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NURSES' CROSS-TRAINING STRATEGIES EFFECTS ON STAFF EFFICIENCY AND QUALITY OF PATIENT CARE: BASIS FOR RECOMMENDATIONS FOR HOSPITAL NURSING

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ABSTRACT

This study examined the effectiveness of cross-training strategies and their effects on the quality of patient care in a selected government hospital in Bohol from May to August 2025. Guided by the Human Capital Theory, the research emphasized how professional development initiatives, such as cross-training, enhance nurses' competencies, adaptability, and contribution to healthcare service delivery. A total of 106 registered nurses, selected through random sampling, served as respondents. Data were collected using a structured questionnaire validated through pre-testing and analyzed using descriptive and inferential statistics. Findings revealed that cross-training strategies—specifically rotation, skills training workshops, and simulation-based training programs—were perceived as highly effective, with rotation rated the most effective overall. In terms of effects on patient care, respondents rated the domains of working relationships with patients and co-workers, utilization of the nursing process, and attitudes toward future job opportunities as highly observed, with career-related attitudes emerging as the most positively influenced. However, statistical analysis indicated a negligible correlation ($r = -0.037$, $p = 0.704$) between the perceived effectiveness of cross-training and its observed effects on patient care, suggesting that while both variables were rated highly, their relationship was not statistically significant. The study concluded that cross-training plays an essential role in strengthening nurses' professional competencies and shaping their career trajectories, although its direct, measurable effect on patient care outcomes may not always be significant. Anchored on Human Capital Theory, the findings highlight that investment in training enhances workforce adaptability and long-term healthcare efficiency. Recommendations were made to improve the design, monitoring, and

evaluation of cross-training programs to maximize their contributions to both nurse development and the quality of patient care.

Keywords: *nurses, cross-training strategies, staff efficiency, quality of patient care, intervention program, hospital nursing, patient outcomes, quantitative research, healthcare, nursing performance*

INTRODUCTION

In today's dynamic healthcare environment, the need for adaptable and highly skilled nursing staff is increasingly critical. Cross-training, defined as the systematic development of competencies beyond primary roles, enhances workforce flexibility and resilience (Yang et al., 2025). Strategies such as job shadowing, simulation, and competency-based training prepare nurses for diverse clinical scenarios and support a more integrated understanding of hospital operations (Kohrt et al., 2025).

Beyond skill development, cross-training improves staff efficiency by optimizing workflow, reducing burnout, and enhancing resource allocation (Harris et al., 2021). Nurses with broader competencies can respond more effectively to patient needs, particularly during high-demand periods. Evidence from Don Emilio Del Valle Memorial Hospital (DEDVMH) shows increased staff satisfaction (from 62% to 85%), reduced turnover (from 18% to 10%), and fewer monthly errors (from 12 to 7) following the implementation of cross-training.

Cross-training also contributes to improved quality of patient care. Nurses with expanded clinical competencies demonstrate better performance, leading to reduced complications, shorter hospital stays, and higher patient satisfaction (Baker et al., 2021). These outcomes highlight the role of cross-training in delivering comprehensive, patient-centered care.

This study examined the relationship between cross-training strategies, staff efficiency, and the quality of patient care at MAN NAS, a government hospital in Bohol. It addressed a gap in localized research on cross-training outcomes in government healthcare settings. Findings aim to inform evidence-based strategies and provide actionable recommendations to strengthen workforce performance and patient outcomes.

Research Questions

The aim of this study was to determine the impact of skills training programs on the quality of patient care.

Specifically, it sought to answer these questions:

1. What skills training programs did the respondents attend?

2. How effective are the skills training strategies in terms of the following:
    2.1 Cross-training;
    2.2 Skills training workshop; and
    2.3 Simulation-based training program?
3. What are the effects of the implemented cross-training strategies on the quality of patient care in terms of the following:
    3.1 Working relationship with the patient and co-worker;
    3.2 Nursing process in the care of the patient; and
    3.3 Attitude toward future job opportunities?
4. Is there a significant relationship between the impact of the skills training program and the quality of patient care?
6. What recommendation can be proposed based on the study's findings?

METHODOLOGY

This study utilized a quantitative research design to examine the relationship between cross-training strategies and patient care quality. Numerical data were collected through structured instruments to enable statistical analysis of patterns and relationships.

The research was conducted at a government hospital in Bohol, with anonymity maintained to ensure ethical compliance. The setting provided a practical context for assessing the implementation of cross-training in public healthcare institutions.

Respondents were 108 registered nurses selected through random sampling from a population of 155 across various clinical units. Inclusion criteria required at least six months of employment, active participation in cross-training programs, and full-time status. Nurses who were on leave, part-time, or without cross-training experience were excluded.

