



Original Article

The Quality of Nursing Care in Intensive Care Units: Influential Factors and the Role of Families

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Abstract

Introduction: Due to factors in the Intensive Care Unit (ICU), the likelihood of adverse events is significantly increased, which affects the quality of care. This study examined the factors affecting the quality of nursing care in the ICU.

Methods: A comprehensive review of studies was conducted using databases such as PubMed, Elsevier, and Magiran. Inclusion criteria focused on studies related to nursing care quality and family involvement in ICUs. Exclusion criteria included studies with weak methodologies or insufficient data.

Results: From an initial 260 articles, 34 studies were selected, revealing key factors influencing care quality, such as family involvement, staffing levels, nurse-patient ratio, emotional Well-Being, teamwork, work environment, technological advancements, ethical challenges, cultural competence, and adequate rest.

Conclusion: By investing in these key factors, ICUs can deliver safer, more effective, and patient-centered services that address the medical, emotional, and social needs of patients and their families.

Keywords: Nursing, Care, ICU, Quality of care, Family

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Introduction

Care is the main focus of the nursing profession, and nurses are from the largest group of healthcare providers. They play a fundamental role in the provision and maintenance of health services at various levels (1). Nurses can have a direct impact on the health status of patients. Therefore, they need to possess the necessary skills and sufficient insight, especially in critical care units (2).

In intensive care units (ICUs), patients who are critically ill, or on the verge of life and death, are treated (3). Nursing in critical care units is one of the most advanced specialties in nursing and has been established in various countries for over half a century. Its goal is to provide specialized care using the most advanced facilities for patients whose lives are at risk (1). In this department, due to factors such as the complexity of patients' conditions and treatment processes, the presence of numerous electronic devices and equipment, patients' lack of consciousness, their dependence on caregivers and life support devices, and the extensive use of oxygen, the likelihood of errors and adverse events is significantly increased, requiring careful attention. Therefore, the development and implementation of standards in the ICU have led to better patient survival, cost savings, a reduction in preventable deaths, and in turn, it improves the quality of patient care (4).

Nursing care quality includes patients' access to physical and psychosocial needs fulfillment, and patients' trust to receive comprehensive and multidimensional care. It is evaluated in physical, psychosocial, and communicational dimensions (5). The quality of nursing care in the ICU directly impacts patient outcomes, safety, and satisfaction (6).

Improving the quality of nursing care is often hindered by several challenges which can be attributed to various factors such as inadequate staffing, poor work environments, insufficiently educated nurses, etc (6). Additionally, identifying and improving the necessary skills and knowledge in these aspects are essential for nurses to address the emotional and physical well-being of patients (1). This study examined these factors affecting the quality of nursing care in the intensive care unit.

