Determinants of Nurse Self-Efficacy and Infection Prevention Competency on Hospital Quality of Care

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ABSTRACT

This study aims to analyze the factors that influence nurse-reported quality of care in medical personnel by involving 207 nurses as a sample. Six constructs were tested, namely care delivery, nurse professionalism, professional skill, professional development capability, organizational collaboration ability, and nurse personal trait. The method used was a quantitative cross-sectional method using Partial Least Squares–Structural Equation Modeling through SmartPLS4 software to see the structural relationship between variables and identify the factors that most influence the quality of care based on nurses' perceptions. The results showed that most of the hypotheses were supported. Nursing services significantly influenced nurses' infection prevention professional skills, professional development capabilities, organizational collaboration, and personal traits. Nurse professionalism had a great impact on professional skills, ability to develop professionally, and individual qualities, but did not affect the collaboration in the organization. The personal traits did not have a direct effect, whereas the quality of nursing services depended mainly on the professional development capabilities, skills of preventing infections, and collaboration of the organization. These results prove that the professional competence of nurses is one of the primary factors that define the quality of the services, and it is essential to reinforce competency-based training and lifelong learning.

Keywords*: Care Delivery, Nurse Personal Trait, Nurse Professionalism, Nurse-Reported Quality of Care, Organizational Collaboration Ability, Professional Development Capability, Professional Skill.*

INTRODUCTION

Nurse self-efficacy is a key determinant of professional performance, especially in Infection Prevention and Control (IPC) as a core element of patient safety (Hansen et al., 2023). It reflects nurses' belief in their ability to perform tasks effectively and influences behavior, adaptability, and clinical practice quality (Ma et al., 2023). In nursing practice, it covers caregiving, professionalism, and managing complex service environments (Miao et al., 2024). Magon et al. (2023) define self-efficacy as a multidimensional construct linked to the delivery of quality care in line with professional standards. Arvidsson et al. (2023) show its association with structural empowerment, work engagement, and lower work stress in medical asepsis. Li et al. (2025) further demonstrate its connection with evidence-based practice, clinical leadership, and nursing professionalism.

Nursing service quality includes infection prevention competency that extends beyond technical knowledge to professional skills, self-development, organizational collaboration, and personal traits (Handayani et al., 2025). Cui et al. (2022) propose a comprehensive framework integrating technical and adaptive competencies such as leadership and communication, which is further refined by Hyon and Moon (2024) into a seven-dimensional IPC competency scale covering knowledge, skills, education, communication, and critical thinking. Teymourzadeh et al. (2019) emphasize that nurses

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play a central role in preventing nosocomial infections through the integration of knowledge, attitudes, and standardized practices.

Empirical evidence shows that self-efficacy is strongly associated with compliance with IPC protocols. Lindberg and Lindberg (2023) and Linnik et al. (2024) found that situation-specific self-efficacy improves infection prevention behavior, while hand hygiene knowledge strengthens self-efficacy among nursing students. Hansen et al. (2023) reported that positive attitudes and high self-efficacy support adherence to PPE use and antibiotic stewardship. Similarly, Kim and Song (2021) showed that organizational culture influences standard precaution practices through self-efficacy. Mahdizadeh et al. (2021) further identified self-efficacy as a key predictor of preventive behavior. In addition, training interventions significantly improve IPC competency, knowledge, practice, and self-efficacy among nurses (Elgazzar et al., 2023; Alkhawaldeh et al., 2025).

Continued training strategies are a key approach to enhancing IPC competency. Amavasi and Zimmerman (2024) emphasize continuous learning in pre-registration programs, while Al Hadid et al. (2023) show that simulation-based training improves COVID-19 knowledge, skills, and self-efficacy among new nurses. Similarly, Lee and Yang (2024) support scenario-based simulations as an effective method for strengthening IPC competencies. In addition, Hussien et al. (2025) demonstrate that compassionate care-based simulations can enhance caring behavior, self-efficacy, and compassion competencies within safe and empathetic care frameworks.

Nonetheless, sustained IPC implementation remains challenging, as McCauley et al. (2021) identify organizational barriers, workload, and low self-efficacy as key drivers of missed nursing care and non-adherence to IPC. This aligns with Kim and Ko (2023), who find that nurse-reported quality of care is influenced by team effectiveness. A multi-country study by Alsulami et al. (2025) further shows that knowledge, attitudes, and self-efficacy jointly shape IPC practices, underscoring the need for a systemic approach. In the patient safety context, Reisinger et al. (2017) emphasize that structured training models such as the Infection Prevention Fellowship enhance IPC competency and service quality. Berdida and Alhudaib (2025) report that professional self-efficacy is linked to caring behavior and patient safety through missed nursing care. Meanwhile, Hendy et al. (2025) demonstrate that self-efficacy mediates the relationship between workload and core competencies, highlighting its critical psychological role in professional performance.

