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Title: The Relationship Between First-Line Nurse Managers' Managerial Competence and Elderly Health Service Standards through Job Satisfaction in Public Health Centers of Malang City and Regency

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To appear in: ***Journal of Client-centered Nursing Care***

Received date: 2026/01/1

Revised date: 2026/08/5

Accepted date: 2026/11/8

This is a "Just Accepted" manuscript, which has been examined by the peer-review process and has been accepted for publication. A "Just Accepted" manuscript is published online shortly after its acceptance, which is prior to technical editing and formatting and author proofing. Journal of Client-centered Nursing Care provides "Just Accepted" as an optional and free service which allows authors to make their results available to the research community as soon as possible after acceptance. After a manuscript has been technically edited and formatted, it will be removed from the "Just Accepted" Web site and published as a published article. Please note that technical editing may introduce minor changes to the manuscript text and/or graphics which may affect the content, and all legal disclaimers that apply to the journal pertain.

Please cite this article as:

Rakhmawati, R., Ahsan, A., & Hayati, Y. S., 2026. The Relationship Between First-Line Nurse Managers' Managerial Competence and Elderly Health Service Standards through Job Satisfaction in Public Health Centers of Malang City and Regency. To be published in *Journal of Client-centered Nursing Care* [Preprint].

Doi: http://dx.doi.org/10.22034/jccnc.12.4.1214.1

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ABSTRACT

Background: The achievement of elderly health Minimum Service Standards (SPM) reflects the quality of primary healthcare delivery in Indonesia. First-line nurse managers play a crucial role in ensuring these standards through effective management, leadership, and staff satisfaction. This study aimed to analyze the relationship between first-line nurse managers' managerial competence and the achievement of elderly health service standards, with job satisfaction as a mediating variable.

Methods: A cross-sectional correlational study was conducted from July to August 2025 involving 126 first-line nurse managers from 32 public health centers in Malang City and Regency, Indonesia, recruiting through proportional to size cluster random sampling. Managerial competence was measured using the Primary Care Managerial Competence Scale, while job satisfaction was assessed using the Minnesota Satisfaction Questionnaire (MSQ) short form. Data analysis was performed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS version 4.0, with statistical significance set at $p<0.05$.

Results: Managerial competence across eight domains—leadership, communication, partnership, systematic thinking and decision-making, organizational development and professionalism, emotional intelligence, proactive approach, and information management—showed no significant direct effect on the achievement of elderly health service standards ($\beta = -0.212$, $t = 1.924$, $p = 0.054$). However, managerial competence significantly influenced job satisfaction ($\beta = 0.575$, $t = 8.875$, $p < 0.001$), and job satisfaction positively affected SPM achievement ($\beta = 0.257$, $t = 2.517$, $p = 0.012$), indicating a significant indirect effect ($\beta = 0.148$, $t = 2.313$, $p = 0.021$). The model demonstrated a good overall fit (GoF = 0.382).

Conclusion: Improving nurse managers' job satisfaction serves as a critical pathway through which managerial competence contributes to service performance. Strengthening managerial capacity, supported by organizational motivation and capacity-building strategies, is essential to optimize elderly health services in primary care settings.

Keywords: Managerial competence, Job satisfaction, Minimum service standards, First-line nurse managers, Primary care

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Highlights

- Achieving minimum standards for elderly health services (SPM) demonstrates the quality of primary health care provision in Indonesia.
- Managerial competence alone did not directly ensure elderly (SPM) achievement in public health centers.
- Nurse managers' job satisfaction is key to translating competence into service outcomes.
- Strengthening both managerial skills and job satisfaction can optimize elderly health services.

