

Original Article

Factor analysis of nurses' satisfaction with educational installation training in hospitals: A cross-sectional study

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Abstract

Background: Nurse job satisfaction plays an essential role in improving the quality of nursing care and patient safety. Several factors, including leadership, work environment, promotion opportunities, training, educational installation activities, and work tenure, have been shown to influence nurses' satisfaction.

Objective: This study aimed to analyze factors associated with nurses' satisfaction regarding educational installation training in hospitals.

Methods: This research applied a quantitative cross-sectional design. The study population comprised 90 inpatient nurses at dr. AK Gani Hospital Palembang, selected through total sampling. Data were collected using a validated and reliable structured questionnaire. Data analysis employed chi-square tests for bivariate analysis and multiple logistic regression for multivariate analysis with a 95% confidence level.

Results: Bivariate analysis revealed significant factors including work tenure ($p=0.000$; $OR=0.093$), leadership ($p=0.001$; $OR=4.984$), work environment ($p=0.003$; $OR=4.054$), promotion opportunities ($p=0.034$; $OR=2.737$), training ($p=0.007$; $OR=3.575$), and educational installation activities ($p=0.002$; $OR=4.516$). Multivariate analysis identified work tenure as the most dominant factor ($OR=412.585$), followed by educational installation activities ($OR=57.295$), training ($OR=27.712$), work environment ($OR=28.014$), promotion opportunities ($OR=24.429$), and leadership ($OR=19.420$).

Conclusion: Nurse satisfaction is significantly influenced by organizational factors and work experience, with work tenure serving as the strongest predictor. Hospitals should strengthen leadership, create supportive work environments, ensure fair promotion opportunities, and provide continuous training and educational installation activities to enhance nurse job satisfaction.

Background

Nurses' job satisfaction is a crucial aspect that directly influences the quality of nursing care and patient safety. Work motivation that emerges from daily communication has been shown to enhance nurses' enthusiasm in carrying out their duties, enabling them to experience meaningful work and to grow in a supportive work environment (Ahlstedt et al., 2020). However, job satisfaction is not only shaped by motivational factors but also by demographic aspects such as gender and work experience, which often result in varying perceptions of satisfaction (Akbari et al., 2020). In the context of leadership, positive leadership behavior improves the quality of nursing care and patient outcomes, making leadership an essential determinant of nurses' job satisfaction (Akbiyik et al., 2020). This indicates that job satisfaction is multidimensional, influenced by the interaction of personal, organizational, and work environment factors.

Across countries, research on health workers' satisfaction consistently highlights the significance of organizational factors and peer support. A study in Ghana revealed that health workers' satisfaction is strongly related to working conditions and career development opportunities (Akuffo et al., 2021). Theoretically, the concept of satisfaction can be explained through Herzberg's two-factor theory, in which motivators and hygiene factors contribute differently to satisfaction and dissatisfaction (Alfayad & Arif, 2017). In modern contexts, the integration of technology, self-efficacy, and social support has been proven to enhance health workers' competence while influencing their job satisfaction (Alshammari & Alenezi, 2023). Peer support also significantly reduces turnover intention among young nurses, underscoring the strategic role of interpersonal relationships (Andrews et al., 2023). Thus, nurses' job satisfaction is closely

linked to both structural and psychosocial factors in the workplace.

Variations in clinical practice further illustrate differences in nurses' job satisfaction. Nurses working in different units, such as intensive care, outpatient services, or obstetrics, face unique demands and challenges that shape their perceptions of job satisfaction (Andrioti et al., 2017). Educational and managerial training programs have been shown to strengthen nurses' leadership competencies, which positively affect team management and staff satisfaction (Aqtash et al., 2022). Nevertheless, nurse managers in perioperative settings often face complex managerial challenges that influence staff performance and satisfaction (Arakelian & Rudolfsson, 2021). A study in Ethiopia emphasized the importance of understanding nurses' motivation and satisfaction, as the limitations of public health facilities often lower satisfaction levels (Ayalew et al., 2019). Therefore, hospital-based educational and training programs are essential instruments for improving nurses' motivation and job satisfaction.