Cumulative evidence highlights a strong relationship between nurse self-efficacy, infection prevention competency, and nursing service quality. However, these variables are rarely integrated within a single conceptual framework, as prior studies mainly emphasize technical skills and training outcomes. Hair et al. (2021) emphasize the importance of robust structural models to capture multidimensional relationships among these constructs. This study examines care delivery and nurse professionalism as predictors of self-efficacy and infection prevention competency while exploring how professional skill, professional development capability, organizational collaboration ability, and personal traits contribute to nursing quality and patient safety outcomes. By integrating psychological and professional dimensions, this study proposes a comprehensive framework explaining the synergistic mechanisms underlying quality-oriented nursing culture. The findings are expected to support policy development related to professional capacity building, self-efficacy-based training, and sustainable infection control systems focused on patient-centered care and continuous quality improvement.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of Care Delivery

The practice of care delivery models that are based on standards, training, and simulation practice has been found to enhance the professionalism skills of nurses. Clinical training and simulation studies have revealed that knowledge, technical skills, and self-efficacy of nurses become considerably improved following structured practice (Al Hadid et al., 2023; Lee & Yang, 2024; Guerrero et al., 2024; Alkhawaldeh et al.,

2025). It is also confirmed by the infection competency model that the care delivery structure has a direct impact on the formation of clinical skills (Cui et al., 2022). As such, the best care delivery is the basis of enhancing professional competencies. Quality care delivery offers the room for lifelong learning in the form of education, training, and exposure to clinical practice. It is proven that repeated education and training will increase the ability of nurses to develop professionally, both in infection control and understanding the technology of mastery of practice (Amavasi & Zimmerman, 2024; Chen et al., 2024; Zhang et al., 2024). Simulations are also possible in scenarios that enhance reflection skills and competency development (Lee & Yang, 2024). Therefore, good care delivery will motivate the nurses to keep enhancing their professionalism.

The efficient implementation of the care delivery process needs inter-team coordination and collaborative structures. The effectiveness of a team has been identified to have an effect on the nursing care remaining unattended and service quality, and the interprofessional competency framework validates that collaboration is a key aspect of care delivery in the hospital setting (McLaney et al., 2022; Kim & Ko, 2023). Thus, the best care delivery enhances the teamwork abilities of an organization. Regular and standardized care delivery inculcates professional character traits like discipline, responsibility, and empathy. Social cognitive theory research indicates that participation in preventive measures and control of infection enhances the personality of nurses and their preventive actions (Mahdizadeh et al., 2021; Chi et al., 2025). Other positive qualities that compassion simulation training is effective at improving include empathy and caring behavior (Hussien et al., 2025; Ebm et al., 2025). This suggests that care delivery can strengthen positive personal traits.

H1: Care delivery has a positive effect on professional skills.
H2: Care delivery has a positive effect on professional development capability.
H3: Care delivery has a positive effect on organizational collaboration ability.
H4: Care delivery has a positive effect on personal traits.

The Effect of Nurse Professionalism

Professionalism is closely associated with higher technical competence, as it reflects strong practice standards, responsibility, and self-efficacy in clinical settings. Nurses with high professionalism tend to adhere more consistently to clinical guidelines and demonstrate greater accuracy in performing procedures, which strengthens their technical abilities in practice. This is supported by prior studies showing that professional self-efficacy strengthens clinical abilities, indicating that higher professionalism leads to stronger professional skills (Magon et al., 2022). Professionalism also encourages continuous competence development through engagement in education, reflection, and evidence-based practice (Jeyakumar et al., 2024). Evidence shows that professional self-efficacy drives capacity development, while empowerment structures further enhance nurses' readiness for growth (Arvidsson et al., 2023; Magon et al., 2023; Li et al., 2025). Thus, professionalism plays a key role in strengthening professional development capability.

In addition, professionalism contributes to collaborative practice by fostering communication, team effectiveness, and adherence to standards. Organizational culture and professionalism are found to enhance collaboration through self-efficacy and compliance with infection protocols, as well as improved teamwork dynamics (Kim & Song, 2021; McLaney et al., 2022; Cho & Kim, 2025). Professionalism shapes personal traits such as empathy, integrity, confidence, and caring behavior. Positive professional attitudes are linked to self-efficacy, while professionalism also promotes compassion and caring competencies (Hansen et al., 2023; Linnik et al., 2024; Hussien et al., 2025). This indicates that nurse professionalism strengthens personal traits in clinical practice.

