Assessment of Leadership Competency Levels Among Primary Healthcare Nurse Managers in Eastern and Riyadh Health Clusters: A Descriptive Quantitative Study

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ABSTRACT

Background: Nurse managers in primary healthcare settings play a vital role in ensuring effective care delivery and organizational performance. Accurate measurement of leadership competencies is essential for strategic workforce development. Objective: The objective was to assess the leadership competency levels among nurse managers working in centers of the Eastern and Riyadh Health Clusters in Saudi Arabia. Methods: After the IRB approval and informed consent were obtained, this cross-sectional descriptive study was utilized. A validated Arabic version of the Nurse Manager Competency Instrument (NMCI) was used to collect data from 385 nurse managers. Results: The highest competency scores were observed in human and leadership skills; (knowledge score of 3.2 ± 0.7 and a skills score of 3.3 ± 0.7). Financial management competencies received the lowest ratings. Participants demonstrated moderate to high levels. A p-value of <0.05 was considered statistically significant. Conclusion: Findings emphasize strengths and developmental areas in leadership competencies among PHC nurse managers. Insights guide targeted training and professional development interventions.

Keywords: *Leadership competency, nurse managers, primary healthcare, cross-sectional descriptive, health care policy, global, environment.*

INTRODUCTION

The nursing profession constitutes the largest segment of the global healthcare workforce and serves as a cornerstone for healthcare systems worldwide. However, the environment in which nurse leaders operate is uniquely complex, shaped by deeply rooted cultural, social, and professional values. This makes leadership in nursing more multifaceted than in other corporate settings. Additionally, nurse managers are expected not only to implement organizational visions but also to actively shape team behaviours, relationships, and clinical practices to ensure high-quality care outcomes (Hafsteinsdóttir, van der Zwaag, & Schuurmans, 2017).

In primary healthcare (PHC), nurse managers serve in hybrid roles that blend clinical expertise with administrative and strategic leadership responsibilities. These include staff coordination, patient service management, and the translation of institutional values into day-to-day operations (Dzokoto, Mensah, Agbenu, Gatheru, Kwashie, & Boateng, 2024; Ofei & Paarima, 2022). The demand for leadership competencies among nurse managers has escalated, as they are now required to demonstrate strong interpersonal skills, critical decision-making capabilities, and financial acumen in an ever-evolving healthcare landscape. These competencies enable them to create productive work environments and influence the professional development of their teams (Iqbal, Fatima, & Naveed, 2020; Hahn & Gil Lapetra, 2019).

Leadership development in nursing is increasingly recognized as essential for healthcare transformation. As Hafsteinsdóttir et al. (2017) emphasized that nurses must evolve their capabilities in health policy, evidence-based practice, and interprofessional collaboration. According to Hahn and Lapetra (2019), leadership competencies include the ability to motivate teams, develop a shared vision, and adapt organizational strategies to meet health goals. Technical, human, and conceptual skills are equally critical to operational efficiency and staff satisfaction in PHC (Perez-Gonzalez, S., Marques-Sanchez, Pinto-Carral, Gonzalez-Garcia, Liebana-Presa, & Benavides, 2024).

In the Saudi Arabian context, the Vision 2030 initiative has prioritized leadership development as a strategic health reform goal. Despite this, nurse managers in the Kingdom face ongoing challenges, including a persistent shortage of qualified first-line nurse managers (FLNMs), reliance on expatriate staff, and a lack of localized research into leadership competencies (Alomairi, El Seesy, & Rajab, 2018; Alluhidan, et al. 2020). The role of nurse managers extends beyond healthcare delivery to include strategic decision-making that aligns with national environmental healthcare goals and the Sustainable Development Goals (Salvage, & White, 2020).

This study seeks to fill a significant gap in the literature by assessing the leadership competency levels of PHC nurse managers in Eastern and Riyadh Health Clusters. It is guided by Katz's conceptual framework, which categorizes leadership competencies into technical, human, and conceptual domains. Chase (2010) expanded on this framework to include leadership and financial competencies, offering a holistic model to assess nurse manager capabilities. This study adopts Chase's five-domain framework to provide a comprehensive understanding of nurse leadership competencies in PHC settings. The scope of this research includes examining associations between leadership competencies and sociodemographic factors. It targets nurse managers and head nurses with a minimum of one year of leadership experience. The findings are expected to support evidence-based training initiatives, enhance clinical governance, and contribute to healthcare leadership policy reforms.

