ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

DEPARTMENT OF NURSING

POSTGRADUATE PROGRAM

Quality of nursing care and associated factors in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025

Principal Investigator: Meron Eshete (BSc)

June, 2025

Addis Ababa, Ethiopia

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Principal Investigator: Meron Eshete (BSc)

Advisors: Tigistu Gebreyohannis (Asst. Prof.)

Tsion Alemu (MSc)

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MASTER OF SCIENCE RESEARCH PROJECT SUBMISSION FORM

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STATEMENT OF DECLARATION

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This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University at College of Health Sciences, School of Nursing and Midwifery. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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ACRONYMS/ABBREVIATIONS

ANA	American Nurses Association
ICU	Intensive Care Unit
PPQNC	Patient Perception of the Quality of Nursing Care
QIs	Quality Indicators
SPHMMC	St. Paul's Hospital Millennium Medical College
SPSH	St. Peter's Specialized Hospital
SPSS	Statistical Package for Social Sciences
TASH	Tikur Anbessa Specialized Hospital
WHO	World Health Organization

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ABSTRACT

Background: The quality of nursing care in intensive care units (ICUs) is a critical determinant of patient outcomes and satisfaction, particularly in high-stakes environments such as those found in public hospitals. In Ethiopia, where healthcare resources are often limited and related literature is rather scarce, understanding the dynamics of nursing care quality is essential for improving health services.

Objective: To assess quality of nursing care and associated factors in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025

Methods: An institution-based, cross-sectional study was conducted from February 1 to February 30, 2025, among nurses working in intensive care units of selected public hospitals in Addis Ababa, Ethiopia. All eligible nurses within the study settings were included, employing a total population sampling approach. Data were collected using a standardized, self-administered Quality Nursing Care Scale for Intensive Care (ICU-I-QNCS) questionnaire. The collected data were entered into Kobo Toolbox and analyzed using SPSS version 26. Descriptive statistics summarized participants' characteristics. Bivariable and multivariable regression analyses were performed to identify factors associated with the quality of nursing care. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated, and a p-value of less than 0.05 was considered statistically significant. The findings were presented using text, tables, and figures.

Results: A total of 165 respondents participated in the study, resulting in a response rate of 98.8%. Males constituted 55.8% (n = 92) of the sample. The median age was 30 years, with an interquartile range of 28 to 32 years. Overall, 75.8% (n = 125) of participants demonstrated adequate knowledge of quality nursing care; however, only 27.9% (n = 46; 95% CI: 21.0–34.8) provided care that met acceptable quality standards. Multivariate logistic regression analysis indicated that higher educational attainment (AOR = 3.70; 95% CI: 1.72–7.98) and adequate knowledge of quality nursing care (AOR = 3.28; 95% CI: 1.14–9.46) were significantly associated with the provision of acceptable quality nursing care.

Conclusions: A substantial majority (72.1%) of nurses delivered care below acceptable quality standards. We recommend that hospital authorities strengthen efforts to ensure compliance with nursing care quality standards. These findings can inform policy development aimed at enhancing care quality in health facilities.

Key words: quality of nursing care, associated factors, intensive care units, Ethiopia

1. INTRODUCTION

1.1 Background

Quality of nursing care is a fundamental aspect of modern healthcare systems that significantly impact patient outcomes and satisfaction (1). It encompasses various dimensions, including the effectiveness, safety, efficiency, and equity of the care provided. The American Nurses Association (ANA) defines in nursing care quality as "the degree to which nursing services for health care consumers increase the likelihood of positive outcomes and are consistent with evolving nursing knowledge" (2). This definition underscores the necessity of aligning nursing practices with current evidence-based practices for optimal patient care.

The concept of quality nursing care is multifaceted, involving both technical and interpersonal elements. It requires nurses to address not only the physical needs of patients but also their psychological, emotional, and social well-being. As highlighted in recent reports, quality care is often described as holistic, underscoring the importance of effective communication, empathy, and strong nurse-patient relationships to achieve optimal outcomes (3,4). Furthermore, quality nursing care is closely linked to patient engagement and satisfaction, as it fosters an environment where patients feel actively involved in their care decisions (5).

Quality assurance programs primarily focus on continuous improvement through systematic evaluation of nursing practices against established standards and criteria. Key goals include enhancing patient health outcomes, improving functional abilities, and ensuring patient satisfaction. In this context, nurses play a key role as they are the primary caregivers who interact with patients most frequently, making their competency and dedication crucial for delivering high-quality services (5).

The quality of nursing care in the Intensive Care Unit (ICU) is a critical area of healthcare that directly impacts patient outcomes and overall hospital performance. ICU nurses operate in a high-stakes environment, facing unique challenges characterized by complex patient needs and a demanding workload (7). The quality of nursing care in this setting is influenced by various factors, including staffing levels, the physical work environment, and the emotional well-being of the nurses themselves (8).

As healthcare systems evolve, understanding the multifaceted aspects of nursing care quality in ICUs becomes increasingly important. This exploration not only addresses the immediate needs of critically ill patients but also contributes to broader discussions about healthcare quality and patient safety (9). By focusing on the quality of nursing care in ICUs, we can better equip healthcare professionals to meet the challenges posed by this demanding field, ultimately leading to improved patient care and greater satisfaction. Therefore, this study is designed to assess quality of nursing care and associated factors in intensive care units of selected public hospitals, Addis Ababa, Ethiopia.

1.2 Statement of the problem

Globally, healthcare systems are increasingly recognizing that inadequate nursing care significantly contributes to patient morbidity and mortality. Prior research works consistently show that factors such as nurse staffing levels, education, and work environments directly impact the quality of care provided. For instance, studies have demonstrated that hospitals with higher ratios of registered nurses to patients experience lower rates of patient mortality and adverse events, including medication errors, healthcare-associated infections, and failure to rescue patients from deteriorating conditions (10–12). For instance, in a study of medical-surgical units, the odds of 30-day mortality increased by 16% for each additional patient in a nurse's workload (13).