Material and Methods

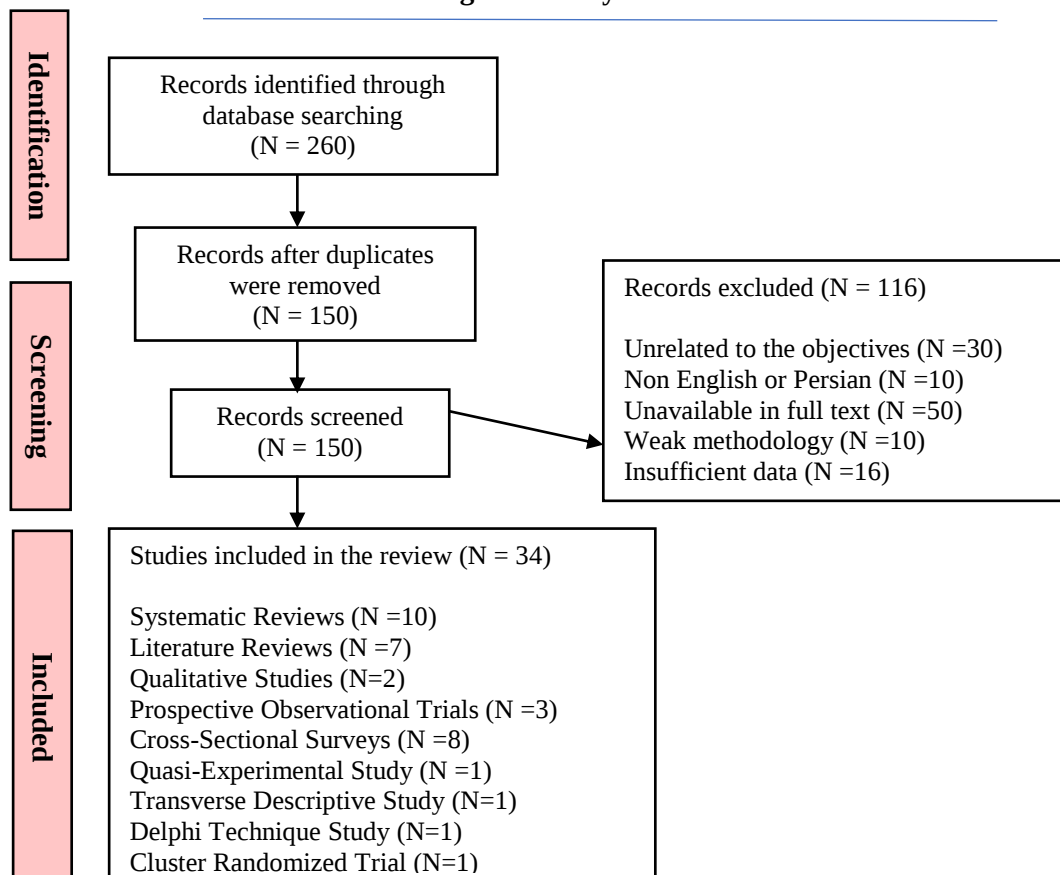
Extensive searches without time limits, conducted up to 2024, were performed in electronic databases, including PubMed, Google Scholar, Elsevier, and Scopus, as well as Persian databases such as Magiran and Scientific Information Database (SID) using related keywords

such as “nursing care”, “Quality of care”, “Family involvement in care”, and “factors in care”. Inclusion criteria were applied to studies that focused on factors influencing the quality of nursing care or addressed the role of families in patient care and their impact on nursing quality; those that were published in English or Persian, as well as relevant studies that provided evidence-based insights into nursing care improvement. Exclusion criteria included studies unrelated to the research objectives, those with weak methodology or insufficient data, and papers unavailable in full text.

Results

Initially, we evaluated the eligibility of titles across all databases to determine if they provided the necessary knowledge required for this research. In total, 260 published papers were retrieved. Removing duplicates and screening abstracts and full texts resulted in the inclusion of 34 published articles which included 17 research studies, 10 systematic reviews, and 7 literature reviews. The quantitative research studies included three prospective observational trials and 8 cross-sectional surveys, and each of the methods, including quasi-experimental, transverse descriptive, descriptive using the Delphi technique, and cluster randomized trial, was represented by one study. Also, two of the studies were qualitative (Diagram).