H5: Nurse professionalism has a positive effect on professional skill.
H6: Nurse professionalism has a positive effect on professional development capability.

H7: Nurse professionalism has a positive effect on organizational collaboration ability.
H8: Nurse professionalism has a positive effect on nurse personal traits.

The Effect on Nurse-Reported Quality of Care

Professional skill plays a crucial role in ensuring service quality, as strong clinical competence minimizes missed care and improves compliance with infection prevention standards. A lack of clinical skills is associated with higher risks of missed care, while infection-based training enhances the quality of clinical practice (McCauley et al., 2021; Elgazzar et al., 2023; Alsulami et al., 2025). Thus, professional skill is a key determinant of nursing service quality. Professional development capability also contributes directly to the quality of care, as nurses with strong learning ability can adapt to evolving clinical demands. Continuous development of infection control competencies improves practice effectiveness and service outcomes, highlighting the importance of ongoing learning and evidence-based updates (McMahan et al., 2021; Hyeon & Moon, 2024; Chen et al., 2024).

Organizational collaboration further strengthens service quality by enhancing teamwork and reducing the risk of missed care. Effective collaboration improves coordination and continuity of care, which has been shown to increase nurse-reported quality of care and support adherence to clinical standards (McLaney et al., 2022; Kim & Ko, 2023). Personal traits such as empathy, discipline, and self-efficacy also support safe and quality clinical behavior. Higher knowledge and self-efficacy improve infection prevention practices, while caring behavior contributes to better service outcomes (Hansen et al., 2023; Linnik et al., 2024; Hussien et al., 2025; Berdida & Alhudaib, 2025). These findings indicate that personal traits complement technical and organizational factors in shaping nurse-reported quality of care.

H9: Professional skills have a positive effect on nurse-reported quality of care.
H10: Professional development capability has a positive effect on nurse-reported quality of care.
H11: Organizational collaboration capability has a positive effect on nurse-reported quality of care.
H12: Nurse personal traits have a positive effect on nurse-reported quality of care.

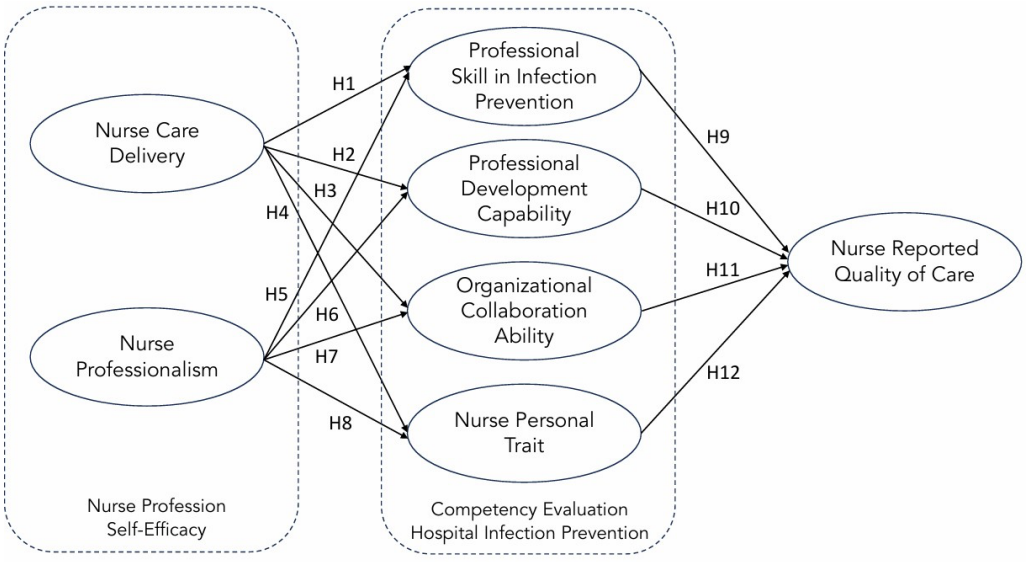

Figure 1. Research Framework

Figure 1 illustrates a conceptual framework in which care delivery and nurse professionalism act as key determinants of nurse competency. Care delivery supports knowledge, clinical skills, self-efficacy, and infection prevention practices, contributing to

professional skill, professional development capability, collaboration, and professional character (Lee & Yang, 2024; Kim & Kang, 2025; Min et al., 2025). Nurse professionalism reflects commitment to professional values, ethical standards, and evidence-based practice, while also strengthening infection control and collaborative behavior through organizational empowerment and culture (Kim & Song, 2021; Piredda et al., 2024). Furthermore, competencies such as professional skill, organizational collaboration ability, and personal traits, including empathy and self-efficacy, play important roles in improving patient safety, infection control compliance, and overall care quality (Elgazzar et al., 2023).