Data were gathered through a modified standardized questionnaire aligned with the Department of Health (DOH), the Philippine Nurses Association (PNA), and the Professional Regulation Commission (PRC) standards, as well as hospital-based performance criteria. The instrument comprised three sections: (1) skills training programs attended, (2) effectiveness of cross-training strategies (rotation, skills training, and simulation), and (3) effects on patient care, including teamwork, nursing process, and career outlook. Responses were measured using a 4-point Likert scale. The questionnaire underwent pre-testing to ensure validity and reliability.

Data collection followed ethical protocols, including institutional approval and informed consent. Confidentiality and voluntary participation were strictly observed.

Statistical analysis included weighted mean and ranking to assess levels of effectiveness and impact. The Pearson Product-Moment Correlation Coefficient was used to assess the relationship between cross-training effectiveness and patient care outcomes, after testing for normality, linearity, homoscedasticity, and independence.

RESULTS

Training Attended by the Respondents

The data below depicts the training attended by the nurse respondents.

Table 1. Training Attended by the Respondents (n=106)

Trainings Attended	Frequency	Percent
Basic Life Support (BLS)	95	89.6
Advanced Cardiac Life Support (ACLS)	72	67.9
Infection Prevention and Control	88	83.0
Critical Care Nursing	64	60.4
Mechanical Ventilator Training	58	54.7
Renal Replacement Therapy	37	34.9
ECG Reading	80	75.5
Total	**106**	**100.0**

**multiple responses*

Effectiveness of the Skills Training Strategies

This section presents the perceived effectiveness of cross-training strategies among hospital nurses. In this variable, there were three domains: rotation, skills training workshop, and simulation-based training program.

Table 2. Overall Effectiveness of the Skills Training Program (n=106)

Domains	Composite Mean	Qualitative Description	Interpretation	Rank
Cross-training	3.58	Extremely Agree	The cross-training strategies are highly effective	1
Skills Training Workshops	3.51	Extremely Agree (EA)	The cross-training strategies are highly effective	3
Simulation Based Training Program	3.56	Extremely Agree	The cross-training strategies are highly effective	2

Legend:

Rating	Derived Value	Interpretation
3.25 – 4.00	Extremely Agree (EA)	The cross-training strategies are highly effective
2.50 – 3.24	Moderately Agree (MA)	The cross-training strategies are moderately effective
1.75 – 2.49	Slightly Agree (SA)	The cross-training strategies are slightly effective
1.00 – 1.74	Do not Agree (DNA)	The cross-training strategies are not effective

Effects of the Implemented Cross-training Strategies on the Quality of Patient Care

This section depicts the extent of the effects of the implemented cross-training strategies on the quality of patient care as perceived by nurses in hospitals. In this variable, there were three domains: working relationship with the patient and co-worker, utilization of the nursing process in patient care, and attitude toward future job opportunities.

Table 3. Overall Effects of the Implemented Cross-training Strategies on the Quality of Patient Care (n=106)

Domains	Composite Mean	Qualitative Description	Interpretation	Rank
Working Relationship with the Patient and Co-worker	3.54	Highly Observed (HO)	The effects of cross-training strategies on the quality of patient care have a high positive effect	2.5
Utilizes nursing process in the care of the patient	3.54	Highly Observed	The effects of cross-training strategies on the quality of patient care have a high positive effect	2.5
Attitude of Future Job Opportunities	3.55	Highly Observed	The effects of cross-training strategies on the quality of patient care have a high positive effect	1

Legend:

Rating	Derived Value	Interpretation
3.25 – 4.00	Highly Observed (HO)	The effects of cross-training strategies on the quality of patient care have a high positive effect
2.50 – 3.24	Moderately Observed (MO)	The effects of cross-training strategies on the quality of patient care have a moderate positive effect
1.75 – 2.49	Slightly Observed (SO)	The effects of cross-training strategies on the quality of patient care have a slight positive effect
1.00 – 1.74	Do not Observe (DNO)	The effects of cross-training strategies on the quality of patient care have no positive effects

Significant Degree of Relationship between the Effectiveness of the Implemented Cross-training Strategies and the Effects of Cross-Training Strategies on Patient Care

The table below depicts the significant relationship between the effectiveness of implemented cross-training strategies and their effects on patient care.

Table 4. Significant Degree of Relationship between the Effectiveness of the Implemented Cross-training Strategies and the Effects of Cross-Training Strategies to Patient Care

Variables	Mean	Std. Deviation	r-value	Interpretation	p-value	Decision
Effectiveness	3.5413	.28740	-0.037	Negligible Correlation	0.704	Failed to Reject Ho

DISCUSSION

The findings indicate that the majority of nurses (89.6%) had completed Basic Life Support (BLS) training, highlighting its role as a core competency in emergency preparedness. This aligns with the existing literature, which emphasizes that BLS proficiency is fundamental for all healthcare providers and significantly improves survival outcomes during cardiac emergencies (Perkins et al., 2021). Similarly, the high participation in Infection Prevention and Control training (83.0%) reflects institutional prioritization of patient safety, consistent with studies showing that structured infection control education reduces healthcare-associated infections and enhances clinical outcomes (Allegranzi et al., 2017).