Flow Diagram: Study Selection Process



Author	Aim	Setting	Sample Size	Method	Outcome
Rezaee et al. (2020)	To identify nurses' experiences of nursing care in	ICUs in two hospitals affiliated with Zahedan University of Medical Sciences in Iran	Fifteen nurses, head nurses, and supervisors	Qualitative research- Conventional content analysis- Using interviews	To provide optimal care, attention to the nature of the intensive care unit should be considered.
Castellan et al. (2016)	To assess the relation of nursing diagnosis with patient outcomes	Two ICUs of the University Hospital of Trieste in Italy	100 patients	Prospective cohort observational study	Nursing diagnoses allow us to predict patient outcomes.
Tonna et al. (2021)	To assess the effect of a quality improvement intervention on sleep and delirium in critically ill patients	Two surgical ICUs in a tertiary care academic medical center in the United States (USA)	646 patients	Prospective, observational, pre-post design	Interventions by nurses were associated with a significant reduction in the proportion of days patients experienced delirium.
Mitchell et al. (2009)	To evaluate the effects of family-centered care in providing fundamental care to patients	The ICU in Australia	174 family members of patients	Quasi-experimental design with a pre-post intervention approach	Partnering with patients' family members to provide fundamental care to the patients improved the respect, collaboration, and support.
Cho et al. (2009)	To examine the relationship between nurse staffing and nurse-rated quality of nursing care and job outcomes	65 ICUs in 22 hospitals in Korea	1365 nurses	Cross-sectional study	Nurse staffing was associated with quality of care and job outcomes.
Nogueira et al. (2017)	To correlate the average number of nursing care hours dedicated to ICU patients with nursing care indicators.	The medium-sized ICU (eight hospital beds) of a hospital in a city of the state of São Paulo, Brazil	1,717 patients	Transverse, descriptive, and quantitative study	The number of nursing care hours directly impacts patient outcomes including accidental extubation of the orotracheal canula, phlebitis, and VAP.
Merlani et al. (2011)	To investigate the factors associated with burnout and determine potential important factors	74 of the 92 Swiss ICUs	4,322 nurses, nurse assistants, and physicians	Prospective, multicenter, observational study	There is a prevalence of burnout among the caregivers, which in turn can impact the quality of the care they provide.
Ali et al. (2011)	To evaluate the impact of weekend breaks for intensivists on both the intensivists and their patients	Five ICUs across four academic hospitals in the United States	45 intensivists and 1,900 patients	Cluster-randomized crossover trial	Taking breaks was beneficial for the intensivists and did not worsen patient outcomes.

Cimiotti et al. (2012)	To examine the relationship between nurse-to-patient ratios, nurse burnout, and the rates of healthcare-associated infections (HAIs) in patients	161 hospitals in Pennsylvania, United States	7,076 registered nurse	Cross-sectional study	Higher nurse-to-patient ratios were associated with increased nurse burnout, higher rates of HAIs, urinary tract, and surgical site infections.
Yeşil et al. (2015)	To identify ICU patients' perceptions of nursing care.	ICUs of five hospitals with different status in Adana/ Turkey.	368 patients	Descriptive and cross-sectional study	Patients' satisfaction level was found to be affected by such variables such as the hospitals they were in.
<u>Vincelette</u> et al. (2023)	To examine the associations between work environment features, omitted nursing care, and nurse-reported outcomes in the intensive care unit.	42 distinct hospitals in the province of Quebec, Canada	493 nurses	An electronic cross-sectional correlational study	higher work environment scores were associated with reduced omitted nursing care scores and better ratings for nurse-reported outcomes. Also, higher omitted nursing care scores were associated with more negative perceptions about the quality and safety of care.
Pereira et al. (2024)	To document the development of the "Program to Promote Positive Nursing Practice Environments" and analyze expert perceptions to reach a consensus.	Online	22 experts, including nurses, specialist nurses, nurse managers, and nursing professors	A descriptive design utilizing a modified Delphi technique	The program seeks to effectively enhance work environments by equipping nurses with knowledge and skills. Positive nursing practice environments benefit clients, professionals, and institutions,
Ulrich et al. (2010)	To report a study of the type, frequency, and stress level of ethical issues encountered by nurses in their everyday practice.	Four states of the USA	1000 nurses from four states	Cross-sectional descriptive survey and a self-administered questionnaire	The range of ethical problems that nurses encounter in their work, impacts their level of stress and their ability to do good for their patients.
<u>Ausserhofer</u> et al. (2014)	To describe the prevalence and patterns of nursing care left undone and associations with nurse-related organizational factors.	In 488 hospitals across 12 European countries	33,659 nurses	cross-sectional study	In hospitals with more favorable work environments, lower patient-to-nurse ratios, and lower proportions of nurses carrying out non-nursing tasks frequently, fewer nurses reported leaving nursing care undone.