Plain Language Summary

As Indonesia's elderly population grows rapidly, public health centers rely on first-line nurse managers to lead programs that meet national elderly health service standards. This study looked at 126 nurse managers from 32 public health centers in Malang City and Regency to understand how their management skills relate to achieving these minimum service standards, and whether their job satisfaction plays a role in this relationship. The results showed that having strong management skills alone was not enough to directly guarantee better service achievement. However, nurse managers with stronger management skills tended to feel more satisfied with their jobs, and this greater job satisfaction, in turn, was linked to better achievement of elderly health service standards. In other words, job satisfaction acts as an important bridge connecting good management skills to real improvements in elderly care services. These findings suggest that health authorities should not only train nurse managers' leadership and organizational skills, but also actively support their job satisfaction and workplace wellbeing to achieve better elderly health outcomes.

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Introduction

The global population of older adults is rapidly increasing due to improved healthcare services and declining birth rates, posing challenges to social and health systems (Jayawardhana et al., 2023; Kaviarasu et al., 2023). By 2030, one in six people worldwide will be aged 60 or above (Freitas & Salibi, 2023), with the elderly population projected to reach 1.5 billion by 2050, mostly in low- and middle-income countries (Aruta, 2023). In Indonesia, older adults account for 11.75% of the total population as of 2023, dominated by those aged 60–69 years.

In Malang City, the elderly population increased from 99,126 in 2023 to 108,277 in 2024—a 9.23% rise—representing 18.95% of the city's population. The increase parallels a higher life expectancy (74.13 years in 2023). Similarly, the elderly in Malang Regency accounted for 14.8% of the population. Health screenings in 2023 showed that 34.5% of older adults suffered from hypertension and 30.7% from obesity, indicating a high prevalence of chronic and degenerative diseases (Sharma & Morishetty, 2023; Wang et al., 2021). The rising demand for long-term care and specialized services escalates healthcare costs and sustainability challenges (Kanev et al., 2024; Lopreite & Zhu, 2020). Community-based screening and education programs have been shown to improve knowledge and early detection of chronic conditions (Hayati & Astari, 2020) underscoring the need for preventive health systems tailored to the elderly.

Elderly health services in Indonesia are guided by the Ministry of Health Regulation No. 6/2024 concerning technical standards for *Standar Pelayanan Minimal* (SPM), (the Indonesian term for Minimum Service Standards). Local governments are mandated to provide screening and education services, including nutritional assessments, blood pressure, glucose, cholesterol checks, simple elderly screening (SKILAS), and behavioral risk assessments, targeting 100% coverage. The SPM achievement serves as an indicator of primary care performance and reflects the managerial effectiveness of first-line nurse managers responsible for program implementation (Gunawan & Aungsuroch, 2017a).

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Preliminary interviews with officials from the Malang City and Regency Health Offices revealed that SPM achievement depends heavily on nurses' managerial competence. Managerial competence refers to the behavior of a first-line nurse manager in applying knowledge, skills, and attitudes to perform specific managerial tasks, functions, and job responsibilities (Gunawan & Aungsuroch, 2017b). Challenges persist in leadership, self-management, and program coordination—nurses often face difficulty motivating teams, managing time, and prioritizing tasks, which affects screening implementation. Limited coordination across sectors, suboptimal use of health information systems, and weak program evaluation further hinder performance.

Managerial competence gaps among first-line nurses are evident, particularly in leadership, organizational development, and information management. Strengthening these competencies is essential to achieving SPM targets effectively and equitably. Competent nurse managers are key to planning, organizing, implementing, and evaluating elderly health programs (Gunawan Aungsuroch, Fisher, McDaniel, et al., 2020a). Despite national SPM achievement averaging 82% in 2023, disparities remain across regions, including Malang, where performance varies widely between health centers. This inequality reflects differing managerial capacities that affect program execution (Ahsan et al., 2021).

The conceptual foundation of this study integrates Boyatzis's managerial competency theory, emphasizing skills, knowledge, and personal attributes for effective leadership (Gunawan et al., 2018), and Walker & Avant's (2019) concept analysis framework, which identifies antecedents and consequences of managerial competence. These are complemented by the Quality-Caring Model (Pérez-Vergara et al., 2021), highlighting caring as the basis for collaborative, high-quality leadership. Together, these frameworks provide a comprehensive foundation for understanding managerial competence among first-line nurses.