RESEARCH METHODS

This study employed a quantitative design with a cross-sectional survey approach. The purpose was to examine how nurse self-efficacy (that includes care delivery and nurse professionalism) affects infection prevention competency (that includes professional skill, professional development capability, organizational collaboration ability, and personal trait) and its effect on nurse-reported quality of care. The reason behind selecting a cross-sectional design is that this type of study is suitable to simultaneously measure relationships among variables at a given time, which corresponds to the study's aim of learning about infection prevention competencies and the quality of nursing care (Hair et al., 2021).

The study sample consisted of hospital nurses who had direct involvement in nursing services and nosocomial infection prevention. Inclusion criteria required at least one year of work experience, as it is considered important in developing self-efficacy and infection prevention competency (Cui et al., 2022; Magon et al., 2023). Purposive sampling was used to ensure relevant and representative respondents. Sample size was determined using G*Power based on a linear multiple regression model (fixed model, R^2 deviation from zero), as recommended for PLS-SEM analysis (Hair et al., 2021). With an effect size of $f^2 = 0.15$, a significance level of 0.05, and a power of 0.80, the minimum sample size with four predictors was 85 respondents. When power was increased to 0.95, the required sample size increased to 129 respondents. Therefore, this study targeted at least 130 nurses to ensure robust and valid model estimation results.

This study examines nurse self-efficacy as the independent variable, consisting of care delivery and nurse professionalism, while infection prevention competency acts as the mediating variable through professional skill, professional development capability, organizational collaboration ability, and personal trait. The dependent variable is nurse-reported quality of care. All measurement scales were adapted from validated instruments developed by Magon et al. (2023), Lindberg and Lindberg (2023), and Hyeon and Moon (2024). The questionnaire items indicate that care delivery reflects patient safety, professional standards, and privacy protection, while professionalism emphasizes continuous learning and research involvement to improve care quality. Infection prevention competency includes professional skill in risk assessment and SOP adherence, professional development capability through evidence-based learning, organizational collaboration ability in communication and teamwork, and personal traits such as resilience and dedication. Nurse-reported quality of care reflects nurses' perceptions of delivering safe, appropriate, and patient-centered care that supports patient safety and satisfaction.

Data were collected using a structured online questionnaire with a 5-point Likert scale covering all research constructs. The survey was administered online to accommodate respondents' availability, and content validity was reviewed by nursing and infection prevention experts. Informed consent was included to ensure voluntary participation and compliance with STROBE ethical standards. Data were analyzed using PLS-SEM with SmartPLS 4. The measurement model was evaluated through convergent validity (factor loadings, AVE), discriminant validity (HTMT), and reliability (Cronbach's alpha, composite reliability). The structural model was then assessed using R^2, Q^2, effect size

(f²), and path significance via bootstrapping. PLS-SEM was chosen due to the model's complexity (Hair et al., 2021).

RESULTS

The empirical results of the study, which were derived from the data gathered and PLS-SEM analysis, are presented in this part. In order to investigate the connections between nurse self-efficacy, infection prevention competency, and nurse-reported quality of care, the results include descriptive statistics, measurement model evaluation, and structural model testing.

Table 1. Respondent Profile

Category	Group	Total	Percentage
Age	20–30 Years Old	95	41.1%
	31–40 Years Old	83	35.9%
	41–50 Years Old	53	22.9%
Education	Diploma III in Nursing	95	41.1%
	Bachelor's Degree in Nursing	38	16.5%
	Nursing Profession	63	27.3%
	Master's Degree in Nursing	35	15.2%

Table 1 shows the age and education in this study are distributed fairly across the profile of the respondents. With regard to age, the age group 20-30 years old was the highest with 95 respondents, meaning that the majority of the respondents were healthcare workers with early to middle years of their careers. The group of 31-40 years old came next with 83 respondents, which represents the demographic of personnel in a more concrete and stable career stage. At the same time, the 41-50 years old segment had 53 respondents, which means that the involvement of older respondents was rather insignificant in comparison to the other two groups. Regarding education, the D III Nursing category had the most respondents, with 95, which means that the vocational nursing staff continues to be the most prevalent in the study sample. Moreover, the respondents who had completed professional nursing education included 63 individuals, which implies that the representation of the professional nursing staff was high. The number of respondents who have a Bachelor's degree in Nursing was 38 people, and the highest educated group, Master's degree in Nursing, was 35 people. This piece indicates the heterogeneity of educational backgrounds and age, and gives a full picture of the features of the nursing staff that were included in this study.