Nurses' job satisfaction is also closely related to professional autonomy and problem-solving skills. Higher levels of autonomy correlate positively with job satisfaction, as autonomy allows nurses to make appropriate clinical decisions (Bayer et al., 2022). Transformational leadership has been shown to improve nurses' satisfaction while also enhancing patient safety, highlighting the critical role of leadership styles in nursing organizations (Boamah et al., 2018). However, resistance to change remains a major challenge that hampers efforts to improve nursing care quality (Cheraghi et al., 2023). Globally, comparisons of nurses' satisfaction demonstrate correlations with macroeconomic indicators such as gross domestic product (GDP), suggesting that job satisfaction among health workers is shaped not only by hospital-level factors but also by broader socioeconomic conditions (Chiang & Chen, 2020).

Nursing managers' competencies are strong predictors of nurses' job satisfaction and retention. Recent studies emphasize that managerial competence directly affects staff satisfaction and lowers turnover (Choi et al., 2022). Furthermore, systematic reviews of leadership styles in nursing conclude that appropriate leadership fosters positive

outcomes for both nursing staff and the work environment (Cummings et al., 2018). Scientifically measuring job satisfaction requires valid and reliable instruments, making scale development theory a critical foundation for such research (DeVellis & Thorpe, 2021). Specifically, job satisfaction in critical care units has its own dynamics, as heavy workloads often negatively affect nurses' well-being (Dilig-Ruiz et al., 2018). Therefore, evaluating training programs that emphasize competence building and managerial support is highly necessary.

In addition to leadership and managerial factors, patient perceptions also contribute to shaping nurses' satisfaction. Evidence shows that patient satisfaction aligns with nurses' perceptions of care quality, which in turn enhances work motivation (Dor & Halperin, 2022). Sociodemographic factors such as age, gender, and job characteristics also influence satisfaction levels, as evidenced in Egyptian hospitals (Elsherbeny & El-Masry, 2018). The COVID-19 pandemic added complexity, as hospital compliance with protective guidelines significantly influenced operating room nurses' satisfaction (Fereidouni et al., 2023). Moreover, authentic leadership and personality traits have been found to affect satisfaction, indicating an interaction between individual and organizational factors (Hirayama et al., 2023). This reinforces the notion that job satisfaction is a multifactorial construct requiring comprehensive understanding.

Nurses working in obstetric and inpatient units also face unique determinants of job satisfaction. A study in Kenya found that working conditions, environment, and social factors strongly influenced satisfaction among obstetric nurses (Kahiga, 2018). Research in Macau highlighted the close link between job satisfaction and burnout risk, illustrating the reciprocal relationship between nurses' well-being and care quality (Leong et al., 2022). Workplace violence, often experienced by nurses in China, contributes to lower satisfaction, increased burnout, and decreased patient safety (Liu et al., 2019). These findings further emphasize the importance of adaptive leadership, supervision, and training programs to strengthen nurses' job satisfaction. In the Indonesian hospital context, educational and training programs serve as key strategies to enhance competencies while also improving job satisfaction amidst the evolving health system.

In summary, nurses' job satisfaction is shaped by diverse factors ranging from leadership, autonomy, and social support to broader macroeconomic conditions. Hospital-based training and education programs represent a vital mechanism to positively influence these factors. However, empirical evidence on nurses' satisfaction with hospital educational training programs remains limited, particularly in Indonesia. Therefore, this study aims to analyze nurses' satisfaction with educational training programs in hospitals.

Methods

Study Design

This study employed a quantitative approach with a cross-sectional design. This design was selected because it allows the researcher to explore the relationship between various risk factors and nurses' satisfaction levels within a specific period of time. Each participant was observed only once during the study, so the data collected reflected the respondents' actual conditions at the time of observation. Thus, the cross-sectional design was appropriate for examining the associations between independent variables—such as education, length of service, leadership, work environment, promotion opportunities, and training—and the dependent variable, namely nurses' satisfaction with training programs.