Managerial competence across nine eight domains—leadership, partnership, communication, systematic thinking and decision-making, organizational development and professionalism, financial management, information management, emotional intelligence, and

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proactive approach—is critical for ensuring effective elderly health services (Kitreerawutiwong et al., 2015). These competencies translate policies into action and maintain program continuity in primary care. Job satisfaction acts as a mediating factor, as competent nurses tend to experience greater satisfaction, which in turn improves adherence to standards and enhances SPM outcomes (Backman et al., 2023; Choi et al., 2022; Labrague et al., 2021; Neves et al., 2020; Zaghini et al., 2020) .

Previous studies have mostly focused on geriatric or basic elderly care without directly linking managerial competence to SPM achievement (Avallone et al., 2021; Grealish et al., 2023; Gunawan, Aungsuroch, Fisher, McDaniel, et al., 2020a). Hence, this study aims to analyze the relationship between first-line nurses' managerial competence and the achievement of elderly health service standards in public health centers of Malang City and Regency, both directly and through the mediating role of job satisfaction.

Materials and Methods

Design, setting and sample

This study employed an analytical quantitative design with a cross-sectional correlational approach to examine the relationship between managerial competence and elderly health service standards through job satisfaction among first-line nurse managers. The study was conducted in public health centers (Puskesmas in Indenesia) across Malang City and Regency, East Java, Indonesia. Data collection was carried out in July–August 2025 through self-administered questionnaires by first-line nurse managers and secondary data on elderly health service standards from 2024 Health Office reports.

The population included all first-line nurse managers responsible for elderly health programs in public health centers of Malang City and Regency. A total of 126 respondents were selected using cluster random sampling proportional to the number of public health center (*Puskesmas in Indonesian)* in each area. Inclusion criteria were nurses serving as program coordinators or team leaders for elderly health services, with at least one year of work experience.

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Respondents on leave or in administrative positions were excluded. The minimum sample size for Partial Least Squares–Structural Equation Modeling (PLS-SEM) was determined using the 10-times rule, which states that the required sample size should be at least ten times the largest number of indicators forming a single construct in the model. In this study, the managerial competence construct had the largest number of indicators, consisting of eight dimensional scores (leadership, communication, partnership, systematic thinking and strategic decision-making, organizational development and professionalism, emotional intelligence, proactive approach, and information management), resulting in a minimum required sample size of 80 (8 × 10). The final sample of 126 first-line nurse managers therefore exceeded this minimum threshold.

Instruments and data collection procedures

Managerial competence was measured across the eight domains mentioned earlier. The instrument was adapted from the Primary Care Managerial Competence Scale developed by Kitreerawutiwong et al. (2015), validated for use in Indonesian primary care settings using confirmatory factor analysis, Cronbach's alpha, and composite reliability tests. The original scale consisted of 43 items rated on a 5-point Likert scale ranging from 1 (unable to perform) to 5 (proficient and able to mentor others). Following discriminant validity assessment (HTMT), six items were removed due to cross-loading issues, and the financial management domain was subsequently excluded from the model, resulting in a final measurement model of 37 items across eight domains. Dimension scores were converted to a 0–100 scale. Cronbach's alpha for the eight retained domains ranged from 0.815–0.958, with composite reliability of 0.824–0.958 (Table 3). The mediating variable was job satisfaction, assessed using the Minnesota Satisfaction Questionnaire (MSQ) short form. The MSQ short form consisted of 20 items rated on a 5-point Likert scale (1 = very dissatisfied to 5 = very satisfied), yielding an average score ranging from 1.00 to 5.00, categorized as very dissatisfied (1.00–1.80), dissatisfied (1.81–2.60), moderately satisfied (2.61–3.40), satisfied (3.41–4.20), or very satisfied (4.21–5.00). This instrument demonstrated good reliability, with a Cronbach's alpha of 0.90 and composite reliability of 0.94

