience of SHMs in their current management position was 4.8 years while the average years of experience in management roles overall, including their current position, was 8 years (Table 3). In their current position, 56% of SHMs (n = 28) had less than five years' experience, while 68% of SHMs (n = 34) had greater than five years' total experience in management roles (Table 4).

TABLE 3 WORK EXPERIENCE OF SHMS

No. years	Current position	Management overall
Mean	4.8	8.0
Median	3.5	7.0
Minimum	1.0	1.0
Maximum	36.0	36.0

TABLE 4 YEARS EXPERIENCE IN CURRENT POSITION AND OVERALL

Experience	Current (%)	Overall (%)
<5 years	28 (56)	16 (32)
5-10 years	18 (36)	21 (42)
10-20 years	3 (6)	10 (20)
>20 years	1 (2)	3 (6)

QUALIFICATIONS OF SHMS

The majority of SHMs (n= 41, 82%) possessed a postgraduate qualification with 80% (n = 40) having a master's degree and one person had a PhD (Table 5). The disciplines of these degrees are detailed in Table 5.

TABLE 5 QUALIFICATIONS OF SHMS

Qualification	N (%)	Description
Bachelor	9 (18)	Bachelor of Medicine and Bachelor of Surgery (MBBS), Bachelor of Hospital Nursing/Bachelor of Nursing (BN), Bachelor of Science Medical Laboratory Technology (BSCMLT)
Master	40 (80)	Doctor of Medicine (MD), Master of Nursing (MN), Master of Business Administration (MBA), Master of Orthopaedic Surgery (MS), Master of Dermatology (MD), Master of Business Studies (MBS), Master of Rural development (RD), Master of Mathematics, Master of Child Development, Master of Public Health (MPH), Master of Clinical Pathology
PhD	1 (2)	Global Health

In addition, 10% of SHMs (n = 5) were currently enrolled in a degree which included Master of Public Administration, Master of Business Administration, Master of Public Health, and PhD Global Health.

Participants were asked whether they had participated in any training (non-degree program) for more than 10 hours per year in the past three years (Table 6). Thirty-eight percent (n = 19) were engaged in management training or self-study on management-related topics. Sixty two percent of SHMs (n = 31) had not participated in any type of training.

TABLE 6 TRAINING PARTICIPATION FOR MORE THAN 10 HOURS PER YEAR IN THE PAST 3 YEARS

Training type	N (%)
Non-management	5 (10)
Management	10 (20)
Self-study, management-related	9 (18)
None of above	31 (62)

DIFFICULTIES ENCOUNTERED BY SHMS

SHMs were asked to indicate the three most common management difficulties they had encountered in the past three years in their management roles from a list of 14 provided in the MCAP tool (Table 7). The three most encountered difficulties were high staff turnover (21, 42%), changing team skill requirements (16, 32%), and losing a high potential employee (15, 30%). Other difficulties faced included: Confronting an employee performance problem, ranked 4, n = 13, 26%; Peer conflict; Making right hiring decisions, and Confronting higher management level, each ranked 5, n = 12, 24%.

TABLE 7 DIFFICULTIES ENCOUNTERED BY SHMS

Rank	Difficulty	N (%)
1	High staff turnover	21 (42)
2	Changing team skill requirements	16 (32)
3	Losing a high potential employee	15 (30)
4	Confronting an employee performance problem	13 (26)
5	Peer conflict	12 (24)
6	Making right hiring decisions	12 (24)
7	Confronting higher management level	12 (24)
8	Having to learn something new such as information or medical technology	9 (18)
9	Employee engagement in decision-making and implementation of change	8 (16)
10	Team conflict	7 (14)
11	Conflicts with patients	7 (14)
12	Creating an innovative team	6 (12)
13	Doing something unethical or wrong	5 (10)
14	Other	3 (6)

INSIGHTS FROM OPEN-ENDED RESPONSES

At the end of the questionnaire, participants were provided with open-ended questions to outline in their own words the difficulties they encountered in organisational management. Only five participants responded to the open-ended questions, which was focused on exploring the challenges faced by SHMs in their roles, the underlying causes and potential organisational- level solutions, as well as their aspirations for career development. Participants primarily shared insights on the challenges faced by SHMs. A recurring theme was the prevalence of political issues in the workplace, such as political pressure, high-level interference, and personnel promotions influenced by favouritism and political connections. These dynamics often undermined merit-based progression and created a demotivating work environment. SHMs also reported facing resistance from subordinates, particularly in relation to the implementation of organisational changes. This resistance hindered smooth transitions and innovation. A particularly concerning issue raised by one SHM was the exposure to violence and abuse from patients or their families. This not only compromised the safety and wellbeing of SHMs but also contributed to their reluctance to continue in their current positions. Among the challenges identified, resistance to change aligned with difficulties outlined in the MCAP tool, whereas the other four types of difficulties (political interference and political pressure, promotions based on favouritism, inadequate benefits and poor work facilities, and instances of violence or abuse from patients and their families) emerged as additional concerns not previously captured in the MCAP tool's predefined options.