The World Health Organization (WHO) estimates that approximately one in ten patients is harmed during healthcare delivery, resulting in over three million deaths annually due to unsafe care practices, particularly in settings such as the ICU (14). Moreover, evidence indicates that nearly two-thirds of hospitals in some health systems are delivering substandard care or failing altogether, with patient safety concerns primarily driven by low staffing levels and inadequate skill mix among nurses (15). Surveys across multiple countries reveal that between 11% and 47% of nurses report poor or fair quality of patient care in their hospitals, reflecting widespread challenges in nursing care quality (16). Additionally, Ethiopian authors documented that roughly half of patients report dissatisfaction with nursing care, implying a substantial proportion may be receiving suboptimal nursing services (17).

This alarming statistic underscores the urgent need for improvements in nursing care quality as a means to enhance patient safety and reduce mortality rates.

In Ethiopia, the situation is particularly concerning. The country faces significant challenges in its healthcare system, exacerbated by a shortage of qualified nursing staff and inadequate training programs (18). The WHO has highlighted that Ethiopia's healthcare workforce is insufficient to meet the demands of its population, leading to compromised care in critical care settings such as ICUs. In these high-stakes environments, where patients are at their most vulnerable state, the implications of poor nursing care can be dire. Studies indicate that compromised nursing care in Ethiopian ICUs practically contributes to increased patient mortality rates, highlighting a pressing public health crisis (11,19).

The magnitude and impact of poor-quality nursing care in Ethiopian ICUs cannot be overstated. The consequences of inadequate nursing practices extend beyond individual patient outcomes (20,21), reflecting systemic failures within the healthcare infrastructure demand immediate attention. Addressing these issues is not merely about improving survival rates; it is about fostering a sustainable healthcare system capable of delivering safe and effective care to all Ethiopians.

Despite ongoing efforts by the Ethiopian Federal Ministry of Health to reform critical care services, significant challenges remain, including limited resources, inadequate staffing, and poor infrastructure (18,22). These factors adversely affect the functionality and efficiency of ICU services. In light of this rationale, this study aims to assess the quality of nursing care and associated factors in intensive care units of selected public hospitals in Addis Ababa, Ethiopia. By prioritizing improvements in nursing practices, we can take crucial steps toward enhancing patient safety and ensuring better health outcomes for all.

1.3 Significance of the study

The significance of this study lies in its potential to transform nursing care quality within Ethiopia's ICUs, addressing critical gaps in understanding and improvement. By examining factors such as nurse training, workload, and work environment, the research aims to provide insights into how these elements impact the quality of nursing care delivered to critically ill patients. The findings are expected to inform healthcare policymakers and hospital administrators about the specific challenges faced by nursing staff, thereby guiding the development of targeted interventions aimed at enhancing nursing education, improving working conditions, and optimizing resource allocation.

This research aligns with the Ethiopian Federal Ministry of Health's ongoing reforms in critical care services, reinforcing national priorities focused on enhancing healthcare delivery. By identifying and addressing the challenges within nursing care, the study could lead to standardized practices that improve patient outcomes and overall healthcare quality. Furthermore, it aims to provide empirical data that can serve as a valuable resource for future studies and comparative analyses in similar low-income countries, thereby contributing to the global discourse on healthcare improvement.

In summary, this study has an influence not only patient care quality but also broader healthcare policy development and academic discussions, ultimately contributing to a more robust understanding of nursing care dynamics in Ethiopia's ICUs.

2. LITERATURE REVIEW

2.1 Overview of quality nursing care

Quality nursing care encompasses a multifaceted approach that prioritizes the safety, effectiveness, and personalization of healthcare services. According to the ANA, quality is defined as the degree to which nursing services enhance the likelihood of positive health outcomes while adhering to evolving evidence-based practices. This definition emphasizes the importance of aligning nursing interventions with up-to-date knowledge and standards, ensuring that care is not only effective but also efficient and equitable. Furthermore, quality nursing care is characterized by compassionate interactions, advocacy for patients' needs, and the establishment of strong interpersonal relationships between nurses and care seekers (3,4). Ultimately, it aims to fulfill patients' holistic needs while promoting their overall well-being and satisfaction within the healthcare system.

The quality of nursing care in ICUs in general has been a subject of significant research, highlighting various challenges and improvements within the healthcare system. An integrative literature review found 45 quality indicators (QIs) specifically associated with nursing care in adult ICUs. The research emphasized that both the quality and amount of nursing care play a crucial role in influencing patient outcomes, such as adverse events and mortality rates. The results indicate that creating a standardized set of QIs could support the continuous evaluation and enhancement of nursing practices within ICUs (24).

2.2 Quality of nursing care in intensive care unit

In New Zealand, a comprehensive audit was conducted to assess compliance with seven nurse-influenced patient care standards in ICUs. These standards included: enteral nutrition initiation within 24 hours of admission, timely antibiotic administration, sedation interruption for eligible patients, early mobilization, and three strategies for pressure ulcer prevention. The analysis of audit data from 2014 and 2015 revealed significant improvements in five of the seven standards. Notably, the most substantial enhancements were observed in the following areas: a 3% increase in patients receiving enteral nutrition within the first 24 hours of ICU admission, a 6% increase in timely antibiotic delivery within 30 minutes of prescription, a remarkable 24% increase in daily sedation interruptions, and an 11% increase in daily patient mobilization during their ICU stay (25).

In Iraq, Qadir et al. conducted a descriptive study among of 70 nurses working at coronary care units of four hospitals in Erbil City. The authors found that three-quarters (75.7%) of nurses provided fair levels of quality of nursing care (26). In the Netherlands, a multi-center survey study was conducted in three intensive care units to understand specific factors that affect nurse-perceived quality, using the Essentials of Magnetism II questionnaire. The majority of the 123 nurses were more than satisfied with the quality of care and with their jobs (27).

A cross-sectional study was carried out in the intensive care units of five hospitals in Turkey in 2015. The study analysed 368 patients to identify their perceptions of nursing care, utilizing the Patient Perception of the Quality of Nursing Care (PPQNC) scale. The median total score of the PPQNC was found to be 73 (70.56±6.80), indicating high PPQNC scale scores and good patients' satisfaction level with nursing care (28).