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(Table 3). The other variable was the achievement of elderly health service standards (SPM) obtained **as** secondary data from the 2024 annual reports of the Malang City and Regency Health Offices. Data were recorded by the researcher using a structured recording form covering three SPM indicators: elderly health screening (at least once per year), health education for elderly and their families, and home visits for elderly unable to attend the facility. For each indicator, the target number of elderly individuals and the number actually served at each public health center were extracted from the official reports, and coverage percentages were calculated accordingly. Coverage percentages were categorized into four score levels: ≥95% (score 4, very good), 85–94% (score 3, good), 70–84% (score 2, fair), and <70% (score 1, poor), consistent with national Minimum Service Standards guidelines (Ministry of Health of Indonesia, 2024). The overall SPM achievement value reported in Table 2 represents the mean coverage percentage across the three indicators for each public health center.

Data analysis

Data analysis used Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS version 4.0 to assess measurement and structural models (Hair et al., 2021). The analysis included outer loadings, Average Variance Extracted (AVE), Fornell–Larcker, and Heterotrait-Monotrait (HTMT) ratio for discriminant validity, followed by path coefficient testing for direct and indirect relationships. A p-value <0.05 was considered statistically significant.

Results

A total of 126 first-line nurses from community health centers in Malang City (n = 60) and Malang Regency (n = 66) participated in this study. Most respondents were female (85.7%) with an average age of 38.6 years (SD = 6.4) and an average work experience of 11.2 years. The majority held a professional nursing degree (*Ners, according to* the Indonesian professional nursing qualification) and were responsible for elderly or chronic disease programs (Table 1).

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Table 1. Demographic characteristics of respondents

Respondent Characteristics	**Category**	***Frequency* (*f*)**	***Percent* (%)**
Gender	Male	38	30.2%
	Female	88	69.8%
Marital Status	Single	9	7.1%
	Married	114	90.5%
	Divorced	3	2.4%
Age	Young Adult (26–35 years)	88	69.8%
	Middle Adult (36–45 years)	38	30.2%
Educational Level	Diploma	105	83.3%
	Bachelor's Degree	21	16.7%
Years of Service	Junior (1–<3 years)	9	7.1 %
	Intermediate (3–<5 years)	12	9.5%
	Senior (5–<10 years)	10	7.9%
	Expert (≥10 years)	95	75.4%

Age categories were classified according to the Indonesian Ministry of Health (Depkes RI, 2009): Young Adult (26–35 years) and Middle Adult (36–45 years)

Table 2. Mean Scores of Managerial Competence Domains, Job Satisfaction, and Elderly Health Service Achievement (n = 126)

Variable / Domain	**Mean (±SD)**	**Category**
Leadership	72.14 (±13.09)	-
Communication	76.19 (±12.31)	-
Partnership	72.02 (±14.19)	-
Systematic Thinking and Decision-Making	70.52 (±13.05)	-
Organizational Development and Professionalism	79.14 (±11.03)	-
Emotional Intelligence	77.99 (±10.97)	-
Proactive Approach	75.56 (±13.43)	-
Information Management	72.42 (±13.12)	-
Overall managerial competence	**74.50 (±11.20)**	-
Job satisfaction	3.77 (±0.59)	Satisfied
Achievement of elderly health service standards (SPM)	95.58 (±6.43)	Very Good

Descriptive analysis based on Table 2 showed that the mean score of managerial competence across the eight retained domains ranged between 70.52 and 79.14 (scale 0–100). The highest mean values were found in the *organizational development and professionalism* and *emotional intelligence* domains, while the lowest appeared in *systematic thinking and decision-making* and *partnership*. Job satisfaction recorded a mean of 3.77 (SD = 0.59), reflecting a satisfied level among first-line nurse managers, whereas the achievement of elderly health service standards

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(SPM) reached an average of 95.58% (SD = 6.43), indicating very good program implementation performance.