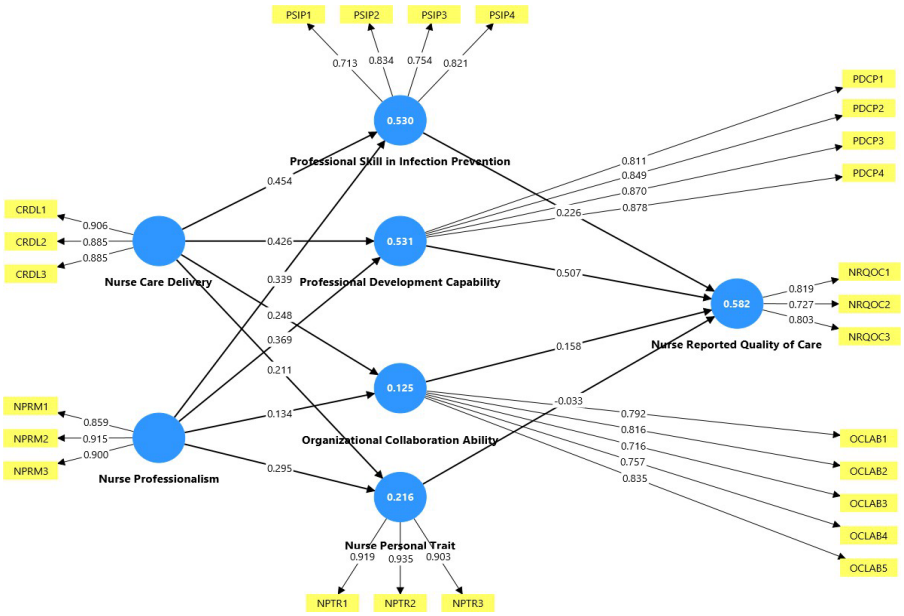

Figure 2. Outer Model

Figure 2 shows that the outer model demonstrates good indicator reliability and convergent validity, as all indicators align well with their respective constructs. Each variable is consistently represented by its indicators, reflecting clear and reliable measurement. The model also indicates strong construct validity, with no overlapping indicators across variables. Dimensions such as professional skill, development capability, collaboration, and personal traits are well captured, confirming that the measurement model is adequate for further analysis.

Table 2. Convergent Validity

Variable	Indicator	Outer Loading	CA	rho_a	rho_c	AVE
Nurse Care Delivery	CRDL1	0.906	0.872	0.875	0.921	0.796
	CRDL2	0.885				
	CRDL3	0.885				
Nurse Professionalism	NPRM1	0.859	0.871	0.873	0.921	0.795
	NPRM2	0.915				
	NPRM3	0.900				
Professional Skill	PSIP1	0.713	0.788	0.802	0.862	0.612
	PSIP2	0.834				
	PSIP3	0.754				
	PSIP4	0.821				
Professional Development Capability	PDCP1	0.811	0.874	0.876	0.914	0.726
	PDCP2	0.849				
	PDCP3	0.870				
	PDCP4	0.878				
Organizational Collaboration Ability	OCLAB1	0.792	0.845	0.848	0.889	0.615
	OCLAB2	0.816				
	OCLAB3	0.716				
	OCLAB4	0.757				
	OCLAB5	0.835				
Nurse Personal Trait	NPTR1	0.919	0.908	0.909	0.943	0.845
	NPTR2	0.935				
	NPTR3	0.903				
Nurse-Reported Quality of Care	NRQOC1	0.819	0.689	0.703	0.827	0.615
	NRQOC2	0.727				
	NRQOC3	0.803				

According to the convergent validity results in Table 2, all constructs are valid and reliable. Most indicators have outer loadings above 0.70 and are supported by Cronbach's alpha, rho_a, composite reliability (rho_c), and AVE values that meet the required thresholds. The constructs of care delivery and professionalism show strong measurement quality, with high outer loadings and AVE values above 0.79, indicating that the indicators explain a substantial portion of construct variance.

The constructs of professional skill, professional development capability, and organizational collaboration ability also meet convergent validity criteria, with AVE values above 0.60 and satisfactory reliability, although a few indicators are close to the minimum threshold, which is still acceptable. Personal trait demonstrates the strongest measurement quality, with very high outer loadings and reliability. Meanwhile, nurse-reported quality of care remains valid and reliable despite a slightly lower Cronbach's alpha, as its composite reliability and AVE still meet recommended standards, confirming adequate internal consistency and convergent validity.