A descriptive study of documentary analysis among 72 patients in maternal ICU of Brazil showed that the hygiene, comfort, and safety axis indicated adequate care. However, the nutrition and hydration indicators revealed risky and undesirable care. The axis that presented the best results was nursing records, which demonstrated adequate care in most of the analyzed items, indicating a satisfactory level of care (29). In Sweden, a retrospective study was conducted using critical care registry data from patients over 15 years old in general critical care units at seven university hospitals. The analysis of patient care and complications in relation to the nurse-to-patient ratio revealed that unplanned extubations occurred in 3% to 5.7% of cases. A significant difference was observed in the length of time patients spent on ventilation among the hospitals; those with fewer patients and a nurse-to-patient ratio of 0.5 to 0.6 specialist nurses per patient noted a longer duration of ventilation (30).

A descriptive cross-sectional research design was used to access patients' satisfaction of nursing care in three selected hospitals, Ibadan, Nigeria. The study included a sample of 400 patients admitted for at least two days before discharge. The study revealed that half (50.7%) of the patients had high level satisfaction with nursing care quality (31).

An institution-based cross-sectional study was performed involving 405 patients admitted to Agaro General Hospital in Southwest Ethiopia. The findings indicated that 76.3% of participants had a positive perception of the quality of nursing care provided (32).

An institution-based cross-sectional study involved 369 randomly selected nurses from primary and secondary-level public hospitals in Bahir Dar City, Northeast Ethiopia. The findings revealed a prevalence of missed nursing care at 46.3%. The most frequently omitted activities included physical examinations (56.4%), patient discharge planning and education (50.9%), providing emotional support to patients and their families (50.8%), monitoring fluid intake and output (50.2%), assisting with patient ambulation (48.5%), and documentation (48%) (21).

Another institution-based cross-sectional study was conducted among 315 randomly selected nurses in public hospitals within the North Shewa Zone from April 1 to April 20, 2021. The study revealed a prevalence of missed nursing care at 33%. This finding aligns with broader research indicating that missed nursing care is a significant issue globally, with prevalence rates ranging from 10% to 98% across various healthcare settings (33,34).

2.3 Factors associated with quality of nursing care

Several studies have identified various factors that significantly influence the quality of nursing care, highlighting demographic, environmental, and organizational aspects.

2.3.1 Demographic factors

Demographic characteristics such as age, gender, and work experience have been shown to play a crucial role in determining nursing care quality. For instance, a study in Iraq found that nurses aged 22-28 years, predominantly male, and with 1 to 8 years of experience provided higher quality care. Additionally, higher educational attainment and participation in training programs were positively correlated with improved nursing care quality (26) .

2.3.2 Organizational variables

The work environment is another critical factor affecting nursing care quality. A Dutch study indicated that nurse-perceived quality was enhanced by favorable work conditions, including adequate staffing, a patient-centered approach, competent colleagues, and support for ongoing education (27). Similarly, research from China emphasized the importance of the nursing practice environment, psychological empowerment, and work engagement, which collectively explained a significant portion of the variance in nursing care quality (35).

In the previous Ethiopian study, Abere et al. reported that factors associated with missed nursing care include male professionals, those who had not received on-the-job training, those who worked full 24-hour shifts, those who were dissatisfied with the level of teamwork, and those who had an intention to leave the nursing profession (36).

Mingude et al. identified that labor resources and material resources were the main reasons for missed nursing care. Additionally, they found that nurses who held a diploma, had work experience of 6 months to 2 years, worked both day and night shifts, exceeded 400 hours of overtime in the past 3 months, and expressed dissatisfaction with the nursing profession were associated with missed nursing care. The authors underscore the complex interplay between staffing levels, nurse education, work conditions, and job satisfaction in influencing missed nursing care (37).

2.3.3 Knowledge variables

Barriers to implementing standard practices in nursing were reported in a qualitative study from Canada. Key issues included insufficient knowledge and skills among nurses, inadequate training opportunities, and organizational challenges such as poor communication and lack of proper equipment (38). In Pakistan, a qualitative analysis revealed that multiple factors influenced nursing care quality: nurse-related issues, patient and family dynamics, environmental conditions, administration factors, and ICU settings (39).

2.4 Conceptual framework

This is the conceptual framework developed specifically for this study by the principal investigator after reviewing related studies (35,40,41) in which this study is intended to revolve. This framework aims to explore the multifaceted aspects influencing nursing care quality in ICUs, particularly within public hospitals. The framework is believed to support the present study entitled '*Quality of nursing care and associated factors in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025'*