MANAGEMENT PREPAREDNESS, COMPETENCY AND IMPORTANCE

MCAP INTERNAL CONSISTENCY

The number of respondents was larger than the sample size required for Cronbach's alpha of n = 38 (where, $\alpha = 0.05$, precision $w = 0.1$, previous reliability $r = 0.9$, and the lowest number of items in C6 $q = 9$) [40]. Cronbach's alpha for the respondents' level of competency and level of importance exceeded 0.90 for each core competency (Table 8). This showed a that the MCAP scale had very good internal consistency for the Nepali version.

TABLE 8 MCAP INTERNAL CONSISTENCY (CRONBACH'S ALPHA)

Level of competency		Level of importance	
Competency*	**alpha (95% CI)**	**Competency***	**alpha (95% CI)**
CI	0.95 (0.94, 0.96)	CI	0.92 (0.91, 0.94)
C2	0.96 (0.95, 0.96)	C2	0.90 (0.88, 0.92)
C3	0.96 (0.95, 0.96)	C3	0.92 (0.90, 0.94)
C4	0.97 (0.97, 0.98)	C4	0.94 (0.93, 0.95)
C5	0.96 (0.96, 0.97)	C5	0.91 (0.89, 0.93)
C6	0.96 (0.95, 0.97)	C6	0.90 (0.88, 0.92)

* See Table 1 for core competency abbreviations

MANAGEMENT COMPETENCY BEFORE TAKING UP THE CURRENT MANAGEMENT ROLE

Participants were asked to indicate the extent to which competencies were acquired before taking up their current management role (Table 9). Overall, 40-50% of SHMs indicated that they were competent in the six core competencies prior to taking up their current management position. Prior to taking the current management role, the highest number of SHMs, 50% (n = 25), self-assessed themselves as competent in C1 *Evidence informed decision making*. This was followed by C2 *Operation, administration, and resource management* and C5 *Leading people and organisations*, both at 48% (n = 24). 32-42% of SHMs (n = 16-21) self-assessed themselves as requiring occasional guidance before undertaking their current role for the six core competencies.

TABLE 9 COMPETENCY PRIOR TO CURRENT ROLE

Competency* [N (%)]	Not yet competent (1-3)	Occasional guidance (4)	Competent (5)	Expert (6)
C1	6 (12)	19 (38)	25 (50)	0
C2	5 (10)	21 (42)	24 (48)	0
C3	10 (20)	20 (40)	20 (40)	0
C4	9 (18)	18 (36)	23 (46)	0
C5	10 (20)	16 (32)	24 (48)	0
C6	8 (16)	21 (42)	21 (42)	0

* See Table 1 for core competency abbreviations

PERCEIVED IMPORTANCE OF MANAGEMENT COMPETENCIES

The majority of the SHMs (96-100%, n = 48-50) perceived the six core competencies as somewhat or very important to their current management role (Table 10). 4% (n = 2) indicated C3 *Demonstrated knowledge of healthcare environment and the organisation* was not so import or were unsure, and 2% each (n = 1) were unsure about the importance of C4 *Interpersonal communication qualities and relationship management* and C5 *Leading people and organisations*.

TABLE 10 SHMS PERCEIVED IMPORTANCE OF MANAGEMENT COMPETENCIES

Competency* [N (%)]	Very unimportant	Not so important	Unsure	Somewhat important	Very important
C1	–	–	–	10 (20)	40 (80)
C2	–	–	–	17 (34)	33 (66)
C3	–	1 (2)	1 (2)	18 (36)	30 (60)
C4	–	–	1 (2)	12 (24)	37 (74)
C5	–	–	1 (2)	7 (14)	42 (84)
C6	–	–	–	13 (26)	37 (74)

* See Table 1 for core competency abbreviations

SELF-ASSESSED COMPETENCY

Overall, 56-72% of SHMs (n = 28-36) indicated that they were currently competent or expert in the six core competencies (Table 11). The highest percentage of SHMs who self-assessed themselves as competent or expert was for C5 *Leading people and organisations* (72 %, n = 36) followed by C4 *Interpersonal communication qualities and relationship management* (70%, n = 35), and the least was C2 *Operation, administration, and resource management* (56%, n = 28) followed by C3 *Demonstrated knowledge of healthcare environment and the organisation* (62%, n = 31) and C1 *Evidence informed decision making* (64%, n = 32). Also, the occasional guidance necessary were highest for C2 *Operation, administration, and resource management* (30%, n = 15) followed by C1 *Evidence informed decision making* (24%, n = 12) and C3 *Demonstrated knowledge of healthcare environment and the organisation* (18%, n = 9).