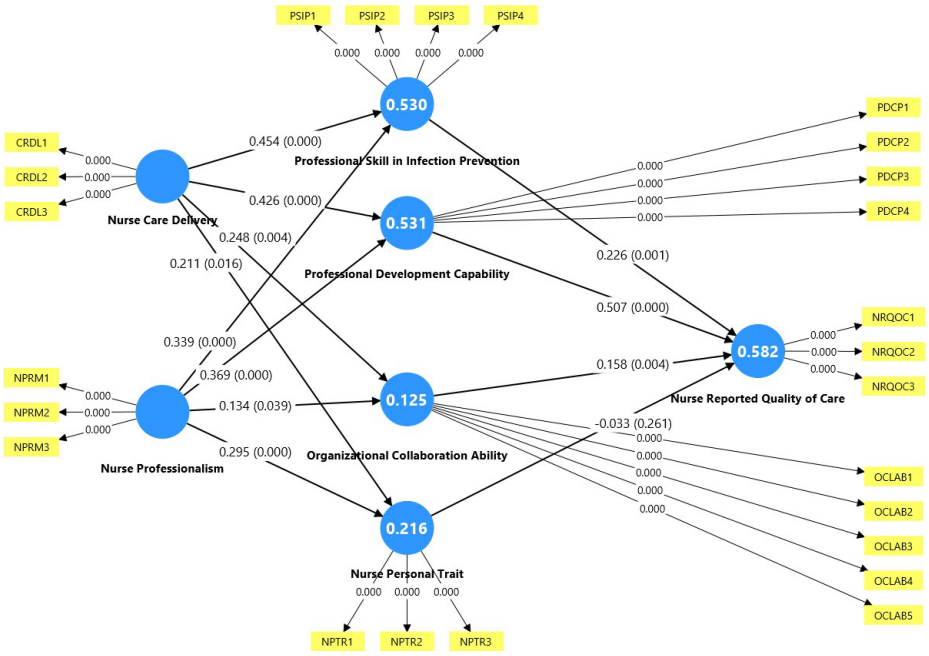

Figure 3. Inner Model

The explanatory strength of the model is indicated by the R^2 values of the endogenous constructs in Figure 3. The R^2 values for professional growth capability and professional competence in infection prevention are 0.531 and 0.530, respectively, indicating a reasonable level of explanatory strength from nurse professionalism and care delivery. Nurse personal characteristics have a moderate value of 0.216, whereas organizational cooperation capacity has a lower R^2 of 0.125, indicating poorer explanatory power. With an R^2 of 0.582 for the primary outcome, nurse-reported quality of care, the model accounts for a significant amount of its variance. This implies that a robust explanation of perceived care quality can be found in the combined effects of professional skill, professional development capability, organizational collaboration ability, and personal attribute.

Table 3. Hypothesis Testing Significance & Coefficients

Hypothesis	Path Relationship	Path Coefficient	Confidence Interval (5%–95%)	p-value	Result	f^2
H1	Care Delivery → Professional Skill	0.454	0.307 – 0.601	0.000	Accepted	0.236
H2	Care Delivery → Professional Development Capability	0.426	0.256 – 0.596	0.000	Accepted	0.208
H3	Care Delivery → Organizational Collaboration Ability	0.248	0.066 – 0.430	0.008	Accepted	0.038
H4	Care Delivery → Personal Trait	0.211	0.017 – 0.405	0.033	Accepted	0.030
H5	Nurse Professionalism → Professional Skill	0.339	0.202 – 0.476	0.000	Accepted	0.131
H6	Nurse Professionalism → Professional Development Capability	0.369	0.228 – 0.510	0.000	Accepted	0.156
H7	Nurse Professionalism → Organizational Collaboration Ability	0.134	-0.015 – 0.283	0.078	Rejected	0.011
H8	Nurse Professionalism → Personal Trait	0.295	0.132 – 0.458	0.000	Accepted	0.059

Hypothesis	Path Relationship	Path Coefficient	Confidence Interval (5%–95%)	p-value	Result	f^2
H9	Professional Skill → Nurse-Reported Quality of Care	0.226	0.087 – 0.365	0.001	Accepted	0.060
H10	Professional Development Capability → Nurse-Reported Quality of Care	0.507	0.370 – 0.644	0.000	Accepted	0.281
H11	Organizational Collaboration → Nurse-Reported Quality of Care	0.158	0.042 – 0.274	0.007	Accepted	0.041
H12	Personal Trait → Nurse-Reported Quality of Care	-0.033	-0.135 – 0.069	0.522	Rejected	0.002