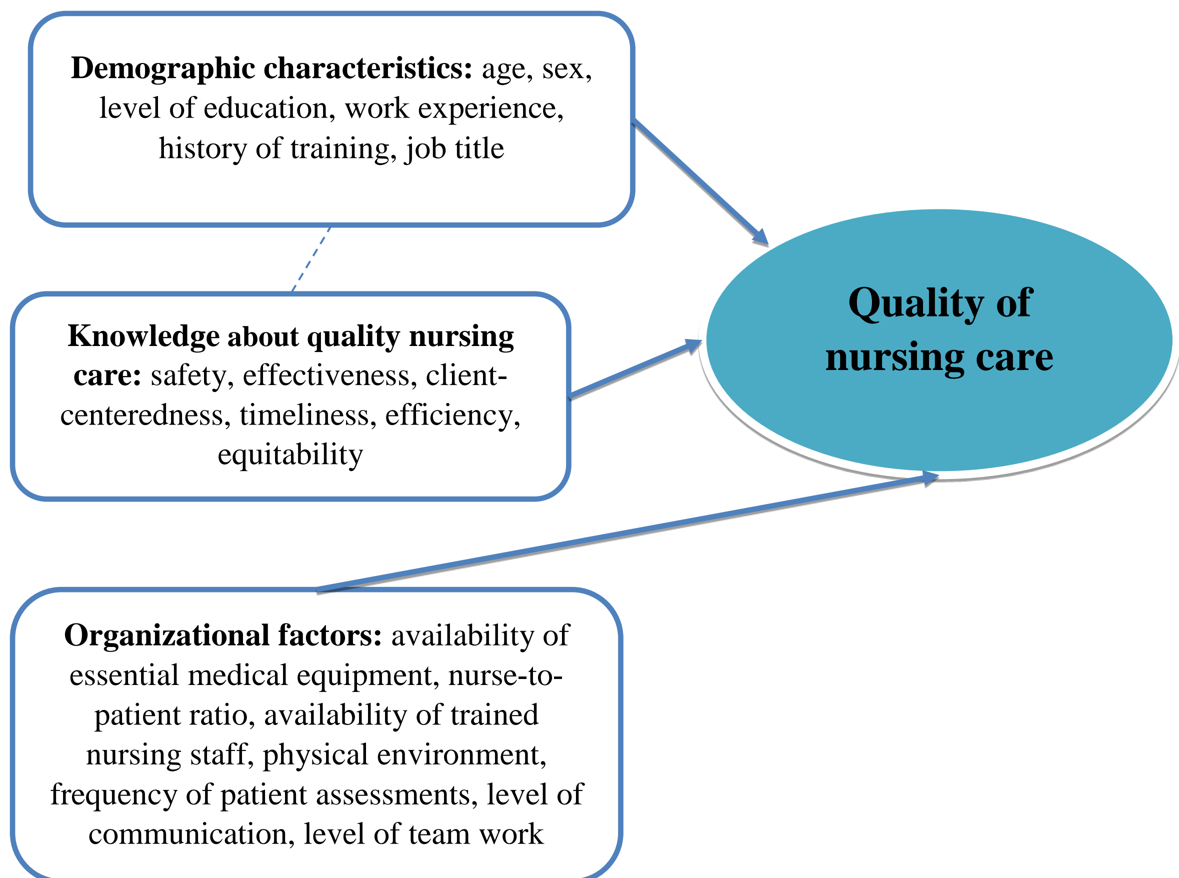

Figure 1. Conceptual framework for potential factors associated with quality of nursing care (35,40,41)

3. OBJECTIVES

3.1 General objective

- To assess quality of nursing care and associated factors in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025

3.2 Specific objectives

- To evaluate the quality levels of nursing care provision in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025
- To identify factors associated with quality of nursing care provision in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025

4. METHODS AND MATERIALS

4.1 Study area and period

The study was conducted in public hospitals in Addis Ababa, the capital city of Ethiopia. The city has a high population density, with a total population of approximately 5,703,630 as of November 2024, according to World Population Review data (42). The city is administratively divided into eleven sub-cities and 117 woredas, and it hosts thirteen government hospitals alongside approximately 40 private hospitals. According to data from the Addis Ababa Health Bureau, the city's health workforce comprises a total of 13,545 professionals. This includes 631 physicians, 1,034 pharmacists, 4,829 nurses, 2,273 health officers, 983 laboratory technicians, 1,125 midwives, 181 health information technologists, and 2,489 other health professionals.

The study was conducted in the ICUs of three hospitals: Tikur Anbessa Specialized Hospital (TASH), St. Paul's Hospital Millennium Medical College (SPHMMC), and St. Peter's Specialized Hospital (SPSH). These hospitals were purposively selected based on their compliance with minimum ICU standards for patient care, their status as major public referral centers with established ICUs, the concentration of critical care resources, availability of prior research data, and practical feasibility considerations. This selection was hoped to ensure a representative and feasible scope for the study.

TASH is a tertiary hospital located in Addis Ababa. It is the largest and oldest public hospital in the country, providing a high level of clinical care for millions of people and training for health science students from various parts of the country and the Horn of Africa. This teaching hospital has several specialty and sub-specialty clinics delivering specialized care to over half a million patients annually in its outpatient department, with an average of 1,500 outpatients daily. It has a 24-bed, well-equipped functional adult ICU, along with an additional 8-bed cardiac ICU (43).

Similarly, SPHMMC, built in 1969, serves about 200,000 patients annually on average and has a catchment population of more than five million people from different parts of the country. It has a 14-bedded, well-equipped functional adult ICU (44).

St. Peter's Specialized Hospital is another public hospital under the authority of the Ministry of Health (MOH). The hospital has a long history of tuberculosis management since it was where TB case management was initiated for the first time in Ethiopia in June 1961. The

hospital has a total of 774 staff members, out of which 30 and 15 nurses are dedicated to the adult ICU (14 beds) and cardiac ICU (4 beds), respectively (45).

In total, the current number of nurses working in the selected ICUs is 185, with TASH, SPHMMC, and SPSH having 84, 56, and 45 nurses, respectively. The study period was extended from February 1 to February 30, 2025.

4.2 Study design

An institution-based, cross-sectional study was conducted.

4.3 Population

4.3.1 Source population

The source population for this study consisted of all nurses working in the ICUs of public hospitals, Addis Ababa, Ethiopia.

4.3.2 Study population

The study population for this study comprised nurses working in the ICUs of selected public hospitals, Addis Ababa, Ethiopia during the study period and who meet the eligibility criteria.

4.4 Eligibility criteria

4.4.1 Inclusion criteria

- Nurses who were actively working in the randomly selected ICUs of public hospitals for more than one month

- Nurses who were willing to participate in the study and provide informed written consent

4.4.2 Exclusion criteria

- Nurses who were not available during study period for reasons such as annual leave, sick leave, and maternity leave

- Newly assigned nurses

4.5 Sample size determination

The sample size for this study is calculated using a single population proportion formula. Taking the proportion of nurses practicing acceptable quality of nursing care to be 50% as there was no prior similar local study and assuming 95% confidence level, 5% margin error and 10% non-response rate, the sample size is estimated as follows:

$$n^0 = \frac{(\mathrm{Z}\alpha/2)2p(1-p)}{e^2}$$

n = the required sample size

p = the proportion of nurses practicing acceptable quality of nursing care=0.5

$Z_{\alpha\backslash 2}$ = the critical value at 95% confidence level = 1.96

e = precision (margin of error) = 5%

N= total population

Accordingly,

$$n^0 = \frac{(1.96)^2 * 0.5(1 - 0.5)}{0.05^2}$$

$$n^0 = \frac{(1.96)^2 * 0.5(0.5)}{0.05^2}$$

$$n^0 = 384$$

Table 1. Sample Size Calculation Using Epi Info: Assessing the Quality of Nursing Care Among Nurses with a Double Population Formula

Variable	Study area	% of exposed	CI (%)	Power (%)	OR	Ratio	Calculated sample size	Author(s)
Being diploma holder	Ethiopia	20.3	95	80	4.5	10.5	108	Mingude et al. (37)
Male professionals	Ethiopia	48.5	95	80	2.9	1.06	130	Abere et al. (36)
High workload	Ethiopia	41	95	80	3.8	3.8	98	Mingude et al. (37)

Therefore, we will use the highest calculated sample size of 384 and apply the correction formula, as the total target population at the hospital is less than 10,000 (N = 185).

$$n = \frac{n^0}{1 + \frac{n^0}{N}}$$

$$n = \frac{384}{1+\frac{384}{185}} = 125$$, which becomes 137 after adding 10% for nonresponse rate.