TABLE 11 SHMS SELF-ASSESSED LEVEL OF COMPETENCY

Competency* [N (%)]	Not yet competent (1-3)	Occasional guidance (4)	Competent (5)	Expert (6)	Competent/ Expert (5-6)
C1	6 (12)	12 (24)	18 (36)	14 (28)	32 (64)
C2	7 (14)	15 (30)	18 (36)	10 (20)	28 (56)
C3	9 (18)	9 (18)	25 (50)	6 (12)	31 (62)
C4	4 (8)	11 (22)	18 (36)	17 (34)	35 (70)
C5	7 (14)	7 (14)	16 (32)	20 (40)	36 (72)
C6	8 (16)	9 (18)	17 (34)	16 (32)	33 (66)

* See Table 1 for core competency abbreviations

COMPETENCY FOR INDIVIDUAL BEHAVIOURAL ITEMS

The highest percentage of SHMs that self-assessed themselves as a competent or expert for individual behavioural items (Appendix A) of each competency were: C1.13 *Commit to ongoing personal and professional development* (70% , n = 35), C2.1 *Complete necessary workforce records e.g. overtime, leave, rosters, attendance, absence to inform the payroll process* (72%, n = 36), C3.11 *Effectively navigate organisational structures, roles and relationships in order to achieve work goals* (60%, n = 30), C4.3 *Listen and empathise with others* (80%, n = 40), C5.10 *Persevere to achieve goals* (78%, n = 39) and C6.3 *Act accountably and accept personal responsibility* (72%, n = 36).

Among the behavioural items the lowest percentages for competent or expert were (Appendix A): C1.4 *Critically appraise the validity and relevance of evidence* (52%, n = 26), C2.5 *Develop budgets in accordance with organisational objectives*, and C2.7 *Anticipate and plan for changes in policies affecting funding to the organisation/unit* (42%, n = 21), C3.2 *Demonstrate understanding of political, social, technical and economic factors and their impact on the organisation* (50%, n = 25), C4.12 *Consider and act with sensitivity to the politics of any given situation* (48%, n = 24), C5.9 *Establish and maintains a personal and professional support network* (56%, n = 28), and C6.7 *Implement change and effectively manage the transition process* (52%, n = 26).

INDIVIDUAL SCORES WITHIN EACH CORE COMPETENCY

A Kruskal-Wallis test was performed to examine associations between individual scores for level of competency (C1.1, C1.2,.... etc) within each core competency (C1-C6). The results indicated a statistically significant difference between individual scores for level of competency within C2 *Operation, administration, and resource management* ($\chi^2(16) = 30.2$, p = 0.0169) and C4 *Interpersonal communication qualities and relationship management* ($\chi^2(18) = 34.1$, p = 0.0124). No statistically significant differences were observed among the remaining groups (C1 *Evidence informed decision making* $\chi^2(12) = 6.97$, p = 0.8597; C3 *Demonstrated knowledge of healthcare environment and the organisation* $\chi^2(10) = 1.97$, p = 0.9966; C5 *Leading people and organisations* $\chi^2(12) = 17.2$, p = 0.1409; C6 *Enabling and managing change* $\chi^2(8) = 5.03$, p = 0.7540).

TABLE 12 MCAP BEHAVIOURAL ITEMS (COMPETENCY AND IMPORTANCE)

Note: the MCAP tool and behavioural items are copyrighted. Use of the MCAP tool or the behavioural items require the written approval of Dr Zhanming Liang. Dr Liang can be contacted at zhanming.liang@jcu.edu.au