<u>Epner and Baile</u> (2012)	To explore how integrating patient-centered care with cultural competence can enhance the quality of healthcare.	In a clinical setting in the USA	Four patients with advanced colon cancer and different cultures	Qualitative- real clinical situations	Addressing cultural differences through patient-centered care improves communication between healthcare providers and patients.
<u>Sagherian et al.</u> (2017)	To explore the association between fatigue, work schedules, and perceived work performance among nurses	In a hospital in the USA	77 nurses	Descriptive cross-sectional study	Nurses with acute and chronic fatigue perceived poorer physical performance, less alertness, less ability to concentrate, and less effective communication.
<u>Woldring et al.</u> (2024)	To elucidate the opinions of family members about their involvement in nursing care.	Home care setting in the Netherlands	3,800 patients-responding by 1,339 family members	A cross-sectional survey with FINC-FO (Families' Importance in Nursing Care–Families' Opinions) questionnaire	Communication about families' wishes, expectations, and the need for support in care is essential to ensuring quality care.

According to the Tables, the included studies were published in various countries; six were conducted in the United States (7,8,9,10,11,12), and the remaining studies were conducted in Iran (1), Italy (13), Australia (14), Korea (15), Brazil (16), Swiss (17), Turkey (18), Canada (19), the Netherlands (20), and European countries (21).

Most studies were conducted in ICU settings. Two studies were carried out in two ICUs (7,13), while another two studies took place in one ICU (14,16). One study was conducted in 65 ICUs across 22 hospitals (15), and another involved 488 hospitals across 12 European countries (21). Additionally, one study was performed in 74 ICUs (17), and another in 5 ICUs across 4 hospitals (8). Some studies covered 161 hospitals (9), 5 hospitals' ICUs (18), and 42 hospitals (19). One study took place in hospitals across four states in the USA (10), and three studies were conducted in a single hospital, a clinical setting, and a home care setting (11,12,20).

In eight studies, the participants were nurses (1,15,21,9,19,10,12,22); in five studies, patients (13,7,16,18,11); in two studies, family members (14,20); in one study, both nurses and other healthcare providers (17); and in one study, both patients and intensivists (8). Moreover, sample sizes ranged from 4 to 33659.

These studies were about the effects of family-centered care and families' opinions about their involvement in nursing care (14,20). Moreover, topics about the experiences of nurses in

delivering care (1), the relationship between nursing diagnosis and patient outcomes (13), the effects of nurse staffing, nurse-to-patient ratios, burnout (15,17,9), fatigue (12), stress (10), weekend breaks (8), nursing care left undone (21), as well as, the average number of nursing care hours (16), the role of work environment features in omitted care and the development of programs to promote positive nursing practice environments (19,22), were also reviewed. Furthermore, topics regarding patients' perceptions of nursing care (18), the integration of patient-centered care with cultural competence (11), as well as, the impact of quality improvement interventions on sleep and delirium of patients (7), were examined. All of these topics are, in a way, directly or indirectly related to the quality of nursing care.

A review of related articles indicates that various factors influence the quality of nursing care in the intensive care unit including nursing knowledge, family involvement, staffing levels, nurse-patient ratio, emotional Well-Being, effective communication, teamwork, work environment, technological advancements, ethical challenges, cultural competence in care, clinical leadership, adequate rest, which all will be addressed in this study.

Discussions

In this section, the factors influencing the quality of nursing care in ICUs are thoroughly analyzed, with a focus on their impact on improving patient outcomes and enhancing the overall quality of nursing care.

1. Nursing training and knowledge

Nurses must integrate technical skills with scientific knowledge to ensure high-quality care. By using evidence-based practices, they can identify patient problems and design effective care programs. Castellan et al. (2016) found that nursing diagnoses predict patient outcomes, such as length of stay and mortality (13).

In addition, understanding factors that contribute to ICU complications, like delirium in surgical patients (e.g., anesthesia, pain, and sleep disruption), helps nurses enhance care quality (7).

2. Family involvement in care

Families of critical care patients are often not meaningfully involved in care. The family-centered care (FCC) model emphasizes respect, collaboration, and support, viewing patients and their families as a unit of care. Michell et al. (2009), found that involving families in

patient care significantly improves FCC principals and overall care quality (14). These core principles ensure better communication, respect patients' values, and encourage family participation in decision making (23).

In ICUs, where patients may have limited communication abilities, nurses involve families as surrogates in care planning and treatment decisions (24). This approach improves family satisfaction and supports patient recovery by fostering a more human environment (25,26). Effective family involvement includes presence, support, communication, shared decision-making, and contribution to care (27). Healthcare professionals should view families as partners, addressing their needs and ensuring open communication to sustain caregiving and enhance care outcomes (20,28).