4.6 Sampling procedure

As the sample size required for this study is 137, which is close to the total population of nurses at the selected study sites (N=185), the investigator aims to include all eligible professionals working at the study sites during the study period to enhance the study's power. Therefore, all ICU nurses who meet the eligibility criteria during the study period were included as subjects of the study.

4.7 Variables in the study

4.7.1 Dependent variable

- Quality of nursing care (acceptable and unacceptable levels)

4.7.2 Independent variables

- **Background characteristics**: age, sex, level of education, years of experience, prior training, job title
- **Knowledge about quality nursing care:** safety, effectiveness, client-centeredness, timeliness, efficiency, equitability
- **Organizational factors**: availability of essential medical equipment, nurse-to-patient ratio, availability of trained nursing staff, physical environment (e.g., cleanliness, space), frequency of patient assessments, level of communication, level of teamwork

4.8 Operational definitions

- **Knowledge**: Study participants who correctly answered 80% or more of the knowledge questions on nursing quality of care were considered to have adequate knowledge, while participants who score below 80% were considered to have inadequate knowledge, based on Bloom's cutoff (46).
- **Quality of nursing care**: refers to the degree to which nursing services meet established standards that ensure patient safety, satisfaction, and effective health outcomes, as assessed by the nurse practitioner. Nurses were categorized as having **acceptable quality of nursing care** if they score 80% or above (a total raw score of ≥40 out of the possible 50) of the maximum possible score on the fifteen-item practice questions related to nursing quality of care. Conversely, those who score below 80% (a total raw score of <40) were considered to have **non-acceptable quality of nursing care** (46).

4.9 Data collection tools and techniques

The required data were collected using a self-administered, structured questionnaire compiled from similar previous studies and the Quality Nursing Care Scale for Intensive Care (ICU-I-QNCS) tool (20,21,47–49). In addition to sociodemographic variables and knowledge-assessing items, the data collection tool includes a Likert-type scale comprising 15 statements about the quality of nursing care. For each of the 15 statements, respondents will choose one of five options: Never (1), Rarely (2), Sometimes (3), Often (4), and Very Often (5). The score assigned to each statement will serve as a basis for analysis. Therefore, the minimum and maximum scores obtainable from the scale range from 10 to 50. Higher total scores indicate greater quality of nursing care.

Two professional healthcare workers were recruited and briefly trained on the data collection procedure. For data collectors and supervisor, a relevant two-day training was provided by the investigator to familiarize them with the data collection tool, eligibility criteria, sampling techniques and ethical concern. Moreover, the data collection from the participants was carried out in their convenient spot individually.

4.10 Data quality management

To ensure data quality, brief training was provided to data collectors and supervisor**.** The questionnaire was pretested in 5% of the calculated sample size at Yekatit 12 Hospital Medical College, a setting comparable to the selected study setting. Pretesting was done to minimize ambiguity of words and also for comprehensibility, appropriateness of language, sensitivity of questions and average duration of the interview. The feedback received after this process was used to modify and finalize the tool. Close supervision was preserved during data collection, and filled questionnaires were double-checked daily for consistency and completeness by the data collectors and principal investigator before proceeding into data entry and statistical analysis.

4.11 Data processing and analysis

Data entry, coding and cleaning of the data were performed using Kobo Toolbox, and the statistical analysis was performed using Statistical Product and service solution (SPSS) version 26. Frequency and cross tabulation were used to check for missed value and variables. The demographic and clinical characteristics of participants were computed using descriptive statistics such as mean ± standard deviation and median + interquartile range for continuous variables while percentage and frequencies for categorical ones. Binary and

multiple logistic regressions were used to identify factors associated with the outcome variable – quality of nursing care.

Bivariable logistic regression analysis was run to check variables associated with the dependent variable individually. Candidate variables yielding p-value <0.25 in the binary regression analysis were then exported into multiple logistic regression model for further analysis to compute odds ratio with corresponding 95% confidence intervals. A p value was considered statistically significant at the level of <0.05. The Hosmer-Lemeshow Goodness of Fit test was used to check whether the model adequately fits the data in this study. The result showed adequate fit with an HL p-value of 0.282. Finally, the study findings were presented using texts, diagrams, tables and figures.

4.12 Ethical considerations

Ethical clearance was obtained from the Ethical Review Committee of School of Nursing and Midwifery, College of Health Sciences, Addis Ababa University under protocol number SNM/05/25. A support letter was sought from the School of Nursing and Midwifery, and it was submitted to each study facility to carry out the data collection. Following this step, the data collectors were introduced with the onsite ICU coordinators. Before approaching each nurse for interview, the purpose of the study was briefly explained until it is well grasped, and informed written consent was obtained. During data collection, the study participants were informed that the information collected would be kept anonymous and confidential, and that the data collected would be utilized only for this study.

4.13 Dissemination of the study findings

The findings of this study will be submitted to the School of Nursing and Midwifery, College of Health Sciences, Addis Ababa University, in Partial Fulfillment of the Requirements for a Master's degree in Cardiovascular Nursing. The outcome of this study will also be presented to higher officials of each study hospital. Pertinent observations will be briefed to onsite healthcare workers to create awareness about the problem at the end of data collection. Aside this, the outcome of this study will be presented at national and international conferences. Finally, the manuscript will be submitted to a peer-reviewed scientific journal for possible publication.