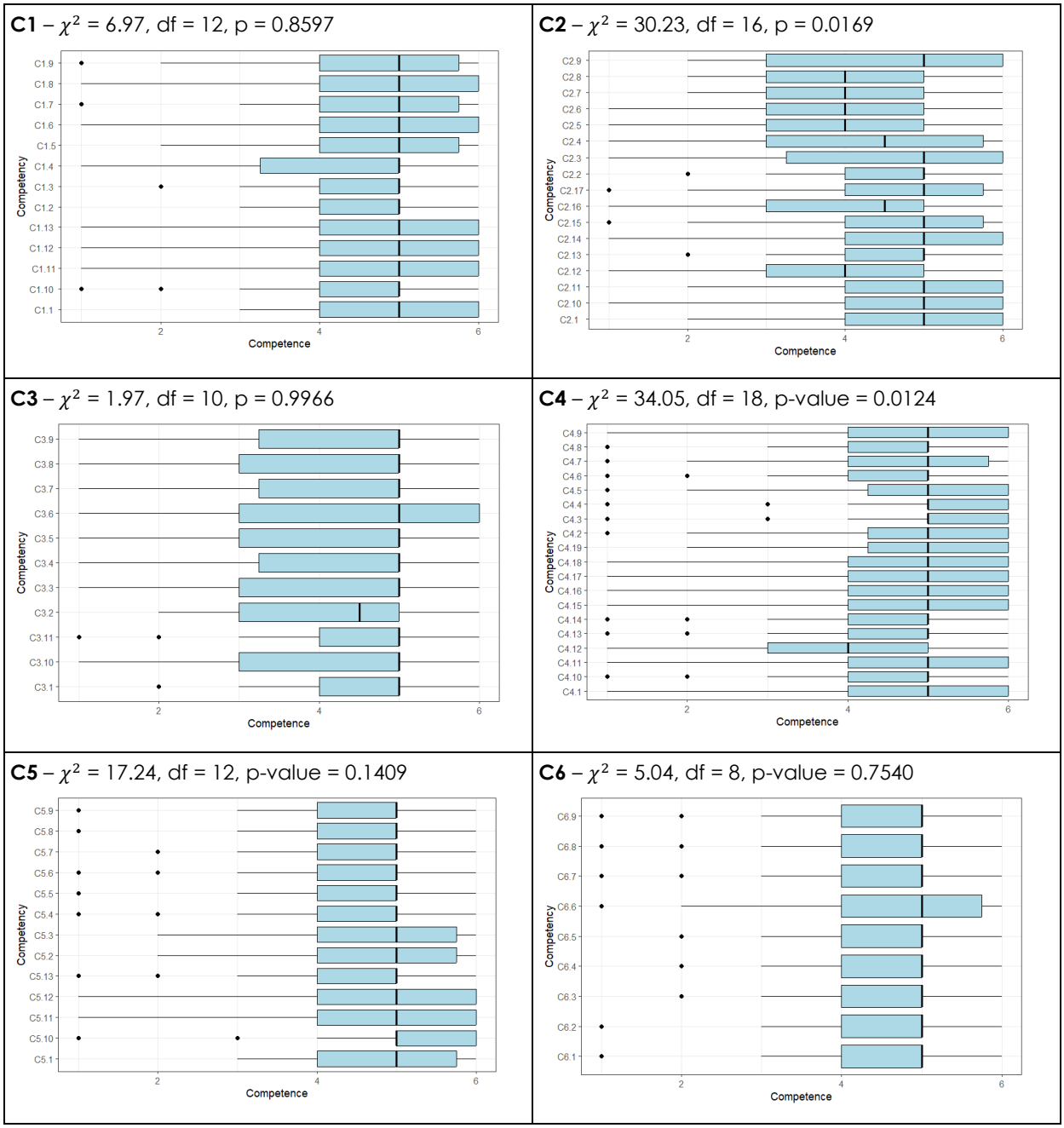
Behavioural item	Level of competency (%)						Level of importance (%)				
	1	2	3	4	5	6	1	2	3	4	5
C1. Evidence informed decision making											
1. Use timely and appropriate questioning/investigation to identify the nature of a problem, issue, or opportunity	0	0	14	18	34	34	0	0	0	20	80
2. Seek appropriate evidence from multiple organisational sources to guide the identification of solutions	0	0	14	26	36	24	0	0	4	22	74
3. Seek appropriate (qualitative/quantitative) evidence from multiple external sources to guide the identification of solutions	0	2	10	24	40	24	0	0	6	32	62
4. Critically appraise the validity and relevance of evidence	2	4	20	22	30	22	2	2	2	36	58
5. Assess and prioritise the relevance of evidence to the question(s)	0	2	14	24	34	26	0	0	4	36	60
6. Use evidence to question and improve existing practice and processes	2	2	14	20	28	34	0	0	4	28	68
7. Apply the best form(s) of evidence to guide management decision-making	2	0	12	26	34	26	0	0	6	28	66
8. Evaluate the process of seeking and applying evidence to management decision-making	0	0	14	30	24	30	0	0	6	38	65
9. Anticipate decision implementation problems/ impacts and develops and communicate appropriate contingency plans	2	2	14	22	34	26	0	2	2	34	62
10. Set and use measures to evaluate decision outcomes	2	2	18	20	34	24	0	2	4	38	65
11. Support and encourage colleagues and subordinates to use evidence to guide decision-making	2	0	14	24	28	32	0	0	2	32	66
12. Anticipate and prepare for the future by staying abreast of best practice and emerging trends that will have an impact on health outcomes	2	2	16	22	28	30	0	0	0	14	86
13. Commit to ongoing personal and professional development	2	0	8	20	36	34	0	0	4	26	70
C2. Operation administration and resource management											
1. Complete necessary workforce records (e.g. overtime, leave, rosters, attendance, absence) to inform the payroll process	0	4	8	16	40	32	0	0	6	34	60
2. Balance the needs of organisation and of staff through effective planning and management of staff roster and work coverage	0	2	8	26	40	24	0	0	4	42	54
3. Interpret basic financial statements	4	16	14	20	26	28	4	0	12	30	54
4. Monitor financial performance by analysing a variety of financial data	4	16	20	18	24	26	4	2	4	34	56
5. Develop budgets in accordance with organisational objectives	4	14	20	20	24	18	4	0	8	32	56
6. Manage budgets in accordance with organisational objectives	4	10	20	20	28	18	4	0	6	26	64