Table 3. Measurement Model Summary: Reliability and Validity of Constructs (n = 126)

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Leadership	0.887	0.888	0.746
Communication	0.910	0.912	0.737
Partnership	0.909	0.910	0.785
Systematic Thinking & Decision-Making	0.950	0.951	0.742
Organizational Development & Professionalism	0.922	0.922	0.866
Emotional Intelligence	0.815	0.824	0.843
Proactive Approach	0.829	0.829	0.854
Information Management	0.958	0.958	0.798
Job Satisfaction	0.973	0.976	0.712

Note: All constructs met reliability ($\alpha > 0.70$, CR > 0.70) and convergent validity (AVE > 0.50) criteria. Five items were removed during discriminant validity assessment (HTMT), and the financial management domain was excluded from the model following this process. Discriminant validity was confirmed via the Fornell-Larcker criterion and HTMT (all values < 0.90).
Source: Primary data collected 2025 (managerial competence and job satisfaction); secondary data from 2024 annual Health Office reports (SPM achievement)

The measurement model, as presented in Table 3, demonstrated strong validity and reliability, with all outer loadings exceeding 0.70, Average Variance Extracted (AVE) values above 0.50, and Cronbach's alpha and composite reliability indices surpassing 0.70. Discriminant validity was also established, as indicated by Heterotrait–Monotrait (HTMT) ratios below 0.90, confirming that each construct was empirically distinct.

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Table 4. Structural Model Results: Direct, Indirect, and Total Effects

Path	β	t-statistic	p-value	Result
Managerial Competence → Job Satisfaction	0.575	8.875	<0.001	Significant
Job Satisfaction → SPM Achievement	0.257	2.517	0.012	Significant
Managerial Competence → SPM Achievement (direct)	**−0.212**	1.924	0.054	Not Significant
Managerial Competence → Job Satisfaction → SPM Achievement (indirect)	0.148	2.313	0.021	Significant

R²: *Job Satisfaction = 0.331 (adjusted 0.325); SPM Achievement =* ***0.048*** *(adjusted 0.033)*
Model fit: *GoF = 0.382 (large, per Chin/Wetzels et al. criteria)*
Note: Significance determined at p < 0.05. Indirect effect calculated via bootstrapping.
Source: Primary data collected 2025 (managerial competence and job satisfaction); secondary data from 2024 annual Health Office reports (SPM achievement)
(*SRMR)* (*NFI)*

The structural model results shown in Table 4 revealed that managerial competence exerted a significant positive influence on job satisfaction (β = 0.575, t = 8.875, p < 0.001). Job satisfaction, in turn, had a significant positive effect on the achievement of elderly health service standards (β = 0.257, t = 2.517, p = 0.012). Conversely, the direct effect of managerial competence on SPM achievement was negative and not statistically significant (β = −0.212, t = 1.924, p = 0.054). However, a significant indirect effect emerged through job satisfaction (β = 0.148, t = 2.313, p = 0.021), confirming a mediating relationship. The model yielded R^2 values of 0.331 for job satisfaction, indicating moderate explanatory power, and 0.048 for SPM achievement, indicating weak explanatory power for this outcome.

As further indicated in Table 4, the overall model fit was assessed using the Goodness of Fit (GoF) index, calculated as the square root of the average AVE multiplied by the average R^2. The model yielded a GoF value of 0.382, which exceeds the threshold of 0.36 for a large GoF, indicating that the proposed model adequately represented the observed data.