Sampling

The study population consisted of all nurses working in the inpatient wards of Dr. AK Gani Palembang Hospital, totaling 90 individuals. These nurses were distributed across several wards: W. Kusuma (12 nurses), Teratai (11 nurses), Melati (9 nurses), ICU (13 nurses), Dahlia (9 nurses), Cempaka (14 nurses), Aster (10 nurses), and the Pavilion (12 nurses). Given the relatively small population size (<100), a total sampling technique was applied, in which all members of the population were included as study respondents. Inclusion criteria consisted of inpatient nurses willing to participate in the study, both civil servants and non-civil servants nurses. Exclusion criteria included nurses who were on leave or pursuing further education during the study period.

Instruments

The research instrument was a structured questionnaire that had been previously tested for validity and reliability. The questionnaire was developed based on the indicators of the study variables, including education, length of service, leadership, work environment, promotion opportunities, training, hospital-based educational training programs, and nurses' satisfaction. Each variable was measured using an ordinal scale with specific categories, such as satisfied or dissatisfied.

Data Collection

Data collection was carried out in several stages. The preparation stage included obtaining research permits from STIK Bina Husada Palembang and Dr. AK Gani Hospital. During the implementation stage, the researcher explained the study objectives, benefits, and participants' rights. Respondents who agreed to participate signed informed consent forms. Questionnaires were then distributed for self-administration under the researcher's supervision. In addition to the questionnaire, secondary data were collected from hospital records and official documents. All responses were recorded in prepared scoring sheets and subsequently entered into computer software for data processing.

Data Analysis

Data analysis was conducted in several stages using statistical software. The initial stage involved editing to ensure completeness of the questionnaires, followed by coding and data entry. Univariate analysis was performed to describe the frequency distribution and percentages of each variable. Bivariate analysis was conducted using the chi-square test to examine associations between independent variables and nurses' satisfaction, with a 95% confidence level ($\alpha = 0.05$). Variables with a p-value < 0.25 in the bivariate analysis were entered into multivariate analysis using multiple logistic regression to identify the dominant factors associated with nurses' satisfaction.

Ethical Considerations

This study was conducted after obtaining official approval from the Master of Public Health Program at STIK Bina Husada Palembang

and RS Tk. II Dr. AK Gani. Prior to completing the questionnaire, the researcher explained the study objectives, procedures, and potential benefits and risks. Participation was voluntary, and respondents had the right to refuse or withdraw from the study at any time without consequence. Confidentiality was ensured by omitting personal identifiers from both the questionnaires and research reports. All participants signed informed consent forms as proof of their willingness to participate.

Results

Table 1. Frequency Distribution of Respondents by Demographic Characteristics

Variables	Frequency (n)	Percentage (%)
Education		
Health	58	64,5
Non-health	32	35,6
Length of Service		
Long (≥5 years)	54	60
Short (<5 years)	36	60
Leadership		
Satisfied	45	50
Dissatisfied	45	50
Work Environment		
Satisfied	45	50
Dissatisfied	45	50
Promotion Opportunities		
Satisfied	45	50
Dissatisfied	45	50
Training		
Satisfied	48	53,5
Dissatisfied	42	46,7
Educational Installation Activities		
Satisfied	58	64,6
Dissatisfied	32	35,6
Satisfaction with Training		
Satisfied	49	54,5
Dissatisfied	41	45,6

Based on the findings presented in Table 1, the majority of respondents had a health-related educational background (64.5%) and work experience of ≥5 years (60%), indicating that most nurses possessed both relevant experience and fundamental competencies in the health sector. The distribution of satisfaction with leadership, work environment, and promotion opportunities appeared balanced, with 50% of respondents reporting satisfaction and 50% reporting dissatisfaction. This suggests that nurses' perceptions of organizational factors influencing job

The findings of this study present the frequency distribution and percentages of respondents based on several variables, namely education, length of service, leadership, work environment, promotion opportunities, training, educational installation activities (Instaldik), and satisfaction with training. These data provide an overview of the respondents' characteristics as well as their perceptions of various factors related to nurses' job satisfaction in the hospital, as summarized in Table 1.

satisfaction were equally divided. Furthermore, the results revealed that satisfaction with training reached 53.5% of respondents, while satisfaction with educational installation activities (Instaldik) was higher, at 64.6%. Overall, satisfaction with training was reported by 54.5% of respondents, although 45.6% remained dissatisfied.