5. Results

5.1 General characteristics of respondents

A total of 167 questionnaires were distributed in this study, of which 165 were properly completed, resulting in a response rate of 98.8%. Among the respondents, the majority were male (92; 55.8%), yielding a male-to-female ratio of 1.3:1. The age distribution of participants was skewed, with a median age of 30 years and an interquartile range of 28–32 years. Approximately half of the respondents (80; 48.5%) were in the 30–39 year age group at the time of data collection. Most respondents (94; 57%) reported a bachelor's degree as their highest academic achievement (Table 1).

Practitioner nurses made up the vast majority of the workforce (93.9%), with nurse managers representing only 6.1%. Most nurses (73.3%; n=121) had received ICU training, and 83% had less than five years of onsite work experience. The nurse-to-patient ratio was generally low, with 93.3% caring for one to two patients at a time. However, 77.0% reported working more than 48 hours per week, and nearly all (95.2%) worked both day and night shifts (Table 1).

Table 2. General characteristics of nurses working in selected public hospitals of Addis Ababa, Ethiopia, 2025(n=165)

Variable	Frequency	Percent (%)
Sex		
Male	92	55.8
Female	73	44.2
Age group		
20–29 years	76	46.1
30–39 years	80	48.5
40–50 years	9	5.5
Educational level		
First degree	94	57.0
Second degree +	71	43.0
Job title		
Practitioner nurse	155	93.9
Nurse manager	10	6.1
History of ICU training		
No	44	26.7
Yes	121	73.3
Onsite work experience		
<5 years	137	83.0
≥5 years	28	17.0
Patient load		
1 to 2 patients	154	93.3
>2 patients	11	6.7
Weekly working hours		
≤48 hours	38	23.0
>48 hours	127	77.0
Working shift		
Day only	8	4.8
Day and night	157	95.2

ICU: Intensive Care Unit

5.2 Organizational characteristics

The vast majority of nurses (95.2%) reported the availability and functionality of essential medical equipment. Regarding teamwork within their units, 90.3% of nurses rated the level of teamwork as good, while a small proportion described it as average (4.2%) or poor (5.5%). Communication within the working units was similarly positive, with 92.7% of nurses assessing communication as good, and only 3.6% each rating it as average or poor (Table 2).

Table 3. Organizational characteristics of nurses working in selected public hospitals of Addis Ababa, Ethiopia, 2025(n=165)

Variable	Frequency	Percent (%)
Availability of Essential Medical Equipment		
No	8	4.8
Yes	157	95.2
Functionality of Essential Medical Equipment		
No	8	4.8
Yes	157	95.2
Level of Teamwork in the Working Unit		
Good	149	90.3
Average	7	4.2
Poor	9	5..5
Level of Communication in the Working Unit		
Good	153	92.7
Average	6	3.6
Poor	6	3.6

5.3 Knowledge and level of quality nursing care

Majority (75.8%; n=125) of the nurses were classified as having adequate knowledge of quality nursing care, while 24.2% (n=40) were categorized as having inadequate knowledge. Regarding the quality of nursing care provided, 72.1% (n=119) of nurses were associated with non-acceptable quality care, whereas only 46 (27.9%; 95 CI%: 21.0–34.8) delivered acceptable quality care (Figure 2).

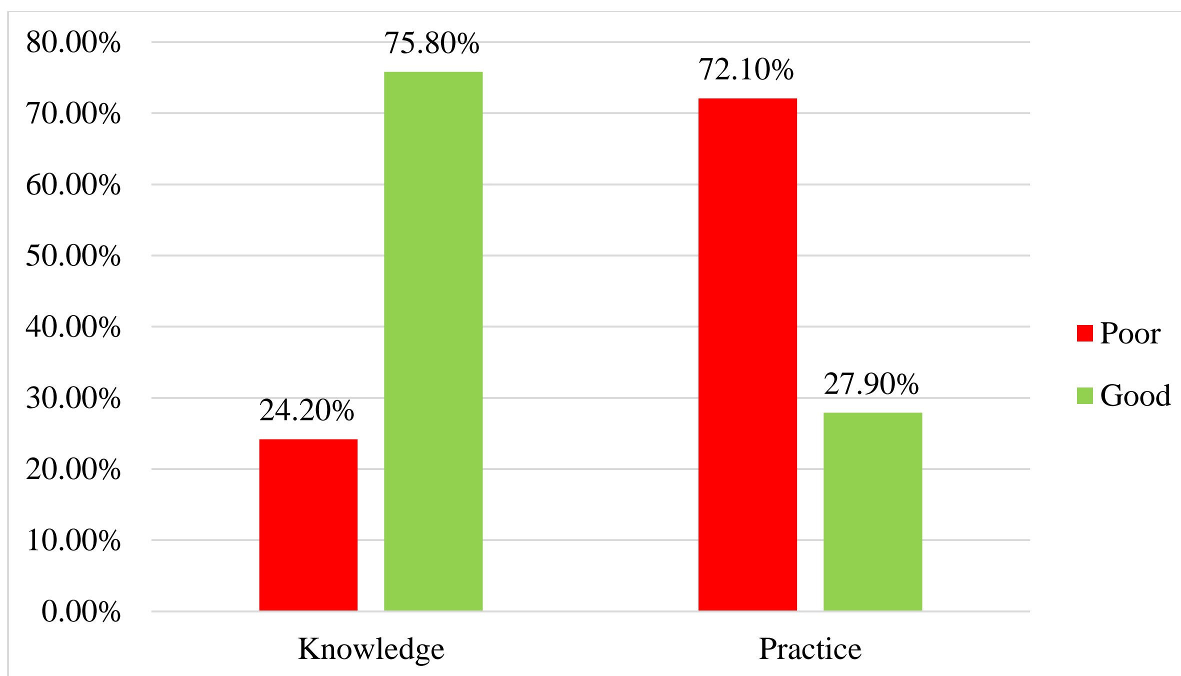

Figure 2. Knowledge and level of quality nursing care (practice) among nurses working in selected public hospitals in Addis Ababa, Ethiopia, 2025

5.4 Factors associated with level of quality nursing care

Initially, all variables were considered for bivariate analysis, including age, sex, educational status, job category, onsite work experience, history of training, daily patient load, weekly working hours, working shift, availability of essential medical equipment, functionality of essential medical equipment, level of teamwork within the working unit, level of communication within the working unit, and knowledge of quality nursing care.