The significance of this research lies in its potential to impact nursing education, practice, and management. As highlighted by Mirzaei et al. (2024). and Minke et al. (2019), equipping nurse leaders with evidence-based leadership competencies is essential for improving patient safety, staff retention, and organizational resilience. Furthermore, this study contributes to addressing the global call (2020) from the World Health Organization (WHO) to advance nursing leadership, particularly within PHC systems, where evidence remains scarce.

METHODS
This study utilized a descriptive cross-sectional quantitative design to assess the leadership competency levels among nurse managers in primary healthcare (PHC) centers across the Eastern and Riyadh Health Clusters in Saudi Arabia. This approach was chosen to gather a comprehensive overview of competency levels at a single point in time and to explore associations between competencies and sociodemographic variables (Hafsteinsdóttir et al., 2017).

Study Setting and Population

The research was conducted in PHC centers affiliated with the Eastern and Riyadh Health Clusters, which represent a significant segment of the Saudi healthcare infrastructure. The target population included nurse managers and head nurses who had held a leadership position for at least one year within these PHC centers.

Sampling and Sample Size

A convenience sampling technique was employed, drawing from available and willing nurse managers who met the inclusion criteria. The final sample consisted of 385 participants. The sample size was calculated using the formula for a finite population with a 95% confidence level, 5% margin of error, and a response distribution of 50%, yielding a required sample of approximately 385 participants. This ensured adequate power for statistical analysis Dzokoto et al., 2024).

Inclusion and Exclusion Criteria

Inclusion criteria were nurse managers or head nurses with at least one year of leadership experience in PHC settings. Exclusion criteria included those with less than one year of leadership experience or those who declined to participate.

Data Collection Instrument

Data were collected using the Nurse Manager Competency Instrument (NMCI), originally developed by Chase (2010). The instrument comprises 38 items distributed across five domains: (1) leadership, (2) communication and relationship management, (3) knowledge of the healthcare environment, (4) business and financial acumen, and (5) professionalism. Each item was rated on a four-point Likert scale ranging from 1 (contributes minimally) to 4 (essential for the role). The instrument was translated into Arabic using a rigorous forward-backward translation method by bilingual nursing experts to ensure semantic and conceptual equivalence. Cultural adaptations were made to reflect local healthcare terminology and practice norms.

Pilot Study

A pilot study involving 10% of the target sample (n = 40) was conducted to assess the clarity, reliability, and time required to complete the instrument. Minor revisions were made based on feedback. The pilot results indicated high internal consistency, with Cronbach's alpha exceeding 0.90 across all domains.

Validity and Reliability

Face and content validity were confirmed by a panel of eight academic and clinical nursing experts from Saudi universities. The Content Validity Index (CVI) for individual items ranged from 0.80 to 1.0. Construct validity was assessed using Exploratory Factor Analysis (EFA) with principal component extraction and varimax rotation. Items loaded consistently with the five-domain model proposed by Chase (3). Internal consistency reliability was evaluated using Cronbach's alpha for each domain, yielding values between 0.88 and 0.95, indicating excellent reliability.

Data Collection Procedure

After obtaining ethical approvals from the institutional review boards of King Saud University and the relevant health clusters, informed consent was obtained from all participants. Each participant received a printed survey packet including a participant information sheet, consent form, demographic questionnaire, and the NMCI. Confidentiality and anonymity were strictly maintained throughout the data collection process.

RESULTS

Data were analysed using IBM SPSS Statistics version 27. Descriptive statistics (mean, standard deviation, frequency, percentage) were used to summarize demographic variables and competency scores. One-way

ANOVA and independent t-tests were conducted to determine differences in competency levels across demographic groups. Pearson correlation coefficients were used to assess associations between continuous variables such as age and years of experience. A p-value of <0.05 was considered statistically significant.

Table A presents the sociodemographic characteristics of the 264 nurse managers who participated in the study. The age distribution shows that the largest proportion (51.5%) were between 30 and 39 years old, indicating a relatively young and mid-career workforce. Participants aged below 29, between 40–49, and those 50 years or older collectively accounted for the remaining 48.5%. In terms of gender, a significant majority were female (76.9%), reflecting the gender composition commonly observed in the nursing profession. Regarding educational qualifications, 37.1% of the participants held a bachelor's degree in nursing, which was the most common qualification. The remaining 62.9% had other qualifications, including diplomas, master's degrees, and doctorate degrees, indicating a mix of foundational and advanced educational backgrounds.

