



Critical Care Nursing: Its Challenges and Implications to Nursing Practice

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Abstract

Critical care nursing is a speciality of nursing that provides full care to patients with life threatening illnesses or injuries that require intensive monitoring, enhanced technological support, and timely clinical treatments. Critical care nurses are essential to patient survival through continual assessment, management of complex therapies, emergency interventions, and coordination with multidisciplinary healthcare teams. However, the growing complexity of critically sick patients together with the improvement of technology, staff shortages, intense workloads and emotional stress have represented major problems that impact both patient outcomes and the well-being of nurses. This paper discusses the concept, history, principles, scope and duties of critical care nursing and its importance in current healthcare delivery. It emphasises the specialised knowledge, clinical expertise, ethical decision making and leadership that critical care nurses need in caring for critically sick patients. The research suggests that increasing critical care nursing education, staffing levels, professional development and fostering supportive work cultures are vital to enhance patient safety, quality of care and nursing practice.

Keywords: *Critical care nursing, intensive care, critically sick patients, nursing practice, patient monitoring, intensive care unit.*

INTRODUCTION

Critical care nursing is one of the most specialised and demanding fields in nursing practice. This means caring for patients with life-threatening illnesses or injuries, who need constant care, advanced life-support technology and swift clinical decisions. Multidisciplinary teams often work together to stabilise critically ill persons in intensive care units (ICU), coronary care units (CCU), emergency departments, trauma centres and other high dependency units[1]. The increasing burden of chronic diseases, infectious diseases, trauma, cardiovascular disorders and emergent global health catastrophes has considerably raised the demand for critical care services in the world. Medical technology has also altered critical care with high-end monitoring systems, mechanical ventilators, extracorporeal life support and enhanced diagnostic tools. Critical care nurses therefore require specialist knowledge and sophisticated clinical skills to safely use these technology and provide holistic patient-centred care. Critical Care Nursing is not simply technical expertise[2]. Nurses are expected to offer psychological support to patients and their families, participate in ethical decision making, advocate for patients' rights, coordinate multidisciplinary treatment, and maintain patient safety during hospitalisation. They often face emotionally stressful situations such as abrupt decline, end-of-life care and ethical questions relating to life-sustaining medicines[3]. There are ongoing shortages of trained critical care nurses internationally with increased workloads, burnout and occupational stress. These difficulties have important implications for patient safety, quality of treatment, and workforce retention. Hence, it is necessary to comprehend the concept, principles, scope and duties of critical care nursing for enhancing the nursing profession and increasing healthcare outcomes[4].

Critical care nursing theory

Critical care nursing is a specialised branch of nursing that focuses on the examination, monitoring, treatment, and evaluation of patients with potential or actual life-threatening health problems. According to the American Association of Critical-Care Nurses (AACN), critical care nursing is "the care of patients whose conditions are life-threatening and who

require comprehensive and continuous care and constant monitoring, usually in an intensive care unit (ICU)[5]. Critical care nursing is primarily aimed at maintaining life, preventing complications, restoring physiological stability, and facilitating recovery through the application of evidence-based practice. Critical care nurses apply advanced scientific knowledge and technical skills to the management of complex medical conditions, including respiratory failure, septic shock, myocardial infarction, multiple organ dysfunction syndrome, traumatic injuries, neurological emergencies, and postoperative complications. General nursing is different from critical care nursing which involves constant patient monitoring, fast recognition of clinical worsening and prompt implementation of relevant therapies. Nurses often use advanced technologies such as cardiac monitors, infusion pumps, mechanical ventilators, haemodynamic monitoring devices, and renal replacement therapies and communicate well with physicians, chemists, respiratory therapists, and other health professionals[6]. Holistic care continues to be a core theme of critical care nursing. In addition to physiological management, nurses provide emotional support to patients and families, encourage communication, respect cultural values and promote dignity in the treatment of critically sick and end of life patients[7].