Behavioural item	Level of competency (%)						Level of importance (%)				
	1	2	3	4	5	6	1	2	3	4	5
7. Anticipate and plan for changes in policies affecting funding to the organisation/unit	0	16	26	16	24	18	0	4	8	36	52
8. Design and develop appropriate roles and reporting structure (across a range of areas) in accordance with organisational objectives	0	6	30	16	24	22	0	2	8	36	54
9. Effectively manage recruitment, selection, and appointment of sufficient, suitably skilled staff	0	6	22	14	24	34	0	0	8	32	60
10. Effectively manage staff turnover and retention	2	2	14	22	30	30	2	0	2	38	58
11. Manage staff in accordance with human resource policy and procedure	0	2	18	16	30	34	0	0	2	40	58
12. Establish and maintain the organisation's insurance contracts and financial relationships	2	12	16	24	26	20	0	4	12	28	56
13. Conduct regular two-way performance review & development discussions to support staff development	0	6	14	16	40	24	0	0	4	38	58
14. Recognise and develop the performance of others by providing timely and appropriate feedback	4	2	16	18	32	28	2	0	6	34	58
15. Contribute to continuous improvement of organisational processes, including quality and safety	4	2	16	26	26	26	2	0	2	32	64
16. Use performance measures and industry benchmarks to inform continuous performance improvement	2	6	20	22	36	14	2	2	4	36	56
17. Plan, execute and evaluate projects with significant scope and impact	2	8	12	24	28	26	2	0	6	34	58
C3. Demonstrated knowledge of healthcare environment and the organisation											
1. Demonstrate understanding of the healthcare industry and its impact on healthcare organisations	0	4	18	26	34	18	0	0	10	44	46
2. Demonstrate understanding of political, social, technical and economic factors and their impact on the organisation	0	10	26	14	30	20	0	4	12	40	44
3. Demonstrate understanding of the roles of key stakeholders in health and how they interact	2	4	22	14	34	24	0	0	14	36	50
4. Demonstrate understanding of the highly professionalised health workforce	4	6	16	16	46	12	0	0	10	40	50
5. Apply relevant legislation and accountability frameworks specific to healthcare settings	2	2	24	20	28	24	0	0	8	32	60
6. Demonstrate awareness of clinical and non-clinical risks specific to healthcare organisations	2	2	26	16	24	30	0	0	12	42	46
7. Apply quality indices and benchmarks to identify opportunities, set performance standards and improve quality	2	2	22	22	34	18	0	0	6	44	50
8. Apply risk management concepts and techniques in their work	2	6	22	18	32	20	0	4	8	26	62