Table 3 shows that care delivery has positive and significant effects on all competency dimensions, including professional skill ($\beta = 0.454$; $p < 0.001$), professional development capability ($\beta = 0.426$; $p < 0.001$), organizational collaboration ($\beta = 0.248$; $p = 0.008$), and personal trait ($\beta = 0.211$; $p = 0.033$). Similarly, nurse professionalism significantly influences professional skill ($\beta = 0.339$; $p < 0.001$), professional development capability ($\beta = 0.369$; $p < 0.001$), and personal trait ($\beta = 0.295$; $p < 0.001$), but does not significantly affect organizational collaboration ($\beta = 0.134$; $p = 0.078$). These findings indicate that both care delivery and professionalism play important roles in shaping nurses' competencies, although collaboration appears to be less influenced by individual professionalism.

Furthermore, professional skill ($\beta = 0.226$; $p = 0.001$), professional development capability ($\beta = 0.507$; $p < 0.001$), and organizational collaboration ($\beta = 0.158$; $p = 0.007$) have positive and significant effects on nurse-reported quality of care, with professional development capability emerging as the strongest predictor. In contrast, personal trait does not have a significant effect ($\beta = -0.033$; $p = 0.522$), suggesting that individual characteristics alone do not directly determine perceived care quality. These results highlight the importance of competency development and collaborative practices in improving nursing service quality.

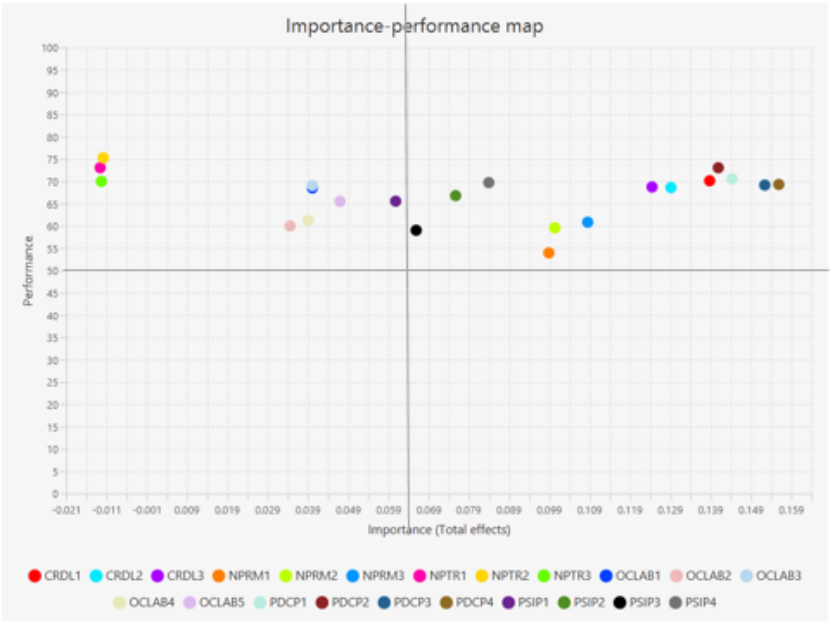

Figure 4. IPMA Indicator

Based on Figure 4 the Importance–Performance Map Analysis (IPMA) at the indicator level for nurse-reported quality of care, it is seen that indicators derived from the

Professional Development Capability construct (PDCP1–PDCP4) have the highest level of importance (total effects) compared to other indicators, especially PDCP4 (0.156), PDCP3 (0.153), PDCP1 (0.145), and PDCP2 (0.141), with a relatively good level of performance but still in the moderate range (±69–73). This finding indicates that improving nurses' ability to learn, understand clinical evidence, and openness to scientific development have the greatest contribution to improving the quality of nursing care, so they need to be a top priority for improvement. The Care Delivery indicators (CRDL1–CRDL3) also show a fairly high level of importance (0.125–0.139) with relatively good performance (±68–70), indicating that patient safety, professional standards, and patient privacy are important factors that have been running quite well but still require continuous strengthening.

Performance of the Professional Skill indicators (PSIP1-PSIP4) is moderate, and there is inconsistent performance, particularly PSIP3, which is relatively low hence, the aspect of monitoring nosocomial infection prevention still requires improvement. Conversely, all the indicators of the Personal Trait (NPTR1-NPTR3) demonstrate a negative and very small overall effect, even though they are strong performers, which demonstrates that personal traits of nurses do not serve as the primary determinants in enhancing the reported quality of nursing care. In the meantime, the indicators of organizational collaboration and nurse professionalism are of low to moderate level of importance and moderate performance, therefore, supportive factors. Altogether, the IPMA findings indicate that enhancing professional development capacity and quality of nursing care implementation are the primary strategic points of nurse-reported quality of care improvement.