Subsequently, variables with a p-value less than 0.25 in the bivariate analysis were selected for inclusion in the multivariable logistic regression analysis. These variables comprised educational level, job category, history of ICU training, work shift, and knowledge of quality nursing care.

After adjusting for potential confounders, two variables-educational status and knowledge about quality nursing care-retained a statistically significant association with the quality of nursing care provided. Specifically, nurses holding a second degree or higher were 3.7 times higher more likely to deliver acceptable quality nursing care compared to those with only a first degree (AOR: 3.70; 95% CI: 1.72–7.98; p = 0.001). Additionally, nurses with good knowledge of quality nursing care were significantly more likely to provide acceptable quality care than those with poor knowledge (AOR: 3.28; 95% CI: 1.14–9.46; p = 0.027) (see Table 4).

Table 4. Factors associated with quality nursing care among nurses working in selected health centers in Addis Ababa, Ethiopia, (n=165)

Variable	Quality of nursing care		COR (95%CI)	AOR (95%CI)	P value
	Acceptable (%)	Unacceptable (%)			
Educational level					
First degree	16(17.0)	78(83.0)	1	1	**-**
Second degree +	30(42.2)	41(57.8)	3.57(1.75,7.29)	3.70(1.72,7.98)	**0.001**
Job category					
Practitioner nurse	41(26.4)	114(73.6)	1	1	-
Nurse manager	5(50.0)	5(50.0%)	2.78(0.76,10.10)	1.05(0.20,5.65)	0.954
History of ICU training					
No	7(15.9)	37(84.1)	1	1	-
Yes	39(32.2)	82(67.8)	2.51(1.03,6.14)	1.51(0.57,3.99)	0.408
Working shift					
Day only	4(50.0)	4(50.0%)	2.74(0.66,11.44)	4.56(0.65,31.94)	0.127
Day and night	42(25.1)	115(74.9)	1	1	-
Knowledge					
Inadequate	6(15.0)	34(85.0)	1	1	-
Adequate	40(33.3)	80(66.7)	2.67(1.04,6.87)	3.28(1.14,9.46)	**0.027**

ICU: Intensive Care Unit; Only variables with p value <0.25 in the bivariable regression are depicted here; 1: Reference category

6. Discussion

This study aimed to assess the quality of nursing care and its associated factors in intensive care units of selected public hospitals in Addis Ababa, Ethiopia. The findings revealed that although the majority (75.8%) of nurses demonstrated good knowledge about quality nursing care, only slightly more than a quarter (27.9%) actually delivered care that met acceptable quality standards, highlighting a significant gap between nurses' knowledge and the quality of care practiced in these health centers. Furthermore, the study found that higher educational attainment and good knowledge were significantly associated with the provision of acceptable quality nursing care among nurses.

In particular, this study found that only slightly more than a quarter (27.9%) of nurses actually delivered care that met acceptable quality standards. This finding aligns somewhat with a previous Ghanaian report indicating that the majority of nurses (75.8%) had poor quality of nursing care, particularly low compliance with infection prevention and control practices (50). It is slightly comparable to what was obtained in other part of Ethiopia, where only 36.8% of nurse delivered acceptable level of perceived quality of nursing care, as indicated by patient satisfaction with the care (51). However, it contrasts sharply with observations from Iraq, where three-quarters (75.7%) of nurses provided fair levels of quality nursing care (26).

The notable discrepancies in knowledge and practices regarding quality of nursing care among nurses observed in this study, compared to previous reports from other settings, can be attributed to several factors. These include the background characteristics of the sampled participants, the sample size of the studied populations, the study design, and the assessment tools used along with their respective cutoff points. For instance, while this study employed the modified Bloom's cutoff point and relied on nurse-reported data, the study conducted in Southwest Ethiopia used mean values to dichotomize patient-perceived levels of quality nursing care (32).

The study found that higher educational attainment was significantly associated with the provision of acceptable quality nursing care among nurses. This finding aligns with several previous studies (52,53), which reported that nurses with advanced education are more likely to deliver high-quality care. Nurses holding advanced degrees typically receive more comprehensive training in critical thinking, clinical decision-making, leadership, and

evidence-based practice. This enhanced knowledge equips them to manage complex patient care situations more effectively, resulting in holistic and superior quality care (53,54).

Additionally, the study revealed that adequate knowledge of quality nursing care was significantly associated with the provision of acceptable quality care among nurses. This result was anticipated and concurs with earlier reports (55,56). Nurses with strong knowledge possess the essential skills, education, and clinical expertise required to deliver comprehensive care that addresses all patient needs (3). This underscores the importance of increasing nurses' knowledge, as it translates into greater adherence to standard nursing care protocols and ultimately improves the delivery of quality nursing care.

Of note, this study indicates a significant gap between nurses' knowledge and the actual quality of care practiced in these health facilities, suggesting that despite relatively good knowledge levels, the translation into acceptable quality nursing care remains limited. This finding aligns with previous reports, which emphasized that outcome measures for knowledge implementation often remain crude and insufficiently precise (57). The observed gap suggests the need for further investigation, as it may be attributable to factors such as resource constraints, equipment shortages, staffing challenges, inadequate institutional support, or broader systemic issues that impede the effective application of knowledge in practice (18).

7. Strengths and Limitations

7.1 Strength

- The study was conducted among nurses working at multiple public health facilities, which likely enhances the generalizability of the findings.

7.2 Limitations

- The cross-sectional design of the study limits the ability to infer causality between factors and the quality of nursing care, and it does not capture changes over time.
- The assessment of nursing care quality was based on self-reported practices, which may differ from actual practices if observed directly, potentially affecting the accuracy of the findings and raising a concern of possible social desirability bias.
- Conducting a comparative analysis was challenging due to the limited availability of reports directly addressing the quality of nursing care in the ICU, especially locally.

8. Conclusion and Recommendation

8.1 Conclusion

The findings revealed that slightly more than a quarter of ICU nurses actually delivered care that met acceptable quality standards. This reflects a troubling shortfall in nursing care quality in these health centers. Furthermore, the study found that highest educational attainment and knowledge about quality of nursing care showed a significant association with the quality of nursing care.