Behavioural item	Level of competency (%)						Level of importance (%)				
	1	2	3	4	5	6	1	2	3	4	5
9. Demonstrate understanding of the diversity of healthcare needs	2	4	20	22	30	22	0	0	8	38	54
10. Demonstrate awareness of the organisational history, culture and development	2	2	24	18	32	22	0	0	6	46	48
11. Effectively navigate organisational structures, roles and relationships in order to achieve work goals	2	6	16	16	38	22	0	0	10	30	60
C4. Interpersonal, communication qualities and relationship management											
1. Show trust and respect for others in their actions	2	2	2	22	26	46	0	0	4	18	78
2. Provide appropriate support to others in the workplace	2	2	6	16	26	48	0	0	0	24	76
3. Listen and empathise with others	2	0	6	12	38	42	0	2	0	18	80
4. Engage confidently and constructively in verbal and non-verbal interactions with others	2	0	6	16	46	30	0	2	2	26	70
5. Communicate verbally in a clear, logical and grammatically correct manner in both formal and informal situations	2	2	6	16	38	36	0	0	2	36	62
6. Produce written reports/materials which are appropriate for both audience and purpose	2	2	8	26	40	22	0	0	6	36	56
7. Invest time and effort in working and engaging with stakeholders	2	2	4	28	38	26	0	0	8	32	60
8. Actively question, listen, respond and provide feedback as a basis for effective communication	2	0	8	30	36	24	0	0	4	42	54
9. Function effectively in a team by developing and maintaining professional relationships with people from a wide range of backgrounds	2	2	10	24	34	28	0	2	8	32	58
10. Build collaborative internal and external relationships	2	4	8	26	36	24	0	0	4	40	56
11. Adopt a flexible, client-oriented approach that is sensitive to diverse needs	2	6	8	22	34	28	0	0	6	40	54
12. Consider and act with sensitivity to the politics of any given situation	2	4	20	24	24	24	2	2	10	42	44
13. Work through conflict (and with diverse views) by initiating and engaging in robust conversations	2	2	18	26	32	20	0	4	10	42	44
14. Demonstrate awareness of own emotions and their impact on others	2	4	6	24	40	24	0	0	8	44	48
15. Show self-control over disruptive emotions and impulses	2	0	6	28	36	28	0	0	4	36	60
16. Maintain focus, set realistic goals and are not easily distracted	2	0	16	22	32	28	0	0	6	30	64
17. Show awareness of, and sensitivity to, the feelings of others	2	0	12	16	36	34	0	0	8	24	68
18. Invest time in self-care and personal support mechanisms, especially during stressful times.	2	0	12	18	38	30	0	0	4	32	64
19. Promote and adhere to high standards for personal and organisational integrity, honesty, transparency and respect for people	0	2	6	18	36	38	0	0	4	26	70

Behavioural item	Level of competency (%)						Level of importance (%)				
	1	2	3	4	5	6	1	2	3	4	5
C5. Leading people and organisations											
1. Develop and/or implement a shared vision to achieve organisational goals	0	0	16	22	36	26	0	0	6	32	62
2. Manage with reference to the broader organisational context	0	2	14	22	36	26	0	0	2	46	52
3. Engage effectively in organisational decision-making	0	2	10	24	38	26	0	0	4	36	60
4. Inform and educate influential decision makers	2	2	6	24	40	24	0	0	6	36	58
5. Balance the values and priorities of both organisation and profession(s)	2	0	12	24	40	22	0	0	4	38	58
6. Lead, develop and evaluate performance to build an effective team	2	2	12	26	48	10	0	0	2	40	58
7. Empower others to achieve goals	0	4	12	20	42	22	0	0	4	28	68
8. Adapt leadership style to suit the situation	0	2	14	22	44	18	0	0	6	30	64
9. Establish and maintain a personal and professional support network	2	0	18	24	32	24	0	0	10	36	54
10. Persevere to achieve goals	2	0	8	12	32	46	0	0	4	20	76
11. Demonstrate energy, commitment and enthusiasm	2	0	6	24	34	34	0	2	4	22	72
12. Encourage ideas and identify opportunities	2	0	8	20	42	28	0	0	2	26	72
13. Remain calm whilst under pressure	2	8	8	22	38	22	0	4	4	28	64
C6. Enabling and managing change											
1. Explain the need for change in an effective way	2	0	14	24	42	18	0	0	2	44	54
2. Assess readiness for change and plans accordingly	2	0	16	22	48	12	0	0	2	38	60
3. Act accountably and accept personal responsibility	0	2	10	16	50	22	0	0	2	30	68
4. Effectively balance consultation and decisiveness in decision making	0	2	20	10	48	20	0	0	2	38	60
5. Use available evidence to appraise options	0	4	18	14	42	22	0	0	6	36	58
6. Anticipate and appreciate the impact of change and plans accordingly	2	6	12	22	32	26	0	0	4	40	56
7. Implement change and effectively manage the transition process	2	2	20	24	34	18	0	0	4	44	52
8. Evaluate the processes and outcomes of change	2	4	14	26	38	16	0	0	4	44	52
9. Recognise and tolerate ambiguity	2	4	12	16	44	22	0	0	4	40	56

FIGURE 2 KRUSKAL WALLIS RANK SUM TEST BY CORE COMPETENCY



ASSOCIATION BETWEEN TRAINING AND COMPETENCIES

Kruskal-Walli's rank sum test suggested a positive association between management training and self-assessed competency, but the association did not achieve statistical significance (p=0.6376).