The substantial proportion of nurses trained in Advanced Cardiac Life Support (67.9%) and ECG interpretation (75.5%) suggests strong preparation for cardiovascular emergencies. Prior research supports that continuous training in these areas enhances early detection of cardiac events and improves clinical decision-making (Agervig et al., 2026). Additionally, participation in Critical Care Nursing (60.4%) and Mechanical Ventilator Training (54.7%) indicates workforce readiness for managing high-acuity patients. This is supported by evidence that specialized critical care training improves patient monitoring, reduces complications, and strengthens nurses' technical competence in intensive care settings (Marshall et al., 2017).

In contrast, Renal Replacement Therapy (34.9%) had the lowest participation rate, likely due to its specialized application. Literature suggests that highly specialized training programs are often limited to specific units, which may explain lower engagement among general nursing staff (Alfaidi et al., 2025).

Overall, these findings are consistent with prior studies indicating that hospitals tend to prioritize training in life-saving interventions, infection control, and critical care to enhance patient safety and service quality (World Health Organization, 2024). Such targeted

professional development initiatives contribute to improved clinical competence, workforce readiness, and overall healthcare efficiency.

Effectiveness of the Skills Training Strategies

Among the three domains, Cross-training ranked first with the highest composite mean of 3.58. This suggests that rotational programs are seen as the most effective cross-training strategy. Nurses recognize that rotating across various hospital departments exposes them to a wider range of clinical situations, thereby improving their adaptability, clinical decision-making, and collaboration with different healthcare teams. This strategy not only helps fill staffing gaps but also strengthens the workforce by distributing skills and experiences more evenly among the nursing staff.

The second most effective strategy, according to the respondents, is the Simulation-Based Training Program, with a composite mean of 3.56. This close second ranking highlights the critical role of simulation in preparing nurses for real-life clinical challenges. Simulation-based training provides a safe, controlled environment in which nurses can practice procedures, respond to emergencies, and build confidence in managing complex patient scenarios without risking harm to actual patients. The high rating also reflects strong support for continued investment in simulation technology and realistic scenario design.

Skills Training Workshops received the lowest composite mean among the three, at 3.51, but still within the “Extremely Agree” range. This indicates that while still highly effective, workshops may benefit from further enhancement to match the impact of rotation and simulation-based training. The slightly lower rating may reflect variability in the relevance or depth of workshop content, session frequency, or consistency in training delivery. Nonetheless, nurses continue to view these workshops as essential for maintaining and advancing their clinical skills and professional development.

The composite means for all three domains fall within the “Extremely Agree” category, indicating that nurses regard these strategies as highly effective in enhancing professional competence, clinical performance, and the overall quality of patient care. The data indicate that all three cross-training strategies are perceived as highly effective, with rotation being the most effective. These findings support the continued and improved implementation of structured rotation schedules, regular simulation exercises, and comprehensive skills workshops as core components of nursing staff development in hospitals. These strategies not only foster individual competence but also contribute significantly to staff efficiency and the delivery of high-quality patient care.

Overall, the consistently high ratings across all three domains affirm that structured cross-training strategies significantly enhance nursing competence and performance. These results are supported by recent literature emphasizing that integrated training approaches that combine experiential learning (rotations), simulation, and formal instruction lead to improved quality of patient care and workforce efficiency (World Health Organization,

2021). The findings therefore reinforce the need for sustained and optimized implementation of these strategies in hospital-based nursing development programs.

Effects of the Implemented Cross-training Strategies on the Quality of Patient Care

Among the three domains, “Attitude Toward Future Job Opportunities” ranked first, with a composite mean of 3.55. This suggests that cross-training has significantly influenced nurses’ professional mindset, enhancing their motivation, responsibility, and preparedness for advanced roles or leadership positions. It highlights that nurses who undergo cross-training are more likely to demonstrate self-direction, initiative, and a collaborative spirit—attributes that are not only essential for current roles but also indicative of potential for future advancement.

The domains “Working Relationship with the Patient and Co-worker” and “Utilizes Nursing Process in the Care of the Patient” both garnered a composite mean of 3.54, placing them in a shared second rank. This indicates that cross-training meaningfully enhances interpersonal communication, cultural sensitivity, teamwork, and patient-centered care. It also reinforces the correct application of the nursing process, ranging from assessment to implementation and evaluation, thus ensuring that patient care is methodical, safe, and evidence-based.