8.2 Recommendation

In light of the study findings, the following recommendations are proposed.

For Nurses**,**

Nurses should actively integrate nursing knowledge into clinical practice through continuous professional development and reflective practice to enhance the quality of care. Participation in multidisciplinary Quality Improvement (QI) initiatives is essential to improve patient outcomes, reduce variability in care, and foster a culture of safety and excellence. Additionally, regular hands-on workshops and simulation exercises should be implemented to bridge the gap between theoretical knowledge and the practical application of quality nursing care.

For management bodies,

These findings highlight the need for targeted interventions that promote safe nursing practices, cultivate a just culture, and support proactive harm prevention. Management should encourage academic advancement to develop a highly skilled nursing workforce capable of addressing current and future healthcare challenges effectively. Specifically, ongoing education and training programs focused on quality care standards and evidence-based practices should be prioritized. Facilitating access to advanced courses and certifications will further enhance educational attainment and improve the overall quality of nursing care.

For researchers,

Future research should seek to validate these findings through robust study designs, including qualitative approaches, to gain deeper insights into the challenges and barriers affecting compliance with nursing care standards. Such investigations will contribute to the development of more effective strategies for improving nursing practice and patient outcomes.

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Annexes

Annex I: Participant Information Sheet and Informed Consent Form for the study

School of Nursing and Midwifery

College of Health Sciences, Addis Ababa University

Greetings: I am ________________ and I am here representing Mrs. Meron EShete, a postgraduate student at the School of Nursing and Midwifery, College of Health Sciences, Addis Ababa University Addis Ababa, Ethiopia. We will proceed with administering the questionnaire, which will take around 10–15 minutes.

Title of the study: Quality of nursing care and associated factors in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025

Objective: To assess quality of nursing care and associated factors in intensive care units of selected public hospitals, Addis Ababa, Ethiopia, 2025

Benefits: This study will not give any direct benefit to the participants; but the detail information you provide us will help to understand quality of nursing care and associated factors in intensive care units as assessed by nurses in public health centers, Addis Ababa, Ethiopia. Thus, it will help us to recommend the concerned stakeholders to design appropriate intervention and to address the challenges.

Risk: There is no any risk associated with this study and overall process of the data collection other than spending 10–15 minutes with me.

Right of the respondents: Any participant will participate in this study voluntarily. You can quit giving answers to the questions you are not willing to answer and even you can stop at all.

Confidentiality: All the data will not be accessed by anyone other than the study team and any information that you give will be confidential. Your name and other information related to your private life will not be mentioned at an individual level showing your identity, thus you are not expected to mention your name at any point.

Whom to contact: If you will have any questions about the research or need further information please contact (Meron Eshete: Email: merryeshete1234@gmail.com; Phone: +251913674987)

Are you willing to participate?

Yes_______ No__________

Consent form

I, the undersigned, confirm that the participant clearly understand the objective and conditions of the study and has given a verbal consent to be part of the study. I have given the necessary information about the research including the right to withdraw from the study at any time using the language he/she understands.

Facilitator name______________________________ Signature__________________

Interview code:_____________________________________

Annex II**: Data collection format**

001. Data collector: code ____/___/___ Name _______________________

002. Date of data collection ____/___/____ Time ____________

003. Checked by Supervisor: Signature ________day _______month ______ year____

004. Name of the health facility:_______________________

I. Background data			
SN	**Question**	**Response**	**Skip**
101	Age in years		
102	Sex	1. Male 2. Female	
103	Highest Level of Education	1. Diploma 2. First degree 3. Second degree and above	
104	Job title	1. Practitioner nurse 2. Nurse manager	
105	Year(s) of experience at ICU		
106	History of ICU training	Yes☐ No☐	
107	How many patients you regularly care for in a day		
108	Number of hours usually worked per week		
109	Work shift	Day ☐ Night ☐ Day and night ☐	
110	Are essential medical equipment (such as ventilator, patient monitor, defibrillator, endotracheal tubes, infusion pump, urinary catheter, ECG machine, crash cart, central venous catheter) available?	Yes☐ No☐	
111	Are essential medical equipment (such as ventilator, patient monitor, defibrillator, endotracheal tubes, infusion pump, ECG machine, central venous catheter) functional?	Yes☐ No☐	
112	How do you rate the level of team work in your working unit?	Poor☐ Unsure☐ Good☐	
113	How do you rate the level of communication in your working unit?	Poor☐ Unsure☐ Good☐	
Section 2: Knowledge-related variables			

201	Quality of nursing care is expected to have a significant impact on patient safety.	Yes☐ No☐ Not sure☐	
202	Patient outcomes are determined by the effectiveness of nursing care.	Yes☐ No☐ Not sure☐	
203	Patient-centered care involves being responsive to patient preferences and ensuring that patient values guide all clinical decisions.	Yes☐ No☐ Not sure☐	
204	Quality of care refers to the efficiency of the care provided.	Yes☐ No☐ Not sure☐	
205	Equitable care is defined as care that does not vary in quality based on patient characteristics.	Yes☐ No☐ Not sure☐	
206	Poor quality of care can lead to complications in patient outcomes.	Yes☐ No☐ Not sure☐	

Section 3: Quality of care assessing items

		Never(1)	**Rarely(2)**	**Sometimes(3)**	**Often(4)**	**Very often(5)**
301	Unconscious patient pain assessment and recorded					
302	Record of likely need to patient restraints as per prescription					
303	Date and time of feeding tube insertion recorded					
304	Dressings have been changed as per prescription					
305	Patient repositioning every two hours. and recorded					
306	The eye-care method has been documented					
307	Patient washing once a day and recorded					
308	Patient mouth washing as by ward procedure and recorded					
309	Pain assessment with scale and recorded					
310	Pain management as by medical prescription					

311	Endotracheal suctioning performed as per prescription and recorded					
312	Fluids intake and output have been recorded					
313	IV infusions have been recorded and signed for on the ICU chart					
314	There's consistency between actual infusion rate in ml/hour and prescribed infusion rate					
315	Monitor alarms properly set					

Thank you.