Bivariate analysis was performed to examine the association between independent variables and installation performance. The chi-square test was applied to generate p-values and Odds Ratios (OR) with 95% Confidence Intervals (CI)

in order to determine the strength of association for each factor. These results provide insights into the variables that significantly influenced

satisfaction with installation performance in the hospital, as summarized in Table 2.

Table 2. Relationship of Education, Length of Service, Leadership, Work Environment, Promotion Opportunities, Training, and Instaldik Activities with Installation Performance

Variables	Installation Performance				p-value	PR (95% CI)
	Satisfied (n)	(%)	Dissatisfied (n)	(%)		
Education						
Health	34	58,6	24	41,4	0,395	-
Non-health	15	46,9	17	53,1		
Length of Service						
Long (≥5 years)	49	90,7	5	9,3	0,000	0,093 (0,040-0,213)
Short (<5 years)	0	0	36	100		
Leadership						
Satisfied	33	73,3	12	26,7	0,001	4,984 (2,028-12,253)
Dissatisfied	16	35,6	29	64,6		
Work Environment						
Satisfied	32	71,1	13	28,9	0,003	4,054 (1,678-9,798)
Dissatisfied	17	37,8	28	62,2		
Promotion Opportunities						
Satisfied	30	66,7	15	33,3	0,034	2,737 (1,162-6,447)
Dissatisfied	19	42,2	26	57,8		
Training						
Satisfied	33	68,9	15	31,3	0,007	3,575 (1,495-8,550)
Dissatisfied	16	38,1	26	61,9		
Educational Installation Activities						
Satisfied	39	67,2	19	32,8	0,002	4,516 (1,787-11,412)
Dissatisfied	10	54,4	22	68,8		

As presented in Table 2, the analysis revealed that education was not significantly associated with installation performance ($p = 0.395$). In contrast, length of service showed a highly significant relationship ($p = 0.000$) with OR = 0.093 (CI 0.040–0.213), indicating that nurses with longer work experience (≥ 5 years) were more likely to report satisfaction with installation performance compared to those with shorter tenure. Leadership was also significantly associated ($p = 0.001$) with OR = 4.984, suggesting that nurses who perceived leadership as good were nearly five times more likely to feel satisfied than those who perceived leadership as poor.

Work environment demonstrated a significant relationship ($p = 0.003$) with OR = 4.054, meaning that nurses with a positive perception of their work environment were four times more likely to report satisfaction. Promotion opportunities were also significant ($p = 0.034$)

with OR = 2.737, indicating a positive role in enhancing satisfaction. Training showed a significant association ($p = 0.007$) with OR = 3.575, reflecting that the quality of training influenced nurses' satisfaction. Finally, Instaldik activities demonstrated a highly significant association ($p = 0.002$) with OR = 4.516, confirming that well-implemented Instaldik programs increased the likelihood of nurses' satisfaction more than fourfold. Overall, length of service, leadership, work environment, promotion opportunities, training, and Instaldik activities were identified as dominant variables influencing installation performance.

Furthermore, multivariate logistic regression analysis was conducted to determine the most influential factors associated with installation performance. The results were reported in terms of p-values, Odds Ratios (OR), and 95% Confidence Intervals (CI). Variables with $p < 0.05$ were considered significantly associated

with installation performance, while the OR values indicated the relative likelihood of

respondents reporting satisfaction compared to the reference categories.

Table 3. Multivariate Logistic Regression of Factors Influencing Installation Performance

Variable	Sig. (p-value)	OR	95%CI
Leadership	0,016	19,420	1,740-216,802
Work Environment	0,009	28,014	2,336-335,961
Promotion Opportunities	0,018	24,429	1,727-345,518
Training	0,006	27,712	2,629-292,066
Educational Installation Activities	0,007	57,295	3,050-1076,384
Length of Service	0,000	412,585	14,308-11897,404

The multivariate analysis demonstrated that all variables were significantly associated with installation performance ($p < 0.05$). Good leadership increased the likelihood of satisfaction with installation performance by 19 times (OR = 19.420; 95% CI: 1.740–216.802). A favorable work environment was significantly related to increased satisfaction, with respondents being 28 times more likely to report satisfaction compared to those perceiving the environment as unfavorable (OR = 28.014; 95% CI: 2.336–335.961). Promotion opportunities also played a significant role, as respondents who rated promotion opportunities positively were 24 times more likely to be satisfied (OR = 24.429; 95% CI: 1.727–345.518).