3. Staffing levels

Among various nursing care units in hospitals, ICUs require higher nurse staffing levels to ensure timely and safe care for critically ill patients (15). Low nurse staffing levels result in higher mortality rates, adverse outcomes, and delayed or omitted care (29,30,21). Furthermore, the National Institute for Health and Care Excellence (NICE) proposed that missed care could be used as a "red flag" to warn of inadequate staffing levels and, as a result, be a potentially useful indicator of the quality of nursing services (31).

4. Nurse-Patient Ratio

A study has shown that mortality decreases at lower patient-to-nurse ratios. This appropriate ratio would allow us to demonstrate that adequate nurse staffing can positively impact the outcomes of the care offered to ICU patients and their relatives. However, increasing the nursing workload negatively impacts emotional distress, reduces job satisfaction, and raises mortality (16).

5. Emotional and psychological Well-Being

ICU nurses experience higher levels of stress compared to nurses in other units due to their numerous and demanding roles, which negatively impact the quality of care they provide. Work-related stress can be mitigated through stress management programs, which have been shown to improve nursing care quality (4,5).

The World Health Organization (WHO) has defined burnout as “a syndrome” conceptualized as resulting from chronic workplace stress that has not been successfully managed. Burnout syndrome (BOS) is composed of three dimensions: emotional exhaustion (EE),

depersonalization (D), and perceived lack of personal accomplishment (PA), which consists of perceiving oneself as negative and incapable of doing the job correctly. ICU nurses are particularly vulnerable to burnout and depression due to factors such as an inability to choose days off, rapid patient turnover, caring for dying patients, performing procedures like CPR, witnessing decisions to forego life-sustaining treatments, extended shifts, sleep disruption, poor working environments, night shifts, high patient loads, and inadequate pay (32,33,34, 35,17,8).

BOS leads to decreased performance, lower care quality, reduced patient satisfaction, increased medical errors, higher rates of healthcare-associated infections, and higher 30-day mortality rates (36,37,9). This situation not only harms nurses' health but also negatively affects the quality of care they provide (38).

6. teamwork

In recent years, significant emphasis has been placed on improving collaboration among healthcare professionals to enhance patient care quality and reduce medical errors (39,40). Collaborative practice is particularly crucial in ICUs due to the complexity and intensity of ICU work. Nurses in ICUs must be prepared to manage patients with critical hemodynamic changes, requiring advanced knowledge, strong decision-making skills, and effective teamwork with other healthcare providers (40). Enhanced collaboration among nurses and other professionals is essential for creating an effective therapeutic environment and achieving positive patient outcomes (41).

Moreover, Care Bundles have emerged as valuable tools for improving care quality. A Care Bundle is a set of standardized, evidence-based interventions that are implemented together to achieve better treatment outcomes. These bundles are widely used in ICUs, particularly to prevent hospital-acquired infections. Each care bundle consists of several components that must be performed simultaneously and completely, as their combined effect is greater than implementing each component separately. A study by Wu et al. (2022) demonstrated the effectiveness of care bundles in reducing unplanned endotracheal extubation in ICUs, highlighting their role in minimizing errors and enhancing the overall quality of care (42).

7. Effective communication

Patient satisfaction is a sign of the quality of nursing services and patient care. Satisfaction, to a great extent, is formed through the patient-nurse relationship. In ICUs, where patients often

feel lonely and isolated due to the lack of family support, the relationship between nurses and patients becomes even more important. Nurses must focus on effective communication to address the physical and emotional needs of these fully-dependent patients. Establishing a strong nurse-patient interaction not only improves the treatment process but also positively impacts the quality of nursing care (43,18).

However, poor working relationships among healthcare providers are a common risk factor for burnout syndrome, which can arise from conflicts and ineffective communication with colleagues (34). Communication errors are also a significant contributor to adverse patient outcomes in healthcare systems. This highlights the need for systemic changes in communication practices within healthcare settings. One effective solution is the use of the SBAR (Situation, Background, Assessment, Recommendation) tool, which has been proven to improve communication between healthcare providers. The SBAR tool is a structured, simple, and effective method that facilitates clear and organized communication, leading to measurable improvements in patient safety. It is systematic and widespread implementation could significantly improve healthcare communication, reduce errors, and create a safer environment for patients (44).