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Discussion

This study find that the managerial competence of first-line nurses does not have a significant direct effect on achieving the Minimum Service Standards (SPM) for elderly health in Malang City and Regency. This suggests that organizational performance in primary care depends

not only on individual managerial abilities but also on systemic, policy, and contextual support (Cummings et al., 2021). Similar findings were reported by Warshawsky et al. (2022), who found that managerial competence among health professionals rarely affects performance indicators directly within collaborative and multi-stakeholder systems (Warshawsky et al., 2022). However, this differs from another study which found a positive association between managerial competence and service achievement in settings with strong monitoring and evaluation mechanisms (Almutairi & Bahari, 2022).

Leadership and communication competencies did not show significant direct effects on elderly SPM outcomes. In practice, public health centers operations follow fixed procedures determined by local health authorities, limiting nurses' ability to innovate or take strategic initiative. As Oliveira et al. (2023) noted, leadership in such contexts often becomes administrative rather than transformational (Oliveira et al., 2023). Similarly, although communication competence is essential for coordination and collaboration (Sundean et al., 2021), SPM achievement is determined more by objective and tangible measures—such as screening coverage and reporting timeliness—than by interpersonal skills (Fowler et al., 2021).

Partnership competence also showed a weak relationship with SPM performance, consistent with the Quality-Caring Model emphasizing collaboration with communities and cross-sector partners to improve care quality (González-García et al., 2021). However, in this study, success depended more on operational logistics and interprofessional coordination, aligning with findings from Gunawan et al. (2020a) that partnership impacts are often indirect through organizational support and motivation (Gunawan, Aungsuroch, Fisher, McDaniel, et al., 2020b).

Similarly, systematic thinking, decision-making, organizational development, professionalism, emotional intelligence, proactive behavior, and information management did not show direct effects on SPM outcomes. These findings reflect contextual constraints—such as centralized budgeting and limited autonomy in decision-making at public health centers—that restrict nurses' managerial influence (Gunawan, Aungsuroch, Fisher, & McDaniel, 2020; Wang et al.,

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2021). Nonetheless, these competencies remain essential for fostering collaboration, emotional well-being, and long-term service quality (Ngabonzima et al., 2020; Pérez-González et al., 2024).

Although direct effects were not significant, the study confirms that managerial competence influences SPM achievement indirectly through job satisfaction. Competent nurses are more confident, efficient, and motivated, leading to higher performance and compliance with service standards (Mirzaei et al., 2024; Ngabonzima et al., 2020). This aligns with Boyatzis's competency theory, which views behavior and motivation as mediators of performance, and Duffy's Quality-Caring Model, which emphasizes that caring relationships enhance satisfaction and commitment (Cummings et al., 2021; Duffy, 2022). Job satisfaction therefore acts as the psychological mechanism through which managerial competence contributes to program success.

Integrating these findings, the study highlights that achieving elderly SPM requires systemic approaches that combine managerial capacity-building with efforts to improve nurses' job satisfaction and workplace support. Strengthening leadership, communication, digital literacy, and intersectoral collaboration can enhance motivation and performance, leading to more equitable and sustainable elderly health services (Ahsan et al., 2021).

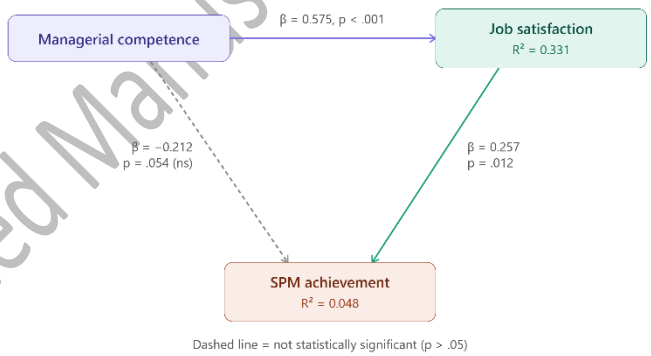


Figure 1. Conceptual model of the relationship between managerial competence, job satisfaction, and SPM achievement. Solid lines indicate statistically significant paths; the dashed line indicates a non-significant path ($p > .05$). R^2 values represent the proportion of variance explained in each endogenous variable.