Training contributed significantly, with respondents who perceived training as good being 27 times more likely to report satisfaction (OR = 27.712; 95% CI: 2.629–292.066). Instalidik activities exerted an even stronger effect, with respondents who perceived these activities positively being 57 times more likely to be satisfied with installation performance (OR = 57.295; 95% CI: 3.050–1076.384). Meanwhile, length of service emerged as the most dominant factor; nurses with longer tenure were 412 times more likely to be satisfied compared to those with shorter tenure (OR = 412.585; 95% CI: 14.308–11,897.404). Therefore, length of service can be considered the primary predictor of satisfaction with installation performance compared to other variables.

Discussion

The findings of this study indicate that leadership had a significant influence on nurses' satisfaction with installation performance, with an OR of 19.420. Effective leadership has been shown to enhance the quality of nursing care and directly impact nurses' job satisfaction (Akbiyik et al., 2020). Transformational leadership contributes to improved satisfaction as well as patient safety, highlighting that leaders' roles extend beyond administrative tasks to encompass clinical responsibilities (Boamah et al., 2018). Supportive leadership through positive daily communication fosters sustainable work motivation (Ahlstedt et al., 2020). The competence of nurse managers has also been identified as an important predictor of staff satisfaction and a key factor in reducing turnover intention (Choi et al., 2022). Nevertheless, managerial challenges remain, particularly in complex perioperative settings (Arakelian & Rudolfsson, 2021). Strengthening supportive leadership styles should therefore be considered a primary strategy for improving installation performance.

Work environment was also significantly associated with nurses' satisfaction, with an OR of 28.014. A healthy and supportive work environment increases nurses' motivation and satisfaction across care units (Andrioti et al., 2017). Cross-national studies have demonstrated that positive work environments correlate with higher levels of nurse satisfaction (Chiang & Chen, 2020). Peer support and a respectful work atmosphere help reduce stress and psychological burden (Andrews et al., 2023). Autonomy and problem-solving skills are

additional environmental factors that enhance satisfaction (Bayer et al., 2022). Conversely, resistance to change within the workplace can hinder improvements in care quality (Cheraghi et al., 2023). Hospitals should therefore prioritize creating work environments that promote nurses' well-being.

Promotion opportunities emerged as an important factor, with an OR of 24.429. Fair and transparent promotion processes enhance nurses' motivation and satisfaction (Akuffo et al., 2021). According to Herzberg's two-factor theory, promotion opportunities are classified as motivational factors that positively influence job satisfaction (Alfayad & Arif, 2017). Evidence from Ethiopia has also shown that nurses' motivation is shaped by career development opportunities (Ayalew et al., 2019). In contrast, limited promotion prospects often lead to dissatisfaction and increased turnover intention (Akbari et al., 2020). Conversely, well-structured promotion pathways encourage nurse retention (Choi et al., 2022). Thus, transparent promotion systems play a critical role in strengthening both nurse satisfaction and organizational loyalty.

Training was also found to be a significant factor, with an OR of 27.712, underscoring its impact on job satisfaction. Educational and training programs improve nurses' managerial and leadership competencies, ultimately enhancing care quality (Aqtash et al., 2022). During the COVID-19 pandemic, compliance with protective training guidelines significantly increased the satisfaction of operating room nurses (Fereidouni et al., 2023). Well-designed training tailored to nurses' needs has also been shown to boost self-efficacy and job satisfaction (Alshammari & Alenezi, 2023). Participation in training enhances preparedness for workplace demands (Enggriani & Haryati, 2024). Continuous evaluation is therefore essential to ensure the effectiveness of training programs (Suliati et al., 2025). Training can thus be regarded as a strategic intervention for enhancing nurses' job satisfaction.