All three domains received a "Highly Observed" qualitative description, with composite means ranging from 3.54 to 3.55, signifying that the cross-training strategies had a consistently high positive impact on these critical areas of nursing practice. The data affirm that implementing cross-training strategies in the hospital setting leads to well-rounded improvements in nursing practice. It enhances not only the technical and procedural competencies of nurses but also strengthens their relational abilities and future career outlook. The consistency of high ratings across domains further underscores the value of institutionalizing cross-training programs as a strategic approach to improve the efficiency of the nursing workforce and the overall quality of patient care. This is consistent with recent studies indicating that integrated training approaches improve not only technical competence but also soft skills such as teamwork and adaptability, which are critical determinants of patient outcomes (Pepe & Altmiller, 2024).

Significant Degree of Relationship between the Effectiveness of the Implemented Cross-training Strategies and the Effects of Cross-Training Strategies on Patient Care

The results indicate that both the perceived effectiveness of cross-training strategies and their observed effects on patient care received high mean scores of 3.5413. This suggests that nurses generally regard cross-training initiatives as highly effective and beneficial for patient care. However, the correlation coefficient ($r = -0.037$) reveals a negligible negative association between these variables, with a p-value of 0.704, which exceeds the conventional significance threshold of 0.05. Therefore, the null hypothesis was not rejected, indicating that there was no statistically significant linear relationship between

nurses' perceptions of cross-training effectiveness and the observed effects on patient care outcomes.

These findings indicate that although nurses recognize the value of rotation, skills training workshops, and simulation-based programs for enhancing competencies, such perceptions do not necessarily translate into measurable improvements in patient care. The negligible correlation may be attributable to external or mediating factors, including institutional support, workload distribution, staffing ratios, hospital policies, and individual nurse motivation, which can influence the application of training in practice. Thus, while cross-training is perceived to enhance skills, organizational and systemic barriers may limit its observable impact on patient care outcomes. This observation is consistent with recent research, which emphasizes that training effectiveness alone is insufficient and must be complemented by supportive organizational structures and conducive work environments to achieve measurable improvements in clinical outcomes (Lavoie et al., 2024; Kim et al., 2024).

Conclusions

This study examined the implementation and perceived effects of cross-training strategies among nurses in government hospitals. Findings indicate that rotation, skills training workshops, and simulation-based training were consistently rated as highly effective in enhancing clinical competence, adaptability, and readiness for patient care.

Cross-training showed the strongest impact in three areas: improved working relationships through better communication and collaboration; enhanced application of the nursing process, including assessment and intervention; and more positive attitudes toward career development, reflected in increased motivation and preparedness for advanced roles.

However, statistical analysis revealed a negligible relationship between cross-training effectiveness and patient care outcomes, suggesting that external factors such as leadership, organizational culture, and resource availability may influence care quality.

These findings support Human Capital Theory and Benner's Skills Acquisition Theory, highlighting cross-training as a strategic investment that strengthens nurses' competencies, promotes professional growth, and enhances workforce flexibility and organizational efficiency.

Recommendations

Based on the findings and conclusions, the following recommendations are presented.

1. Hospital administrators should standardize cross-training programs across departments through clear guidelines, structured rotations, and competency-based curricula aligned with patient care standards.

2. Targeted interventions should address identified gaps in cultural competence, patient involvement, and emergency preparedness through diversity training, patient participation strategies, and enhanced simulation activities.
3. Comprehensive orientation and mentorship programs should be implemented to support nurses during departmental rotations and ensure continuity of care.
4. Hospitals should expand investment in simulation-based training, including regular drills and debriefings, to strengthen clinical decision-making and teamwork.
5. Continuous evaluation mechanisms that incorporate staff feedback and outcome-based metrics should be established to monitor and improve training effectiveness.
6. Cross-training should be linked to career advancement opportunities, such as promotions and certifications, to enhance motivation and professional growth.
7. Leadership should foster a collaborative culture that promotes teamwork, peer learning, and interdepartmental cooperation.
8. Further assessment of organizational factors, such as leadership, staffing, and resources, is recommended to better understand their influence on patient care outcomes.
9. Adequate funding, staffing, and institutional support should be ensured to sustain high-quality cross-training programs.

Compliance with Ethical Standards

The author affirms that this study was conducted in full compliance with established ethical standards. Informed consent was obtained from all participants after providing a clear explanation of the study's purpose, procedures, and their rights, including the freedom to withdraw at any time without penalty. Respondents' anonymity was strictly maintained, and all data were handled in accordance with applicable Data Privacy regulations to ensure confidentiality and security. The well-being of participants was safeguarded throughout the study, with no procedures posing harm or undue risk. The authors declare that no conflict of interest exists in the conduct of this research. Plagiarism was strictly avoided, and all sources were properly acknowledged. Furthermore, the interpretation of findings was conducted objectively, without bias, and the results were used solely for academic and research purposes. Where applicable, the use of artificial intelligence tools in the preparation of this manuscript has been disclosed to ensure full transparency.

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