8. Work environment

Poor work environments hinder nurses' ability to provide quality care (19). The WHO emphasizes that fair wages and decent working conditions are vital for retaining nurses and recognizing their contributions. The International Council of Nurses (ICN) outlines five priorities for improving nursing jobs: 1) investing in education and job creation; 2) valuing nurses through fair pay and well-being; 3) promoting gender equality; 4) improving work conditions like safety and work-life balance; and 5) fostering collaboration across sectors. These strategies improve nurses' satisfaction, patient care quality, and global public health (22).

Staffing shortages lead to rationed nursing care, where limited resources such as staff, time, equipment, or financial resources, prevent nurses from meeting all patient needs. This results in poorer outcomes, including errors, infections, and adverse events (1,3). Adequate staffing is crucial for delivering high-quality care (15). Similarly, unfinished care arises when nurses lack time or resources, leading to delays or omissions in care. Studies show better ICU environments reduce missed care, enhancing patient satisfaction and outcomes while lowering advanced events (19,45).

9. Technological advancements

Health information technology includes electronic sign-out and hand-off tools, smart pumps, bar-code medication administration, retained surgical item detectors, patient portals, telemedicine, and electronic incident reporting to reduce errors, improve outcomes, enhance care coordination, improve practice efficiencies, and improve patient safety. However, regular training and streamlined workflows are essential to maximize these benefits (46).

10. Ethical challenges

ICU nurses frequently face ethical dilemmas, such as balancing life-prolonging treatments with patient suffering. These challenges cause stress and influence the well-being of nurses and the health of patients (10).

Türkan Işık et al. (2022) suggest emphasizing ethics during nursing education, offering vocational training on ethical issues in the ICU, and providing platforms for nurses to share experiences. In-service training on ethical codes and legal regulations is also recommended to support nurses in managing these challenges effectively (47).

11. Cultural competence in care

Cultural competence is the ability to provide care that respects patients' diverse values, beliefs, and needs (48). It emphasizes patient-centered care built on respect, sensitivity, composure, partnership, honesty, astuteness, curiosity, and tolerance (11).

Culturally competent care helps reduce racial and ethnic health disparities, improves healthcare quality, enhances communication, builds trust, and increases patient satisfaction, enabling nurses to address patient needs effectively (49).

12. Clinical leadership and management style

Leadership style significantly impacts both patient outcomes and nurses' well-being. Relational leadership styles are linked to lower patient mortality, fewer medication errors, reduced restraint use, and fewer hospital-acquired infections, as well as improved patient satisfaction and safety (50). Supportive leadership also enhances nurses' job satisfaction, organizational commitment, and retention while reducing emotional exhaustion (51).

13. Adequate rest and work schedules

Nurse fatigue negatively affects personal and professional well-being, leading to reduced patient interaction, poor self-assessment, and compromised care quality (3). Increased

workloads and overtime are linked to higher patient mortality and adverse events, especially in intensive care settings (52). Monitoring and managing work schedules is essential to prevent fatigue and its impact on patient care (12).

Conclusions

Quality nursing care in the ICU depends on various factors, from adequate staffing and family involvement in care to emotional support and effective teamwork. Addressing these factors requires a comprehensive approach involving healthcare organizations, policymakers, nursing leaders, and families.

Additionally, by fostering supportive work environments, providing stress management programs, promoting cultural competence, adequate staffing, leadership training, and implementing patient family-centered care models, healthcare institutions can enhance the overall quality of ICU nursing services.

Ultimately, the integration of these strategies ensures that ICUs can provide safer, more effective, and patient-centered services, addressing both the medical and psychosocial needs of patients and their families while bolstering nurse retention and job satisfaction.

In future studies, it is recommended to compare the role of family with other factors influencing the quality of nursing care, as this comparison has not been addressed in previous studies.

Conflict of interest

According to the authors, this article has no conflict of interest.

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