DISCUSSION

The results show that most relationships are significant, highlighting the role of care delivery in shaping professional skill, development capability, collaboration, and personal traits as key components of nursing competency. These findings are consistent with prior studies by Al Hadid et al. (2023), Al Khawaldeh et al. (2025), and Hussien et al. (2025), which demonstrate that clinical exposure and simulation-based training enhance skills, self-efficacy, and infection prevention readiness. Thus, care delivery functions not only as a work process but also as a mechanism for continuous professional learning.

Nursing professionalism significantly influences professional skill, development capability, and personal traits, but not organizational collaboration. This supports prior findings by Magon et al. (2023), Miao et al. (2024), and Li et al. (2025) that professionalism strengthens individual competence through self-efficacy and continuous learning. Its non-significant effect on collaboration indicates that teamwork is more shaped by structural and organizational factors, consistent with McLaney et al. (2022) and Kim and Ko (2023).

The structural model shows that personal traits do not significantly affect nurse-reported quality of care, while professional skill, professional development capability, and organizational collaboration have positive and significant effects. This indicates that care quality is driven more by technical competence and continuous professional development than by individual personality traits. These findings are consistent with prior studies by Chen et al. (2024), Min et al. (2025), and Kim and Kang (2025), which emphasize the importance of clinical proficiency, evidence-based updates, and ongoing training in improving care quality and patient safety. In addition, the significant effect of organizational collaboration highlights the importance of effective coordination among healthcare professionals in enhancing continuity of care and adherence to clinical guidelines, in line with Kim and Ko (2023).

The IPMA results indicate that professional development capability (PDCP1–PDCP4) has the highest importance for nurse-reported quality of care but only moderate performance, revealing a gap between its critical role and practical implementation. This highlights the need to strengthen continuous training and evidence-based learning, consistent with findings by Reisinger et al. (2017), Amavasi and Zimmerman (2024), and

Zirges et al. (2025). Care delivery indicators also show high importance with relatively good performance, suggesting that aspects such as patient safety, professional standards, and privacy are well implemented but still require further optimization.

However, the total effect of personal characteristics of nurses on care quality was very low and even negative, even though the performance was high. This observation supports the conclusions of the structural model, which argues that individual qualities, including resilience or commitment, cannot have a direct positive effect on care quality in the absence of sufficient technical proficiency and professional growth. This interpretation is congruent with the research by Arvidsson et al. (2023) and Hendy et al. (2025), who highlighted that self-efficacy and personal characteristics are supportive factors, yet their performance greatly depends on competence and work systems context. Measures of organizational collaboration were also comparatively less important at the indicator level, which confirms the idea that the quality of care is more responsive to personal skills and professional growth rather than to structural mechanisms of collaboration (Kim & Ko, 2023).

In general, the hypothesis testing and IPMA outcomes can be used to conclude that the strategies to enhance the quality of nursing care could be focused on enhancing the professional skills and professional development abilities to promote and support them, especially with the use of simulation training, evidence-based learning, and self-efficacy reinforcement. These results support the existing body of global literature that infectious prevention competencies and ongoing professional development are the key elements of ensuring the quality of care and patient safety in hospital environments (Chen et al., 2024; Alkhawaldeh et al., 2025; Kim & Kang, 2025).

CONCLUSION

This study concludes that care delivery and nurse professionalism play key roles in enhancing nurse competency, particularly in infection prevention skills and professional development capability. Most relationships are significant, except for the effect of professionalism on organizational collaboration, indicating that care delivery strengthens overall competency, while professionalism mainly supports individual capacity. Professional skill, development capability, and organizational collaboration significantly improve nurse-reported quality of care, whereas personal traits do not show a direct effect. IPMA results further highlight that professional development and care delivery are the most critical areas for improvement, despite only moderate performance, suggesting a need to strengthen continuous learning and practice standards.

In terms of practical implications, hospitals should prioritize integrated competency development programs, including simulation-based training, clinical supervision, and continuous professional learning. Strategic implications highlight the need to focus on high-importance indicators such as evidence-based knowledge, learning readiness, and adherence to care standards. From a theoretical perspective, this study contributes to understanding the relationship between care delivery, professionalism, competency, and quality of care, particularly in developing country contexts.

This study has limitations, including the use of a cross-sectional design that limits causal inference, potential common method bias from self-reported data, and limited generalizability due to a specific sample and setting. Future research is recommended to apply longitudinal designs, incorporate qualitative approaches to better understand organizational collaboration, and expand variables such as self-efficacy, job satisfaction, workload, and leadership to develop a more comprehensive model of nursing service quality.

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