When it comes to professional experience, a substantial proportion (67.4%) of nurse managers had more than 10 years of work experience, suggesting that the majority of respondents were seasoned professionals with extensive clinical and managerial exposure. In terms of span of control, 34.5% of nurse managers supervised fewer than 14 full-time equivalents (FTEs), while 65.5% managed larger teams ranging from 15 to more than 50 FTEs. This variation highlights the diversity in management responsibilities among participants across different healthcare settings.

Table A: Sociodemographic Characteristics of Nurse Managers (n=264)

Variable	Category	n (%)
Age	30–39 years	136 (51.5%)
	<29 / 40–49 / ≥50 years	128 (48.5%)
Gender	Female	203 (76.9%)
	Male	61 (23.1%)
Education	Bachelor's in Nursing	98 (37.1%)
	Diploma / Master's / Others	166 (62.9%)
Experience	>10 years	178 (67.4%)
	≤10 years	86 (32.6%)
Span of Control (FTEs)	<14	91 (34.5%)
	15–24 / 25–49 / >50	173 (65.5%)

Table B summarizes the mean scores and standard deviations for nurse managers' knowledge and skills across three key leadership competency subscales. For the Core Competency Determinants, which include elements such as decision-making, delegation, and time management, the mean knowledge score was 3.2 ± 0.8, while the skills score was slightly higher at 3.3 ± 0.7. This suggests that most nurse managers not only understood the core leadership concepts but were also able to effectively apply them in practice. In the Communication and Relationship subscale, which encompasses aspects such as effective communication, team-building, and staff development strategies, both the knowledge and skills scores were consistent at 3.2 ± 0.7 and 3.3 ± 0.7, respectively. These findings indicate a strong grasp of interpersonal and collaborative leadership practices among the participants.

The Knowledge of Healthcare Environment subscale, which includes areas like clinical standards, infection control, and regulatory compliance, showed the same pattern, with a knowledge score of 3.2 ± 0.7 and a skills score of 3.3 ± 0.7. This reflects a well-rounded competency in understanding and navigating the healthcare system effectively. Overall, the scores across all subscales suggest that nurse managers generally demonstrated a significant to essential level of both understanding and application of leadership competencies in their respective domains.

Table B: Mean Scores – Knowledge & Skills in Leadership Competency Subscales

Subscale	Knowledge Mean ± SD	Skill Mean ± SD
Core Competency Determinants	3.2 ± 0.8	3.3 ± 0.7
Communication & Relationship	3.2 ± 0.7	3.3 ± 0.7
Knowledge of Healthcare Environment	3.2 ± 0.7	3.3 ± 0.7

Table C presents the overall distribution of nurse managers' knowledge, skills, and combined total leadership competencies. In terms of knowledge, a large majority (77.3%) of the participants demonstrated a high level of knowledge regarding leadership competencies, while 14.0% had a moderate level, and only 8.7% fell into the low knowledge category. The mean score for knowledge was 124 ± 28, indicating a generally strong theoretical understanding of leadership principles among the participants. Regarding leadership skills or practice, 81.8% of nurse managers were classified as having a high level of leadership skill, whereas 9.1% each had moderate and low levels. The mean score was 126 ± 27, slightly higher than the knowledge score, suggesting that nurse managers were generally confident in translating their leadership knowledge into effective practice.

When considering total leadership competencies—a combination of both knowledge and skills—81.1% of participants demonstrated a high level of overall leadership competence. Only 11.0% had a moderate level, and 8.0% had a low level. The mean score again stood at 126 ± 27, further reinforcing the finding that the majority of nurse managers possessed both the understanding and the practical ability to function effectively as leaders in their healthcare settings. These results reflect a well-developed leadership competency profile among nurse managers in the study, with a small percentage needing targeted support or development.