ASSOCIATION BETWEEN EXPERIENCE AND COMPETENCIES

The Fisher's test indicated no significant difference in the proportion of SHMs with high competency (scoring a level of competency 5 or 6) and their level of experience categorised as low being (<3 years) or high (>3 years) of experience (p = 0.27).

DISCUSSION

This study showed that 96 to 100% of SHMs scored the six core management competencies from the MCAP tool as either important or very important, reinforcing the suitability of MCAP tool to the international context [28,29,30,31,32] including Nepalese senior hospital managers.

The self-assessment data presents a revealing picture of current levels of competency among Nepalese SHMs across the six core domains. Most SHMs reported competency expertise in leading people and organisations, closely followed by strengths in communication and relationship management. In comparison, findings from studies in China and Iran which used the MCAP tool highlighted that hospital executives rated themselves significantly lower in leadership competency [28,31]. In contrast the findings from this study suggest a strong foundation in leadership and interpersonal skills, both critical for influencing teams and driving organisational goals.

However, not all SHMs are fully proficient in the core competencies since levels of competency for SHMs across the domains ranged between 56 and 72% suggesting a need for targeted professional development strategies. In particular, areas such as resource management, knowledge of the healthcare environment, and evidence-informed decision making were the least developed competencies indicated by SHMs. This aligns with findings from India, where project managers considered themselves as least competent for evidence informed decision making and knowledge on healthcare organisation [30]. Furthermore, the lowest levels of competency were in SHMs developing budgets aligned with organisational goals which signals either a skill gap or a lack of adequate support structures in financial planning. Additionally, the open-ended questions identified SHMs lower level of confidence in political acumen and managing the change. These findings highlight a critical need for targeted competency-building in three core competencies along with additional support on strengthening working politics and change management for effective and efficient hospital management and service provision in central level public hospital in Nepal.

The primary focus needs to be on resource management including financial insights and budgets to bridge the competency gaps of SHMs. This is further supported by broader literature such as Ziv et al. (2003) who identified that the resource management training programs have good outcomes for fillings competency gaps in health managers specifically for the well organised use of resources [41]. Additionally, research evidence shows that simulation- and scenario-based learning is a cost-effective positive method for improving performance of health executives which supports the acquisition of critical management skills and confidence while incubating a culture of safety [42,43]. Likewise, cross-functional mentorship programs can be utilised for aiding SHMs to improve their management performance in areas like accounting, HR, monitoring, and evaluation [44], in addition to better team dynamics [45].

The second priority is to deepen SHMs understanding on health care environment. This requires increased comprehension of hospital systems and organisational structures including system-wide functions, policy and governance. Workshops and collaborative learning initiatives involving system experts may be included to facilitate the contextualised learning for SHMs, thereby enhancing their understanding of organisational structures within specific healthcare settings [46]. It has been acknowledged that such collaboration fosters deeper insights into governance, policy and operational frameworks, promotes cross-level dialogue and strengthens resilience and adaptability through shared problem-sharing [46]. Furthermore, as a potential strategy, the learning health systems (LHS) framework, which aligns people, data, and organisational culture to enable ongoing learning and innovation, may be employed to foster continuous, context-sensitive improvement [47]. The LHS framework uses real-time evidence from clinical practice to inform decisions, ensuring that new knowledge is rapidly translated into better care. By promoting shared understanding across all levels of the health system, the framework may be utilised to facilitate sustained transformation [47].

The third priority is SHMs knowledge of evidence-based decision making which includes development of skills to access, interpret, and apply research and data in policy and practice. The integration of case-based learning and analytics training may present a valuable approach for developing managerial competency and capabilities of SHMs. By embedding case-based learning within the professional development programs, SHMs can engage in contextualised, experiential learning that deepens their understanding of evidence-based decision-making frameworks [48,49]. This teaching method is effective in cultivating critical thinking, collaborative problem-solving, and systems-level reasoning that is important for negotiating complex areas such as governance, policy and operational challenges in healthcare settings [48,49].