The present findings propose a conceptual model (Figure 1) showing that managerial competence indirectly contributes to the achievement of elderly health service standards through job satisfaction. Therefore, nursing management strategies should integrate competence enhancement with efforts to improve nurses' satisfaction and motivation. By strengthening

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leadership, communication, and supportive work environments, primary care institutions can optimize managerial performance and ensure sustainable improvements in elderly health service delivery.

Limitations of the study

This study was conducted in public health centers located in Malang City and Regency; therefore, the findings primarily reflect the local context and may differ in other regions with varying organizational characteristics and cultural settings. Moreover, the cross-sectional design and relatively short data collection period provided only a snapshot of the existing conditions. This limits the study's ability to capture long-term dynamics, particularly those related to nurses' job satisfaction and the achievement of elderly health service standards (SPM).

Conclusion

This study demonstrated that first-line nurse managers' managerial competence did not directly influence the achievement of minimum service standards (SPM) for elderly health but had a significant indirect effect through job satisfaction. Managerial competence was found to strongly enhance nurses' job satisfaction, which in turn improved the quality and consistency of elderly health service delivery.

These findings highlight the essential mediating role of job satisfaction in linking managerial competence with service performance. Strengthening managerial skills across the eight retained domains—leadership, partnership, communication, systematic thinking and decision-making, organizational development and professionalism, information management, emotional intelligence, and proactive approach—supported by conducive organizational policies and resources, can optimize elderly health service outcomes in primary care settings. Therefore, strategies to improve managerial competence should be integrated with initiatives to enhance nurse job satisfaction to achieve sustained improvements in elderly health service standards.

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Future research should address several important gaps identified in this study. First, given the relatively small proportion of variance in SPM achievement explained by managerial competence and job satisfaction ($R^2 = 0.048$), subsequent studies should explore additional predictors—such as organizational culture, resource availability, and inter-sectoral collaboration—that may more substantially influence SPM outcomes. Second, longitudinal or experimental designs are recommended to establish clearer causal pathways between managerial competence, job satisfaction, and service performance, given the inherent limitations of the cross-sectional design employed here. Third, the financial management domain was excluded from the final model due to discriminant validity concerns; future studies could revisit this construct with refined or expanded measurement items to better capture its potential contribution to managerial competence. Finally, qualitative approaches may help clarify the unexpected negative direction of the direct relationship between managerial competence and SPM achievement observed in this study

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Ethical Considerations

Compliance with ethical guidelines

Data were collected through self-administered online questionnaires distributed to respondents after obtaining ethical approval from the Health Research Ethics Committee of Universitas Brawijaya No. 191/UN10.F17.10.4/TU/2025. Prior to participation, all respondents were presented with an informed consent page at the beginning of the online questionnaire, which explained the study's purpose, procedures, and their right to withdraw at any time without consequence. Respondents were required to provide electronic consent by checking a confirmation box before proceeding to the questionnaire, and the confidentiality of their responses was assured throughout the study.

Acknowledgement: The author sincerely thanks the Faculty of Medicine, Universitas Brawijaya, for its academic and administrative support during the research process. Appreciation is also extended to the Health Offices of Malang City and Malang Regency and to all participating nurses from the public health centers for their valuable contribution and cooperation.

Authors' Contributions: Author 1: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing – original draft. Author 2: Supervision, Writing – review & editing. Author 3: Supervision, Writing – review & editing. All authors read and approved the final manuscript.

Conflict of Interest: The author declares no conflict of interest related to this study or its publication. All procedures and analyses were conducted independently without any influence from funding sources or institutional bias.

Funding: This research was partially funded by the Department of Nursing, Universitas Brawijaya

Declaration of AI Use: During the preparation of this work, the author used Claude (Anthropic) to assist with language editing and organizing statistical revisions based on the authors' own raw data and analysis output. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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