Instaldik activities showed the strongest effect, with an OR of 57.295, highlighting their role as one of the dominant factors influencing nurses'

satisfaction. Well-structured Instaldik programs foster motivation and satisfaction by providing opportunities for continuous learning (Dor & Halperin, 2022). Educational programs in hospitals also serve to strengthen leadership and clinical skills among nurses (Aqtash et al., 2022). Prior research has shown that participation in educational activities increases nurses' sense of belonging to their organization (Ahlstedt et al., 2020). Internal training programs can also reduce turnover and enhance service quality (Andrews et al., 2023). Regular evaluation of nursing education programs is necessary to ensure their long-term benefits (Sulviana et al., 2024). Instaldik activities therefore represent a cornerstone for improving nursing service quality.

Length of service was the most dominant variable, with an OR of 412.585, indicating that nurses with longer tenure were far more likely to feel satisfied. Extensive work experience allows nurses to adapt better to organizational dynamics (Akbari et al., 2020). It also strengthens clinical skills and confidence in handling complex situations (Dilig-Ruiz et al., 2018). A study in Kenya confirmed that work experience significantly affects satisfaction among obstetric nurses (Kahiga, 2018). Similarly, experienced nurses are better equipped to manage stress and prevent burnout (Leong et al., 2022). Work experience has also been shown to buffer the negative effects of workplace violence (Liu et al., 2019). Thus, length of service stands as the principal determinant of satisfaction with installation performance.

Overall, these findings align with international evidence highlighting the importance of leadership, work environment, promotion opportunities, training, educational activities, and work experience in shaping nurses' satisfaction. Supportive leadership fosters a positive work environment and ensures fair promotion opportunities (Boamah et al., 2018). A conducive work environment amplifies the effects of training and educational activities on satisfaction (Andrioti et al., 2017). Promotion and training opportunities also contribute to retaining competent nurses (Akuffo et al., 2021). Internal educational programs enrich work

experience and reinforce motivation (Dor & Halperin, 2022). Work tenure further amplifies these effects, as experience fosters stability in professional performance (Leong et al., 2022). These results are therefore consistent with previous empirical evidence.

The implications of this study highlight the need for comprehensive interventions to enhance nurses' satisfaction. Hospitals should strengthen supportive leadership styles, foster healthy work environments, provide transparent promotion systems, and implement sustainable training and Instaldik activities (Aqtash et al., 2022). Such interventions should also consider length of service as a critical factor in shaping satisfaction (Dilig-Ruiz et al., 2018). Ultimately, nurses' satisfaction is closely linked to care quality and patient safety (Boamah et al., 2018). By addressing these determinants, hospitals can enhance service quality and institutional competitiveness (Suliaty et al., 2025). Thus, these findings may serve as a basis for managerial policy development in Indonesian hospitals.

Conclusion and Recommendation

This study demonstrated that leadership, work environment, promotion opportunities, training, Instaldik activities, and length of service were significantly associated with nurses' satisfaction with hospital installation performance. Length of service emerged as the most dominant factor, followed by Instaldik activities, training, work environment, promotion opportunities, and leadership. These findings confirm that nurses' satisfaction is shaped not only by individual factors but also by organizational support, managerial systems, and professional experience. Therefore, improvements in nursing service quality should be pursued comprehensively through strengthened leadership, enhanced work environments, fair promotion opportunities, and the implementation of continuous training and educational programs.

Hospitals are recommended to reinforce managerial systems that emphasize transformational leadership, foster conducive work environments, and ensure transparent and equitable promotion policies. Training and Instaldik programs should be continuously developed in both quality and sustainability to

meet the competency needs of nurses in modern healthcare services. Additionally, hospital management should provide greater support to nurses with shorter tenure through mentoring and adaptation assistance to ensure job satisfaction from the early stages of their careers. The implementation of these strategies is expected to enhance nurses' motivation, satisfaction, and performance, ultimately leading to improved service quality and patient safety.

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Declaration of conflict of interest

The authors declare no competing interests.

Declaration on the Use of AI

No AI tools were used in the preparation of this manuscript.

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