The fourth priority this study identified was a lack of confidence among SHMs in overseeing politically delicate circumstances. This suggests an inadequate exposure to political acumen training along with insufficient assistance during professional development for SHMs and reflects the importance of targeted capacity building initiatives in political literacy and policy navigation. This sentiment is echoed on study by Waring et al. (2023), who emphasises the implementation of targeted capacity-building initiatives, such as leadership development programs incorporating political education, stakeholder engagement, and policy navigation [50]. Therefore, this study underscores the importance of embedding these components into both pre-service education and ongoing professional development program for SHMs to foster greater preparedness and competency in navigating complex political environments within Nepalese public hospital settings.

The final priority is the competency gap in implementing and managing change processes effectively which suggests a need for professional development strategies for SHMs focusing on change management approach. A study by Le-Dao (2025) identified that addressing shortfalls in change management may include introduction of targeted professional development initiatives on change leadership and transition management underlying stakeholder management, resilience, and strategic alliance for uplifting transition management competencies [51]. These finding collectively underscore the importance of planned and structured development approaches as a foundational support to boost SHMs performance attaining organisational persuasiveness, and system sustainability. Together with the development of SHMs resilience and adaptability, the structured and targeted approaches for competency development ensures that SHMs are well-equipped to navigate the complexities of modern public hospital management in Nepal with competence and conviction.

These findings, along with highlighting a critical need to support Nepalese SHMs in developing the core managerial competencies, are relevant across the broader Asia Pacific region, principally in developing countries where health system strengthening remains uneven. As highlighted in several analyses, discrepancy in management and leadership development have obstructed steady progress in healthcare delivery [25,37,52]. By incorporating the competency development needs identified in Nepal, other nations with similar socio-political and economic contexts, such as Bhutan, Papua New Guinea, and parts of Southeast Asia could benefit from a targeted approach to building managerial competency. This aids regional efforts in advancing healthcare management and enhancing system resilience and efficiency [53].

LIMITATIONS

The generalisability of the findings is limited because responses were only received from 50 SHMs in four central level public hospital in Nepal, representing distinct service types and geographical contexts, including urban and rural locations, and specialised facilities such as a children's hospital, maternity hospital, and an infectious disease hospital. Therefore, the result may not be illustrative of all SHMs in central level public hospitals in Nepal. Furthermore, competency assessment relied on self-assessment by participants which may be subject to response bias such as overestimation and underestimation of management competency, leading to errors in self-reported data [28]. Additionally, the relatively small sample size of SHMs may inhibit the ability to robustly assess the internal consistency of MCAP tool using Cronbach's alpha [54].

FURTHER RESEARCH

Further research on different hospital settings and different levels of management may contribute to a better understanding of the competency development requirements for managers in central level public hospitals in Nepal. The open-ended responses revealed complicated issues influencing SHMs performance that expanded beside individual competency. Challenges such as political interference, progression impacted by favouritism, scarce benefits, and substandard working conditions suggest systemic hurdles that warrant closer examination. These barriers further underscore the requirement for qualitative investigation to examine SHMs lived experiences, insights, understanding, and approaches for managing these challenges. Moreover, examining the perceptions of policymakers will also be critical in comprehending the disengagement between governance frameworks and management realities. Future studies should

employ in-depth interviews or focus group discussions to understand the nuanced dynamics at play along with identification of actionable moderators that could support SHMs in effectively fulfilling their roles.

CONCLUSION

Developing SHMs managerial competency is a critical strategic approach to reinforce the efficiency, strength, workability, resilience, stability and sustainability of hospital systems. The study highlights competency gaps among SHMs in areas such as resource management, evidence-based decision making, knowledge on healthcare environment, political acumen, and transition management which further underscores the need for prioritised targeted professional development interventions in these domains. The professional development programs including trainings need to focus on resource allocation, healthcare environment, decision making, political sensitivity, and transition management for equipping SHMs with the competencies necessary to perform their roles effectively and efficiently.

Different learning approaches such as case-based learning and simulated trainings offer valuable opportunities for intensifying evidence-based decision making in conjunction to fostering critical thinking and collaborative problem-solving. These methods are particularly relevant to the complex, policy driven environments that SHMs operate in. The study ultimately underscores that addressing these competency development needs of SHMs through planned, structured and contextually responsive strategies not only strengthens SHMs individual managerial competency but also enhances their organisational performance and resilience. A sustained investment in competency building and development will enable SHMs to negotiate the challenges of contemporary hospital systems with greater confidence and competency. Such development approaches ultimately contribute to the long-term success and sustainability of Nepalese hospital management and healthcare settings.

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