Table C: Overall Knowledge & Skills Levels of Nurse Managers

Competency Type	Level	n (%)	Mean ± SD
Knowledge	Low	23 (8.7%)	124 ± 28
	Moderate	37 (14.0%)	
	High	204 (77.3%)	
Skills	Low	24 (9.1%)	126 ± 27
	Moderate	24 (9.1%)	
	High	216 (81.8%)	
Total Leadership	Low	21 (8.0%)	126 ± 27
(Knowledge + Skills)	Moderate	29 (11.0%)	
	High	214 (81.1%)	

Table D outlines the statistical associations between nurse managers' sociodemographic variables and their overall knowledge levels regarding leadership competencies. The analysis revealed highly significant associations ($p \leq 0.01$) between education level, primary healthcare (PHC) centre size, and span of control with the level of leadership knowledge. This indicates that nurse managers with higher educational qualifications, those working in larger PHC centers, and those supervising larger teams were more likely to possess greater knowledge of leadership competencies. In contrast, no statistically significant associations ($p > 0.05$) were found between knowledge level and the variables of age, gender, and years of experience. This suggests that, regardless of how long a nurse manager had been in practice, or their age or gender,

these factors did not significantly influence their leadership knowledge. These findings imply that formal education and the complexity of the work environment—rather than demographic or experiential factors—play a more critical role in shaping leadership knowledge among nurse managers.

Table D: Significant Associations with Knowledge Level

Sociodemographic Variable	Significance
Education Level	**Significant (p $\leq$ 0.01)**
PHC Center Size	**Significant (p $\leq$ 0.01)**
Span of Control	**Significant (p $\leq$ 0.01)**
Age, Gender, Experience	Not Significant (p > 0.05)

DISCUSSION

The discussion chapter provides an in-depth analysis of the findings presented in this study, focusing on the leadership competencies of primary healthcare nurse managers in the Eastern and Riyadh Health Clusters. This section interprets the results within the framework of existing literature, highlighting implications for nursing practice, healthcare administration, and policy formulation. The chapter explores how key competencies—such as communication, decision-making, and strategic thinking—enhance the successful administration of primary healthcare services. It also considers the challenges and opportunities nurse managers face and underscores the importance of continuous professional development to strengthen leadership capabilities and improve healthcare delivery.

Nurse Managers' Knowledge: Core Competency Determinants

The study showed that most nurse managers possessed significant to essential knowledge levels regarding core leadership competencies. This is consistent with findings by Gonzalez Garcia et al., who emphasized the need for nurse managers to master essential competencies such as decision-making, relationship management, and team collaboration to succeed in modern healthcare systems (García, Pinto-Carral, Villorejo, & Marqués-Sánchez, 2020). Similarly, Kakemam et al. (2020) proposed a comprehensive framework of inclusive management competencies vital for leadership development and recruitment in healthcare (Kakemam, Liang, Janati, Arab-Zozani, Mohaghegh, & Gholizadeh, 2020). Researchers highlighted that moderate competency levels among nurse managers, advocating for targeted leadership training to build necessary attitudes and capabilities (Ofei, & Paarima, 2022).(3)

Nurse Managers' Skills: Core Competency Determinants

The current study also revealed that most nurse managers demonstrated significant to essential levels of leadership skills. These findings align with Mahdi and Faraj, who reported that nurse managers exhibit strong leadership in areas like communication, change management, and subordinate development (Castillo, Padilla, & Hernández, 2021). Researchers of this study conducted a meta-analysis identifying 53 key leadership competencies across six domains, such as time management, integrity, and conflict resolution of which match those highlighted in this study (Perez-Gonzalez, Marques-Sanchez, Pinto-Carral, Gonzalez-Garcia, Liebana-Presa, Benavides, 2024).

Knowledge in Communication and Relationship Competency

Nurse managers reported high knowledge levels regarding communication and relationship competencies. The researchers found that effective communication is a fundamental component of the American Organization for Nurse Leadership (AONL) domains. Also, researchers concluded that communication, proactiveness, and decision-making are central competencies of effective nurse managers and critical to

improving outcomes in both staff and patient care (Fowler, Robbins, & Lucero, 2021; Abd-Elmoghith and Abd-Elhady, 2021).

Skills in Communication and Relationship Competency
In terms of practical skills, the findings showed that nurse managers had essential levels of communication and relationship management. However, Warshawsky et al. noted contrasting results, indicating that many nurse managers still lack necessary competencies and that professional development budgets are often the first to be cut, despite the risks. Conversely, researchers also found that front-line nurse managers exhibited strong leadership abilities, though management training was the single most influential predictor of these skills (Warshawsky & Cramer, 2019; Chen, Modanloo, Graham, Hu, Lewis, & Gifford, 2022).

Knowledge in Healthcare Environment Competency
The study also reported high knowledge levels in the healthcare environment subscale. This supports findings by Gottlieb et al., who emphasized the leadership role in fostering autonomy and job satisfaction among nurses, which positively impacts patient outcomes (Gottlieb, et al., 2021). The transformational leadership (TFL) fosters an inclusive work environment and enhances job satisfaction and. Similarly, researchers also found that nursing managers with strong TFL traits reduce burnout and improve team cohesion (Lavoie-Tremblay, Aubry, Richer, & Cyr, 2018; Specchia et al., 2021; Kok, Weggelaar, Reede, Schoonhoven, & Lalleman, 2023).

Skills in Healthcare Environment Competency and Sociodemographic Correlations
The findings demonstrated significant associations between leadership competency levels and factors like education and span of control, but no significant links with age, gender, or experience. The researchers concluded that similar predictors among frontline nurse leaders (Chen, Modanloo, Graham, Hu, Lewis, & Gifford, 2022; Gottlieb, Gottlieb, & Bitzas, 2021; Kok, Weggelaar, Reede, Schoonhoven, & Lalleman, 2023). Nurses lacked adequate clinical competencies during the COVID-19 pandemic due to limited prior training. And also, researchers observed that demographic characteristics, such as years of service and gender, significantly influenced competence levels among Saudi nurses Grnde, et al. (2023; Halabi, Lepp, & Nilsson, 2021).

LIMITATIONS
This study has several limitations that may affect the generalizability of the results: Sampling Method: The use of convenience sampling limits representativeness, as the sample may not reflect the diversity of nurse managers across all Saudi Arabian PHC settings. This introduces potential selection bias. Descriptive Cross-sectional Design: The design allows for identification of associations but not causation. Longitudinal or experimental designs would provide stronger evidence regarding the impact of leadership competencies on outcomes. Moreover, self-reported Data: The study relied on self-assessment questionnaires, which are subject to response bias. Participants may overestimate their competencies due to social desirability or misperception. Geographic Scope: The research was limited to the Eastern and Riyadh Health Clusters. Findings may not be applicable to other regions or healthcare systems with different organizational structures and cultural contexts. Limited Variable Analysis: While the study explored several sociodemographic factors, other potentially relevant variables, such as organizational culture, availability of continuing education, and leadership mentoring, were not assessed. These limitations should be considered when interpreting the findings, and future research should aim to address them through more robust study designs and broader samples.

IMPLICATIONS
This study suggests that development in leadership competencies among PHC nurse managers with financial management is known as the weakest domain. Concentrating on this gap through structured training, competency-based professional development initiatives, and mentorship would strengthen

managerial effectiveness. Also, it would advance organizational performance and care delivery. Implementing leadership development strategies that are aligned with the priorities of Saudi Arabia`s vision 2023. It would not only substitute the professional growth of nurse managers, but it would also advance the wider goals of healthcare transformation at the national level.

CONCLUSION

This cross-sectional descriptive study assessed the leadership competencies of primary healthcare (PHC) nurse managers in the Eastern and Riyadh Health Clusters, focusing on core competency determinants, communication and relationships, and knowledge of the healthcare environment. The results demonstrate that a large proportion of nurse managers exhibit high levels of both knowledge (77.3%) and skills (81.8%) related to leadership competencies. Overall, 81.1% of the participants were categorized as highly competent when combining both knowledge and skill domains. Significant associations were found between leadership knowledge levels and certain sociodemographic variables, specifically education level, PHC center size, and span of control ($p \leq 0.01$), while variables such as age, gender, and experience were not significantly associated. These findings reinforce the importance of targeted leadership training programs that consider managerial responsibilities and formal educational background. The consistency of these results with international literature supports the global relevance of strengthening nurse manager competencies as a strategic priority for healthcare systems. Enhancing leadership at the PHC level not only improves team efficiency and communication but also directly influences healthcare delivery, workforce stability, and patient outcomes.

Declaration of Conflicting Interest
The authors confirm that there are no conflicts of interest to declare regarding this article.

Ethical Approval and Registration
Ethical approval was obtained from the Institutional Review Board (IRB) at King Saud University (KSU) (IRB No. KSU-HE24-446) ON May 5, 2024, and from relevant authorities in the Eastern and Riyadh Health Clusters (IRB No: 24-406E). Prior to the research beginning, the participants (nurses) in this study gave their written informed consent. Before they were recruited, they were informed about the nature, goal, and other pertinent information of this cross-sectional descriptive study. The participants were made aware that they had an equal chance to participate in this study and that it was entirely voluntary. They were also told that the participants' identities and the confidentiality of the data were ensured. Participants' information was stored on the researcher's computer with a password-protected.

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