Critical care nursing arose as a consequence of progress in medicine and the rising necessity for specialised care of critically sick patients. In the nineteenth century, during the Crimean War, Florence Nightingale emphasised close observation of very ill patients and started the foundation of contemporary critical care nursing with enhanced hygiene, patient monitoring and organised nursing care[8]. Specialised intensive care facilities were established in the 1950s during the poliomyelitis outbreak in Europe. Mechanical ventilation was developed to help patients with respiratory paralysis. Continuous surveillance was shown to be important and specially trained nurses and ventilators in dedicated units resulted in a considerable decrease in mortality. In the 1960s and 1970s, coronary care units, newborn intensive care units, paediatric intensive care units and trauma centres became part of intensive care. The advances in cardiac monitoring, invasive haemodynamic monitoring, dialysis and ventilatory assistance further strengthened the role of critical care nurses. Over the past few decades, technological developments, evidence-based practice, simulation training, telemedicine, and multidisciplinary care have made critical care nursing one of the most sophisticated areas of healthcare. The COVID-19 pandemic also emphasised the essential function of critical care nurses globally, displaying their competence in infection control, ventilator management and emergency response, while revealing workforce shortages and occupational concerns[9].

Critical care nursing principles offer a framework for safe, effective and patient-centred treatment.

To enable early identification and intervention, nurses need to be aware of subtle changes in patients' health and institute interventions in a timely manner prior to clinical deterioration. Ongoing surveillance allows the early identification of problems such as respiratory failure, arrhythmias, sepsis or haemodynamic instability. Another important principle is evidence-based practice. Critical care nurses use the best available scientific knowledge, clinical expertise, and patient preferences to drive decision making and enhance patient outcomes[10]. The foundation of patient safety continues to be the basis of critical care practice. Nurses take infection prevention, drug safety, equipment checks and quality improvement initiatives to lower adverse occurrences. Critical care nursing also emphasises holistic care, recognising that patients have physical, psychological, emotional, social, cultural and spiritual needs. Family focused care fosters good communication, involvement of families in care planning and emotional support during hospitalisation[11]. Critical care nursing is an important element of ethical practice. Nurses often talk about informed consent, withdrawal of life support, organ donation, and end-of-life care, respecting patient autonomy and professional standards. Critical care nursing is a broad field that encompasses a range of health care settings, including intensive care units, coronary care units, emergency rooms, operating rooms, trauma centres, neonatal and paediatric intensive care units, recovery rooms, and specialised cardiac or neurological care units. Responsibilities include emergency treatment, postoperative monitoring, mechanical breathing, haemodynamic monitoring, pain management, infection prevention, patient education, rehabilitation planning and collaboration with multidisciplinary healthcare teams [12].

Critical Care Nurse Roles and Responsibilities

Critical care nurses provide comprehensive care for critically ill patients while maintaining patient safety, clinical quality and compassionate support. Their primary role is complete patient assessment. Nurses perform systematic physical examination, monitor vital signs, assess neurological health using standardised assessment tools, assess respiratory and cardiovascular function, interpret laboratory data, and identify early indicators of clinical deterioration. Another vital function is ongoing surveillance of the patient. Critical care nurses use advanced monitoring technology to monitor electrocardiograms, oxygen saturation, blood pressure, intracranial pressure, central venous pressure, urine output, arterial blood gases and haemodynamic parameters. Finding abnormalities early permits early action and prevention of problems[13].

A primary responsibility is medication management. Nurses provide IV medicines, vasoactive pharmaceuticals, antibiotics, sedatives, analgesics, anticoagulants, and electrolyte replacements, and need to ensure precise dosage and accurate calculations and closely monitor for adverse effects. In addition, critical care nurses are involved in the administration of mechanical ventilation. They monitor ventilator settings, airway patency and suction as needed, monitor oxygenation, prevent ventilator associated problems and coordinate with respiratory therapists and physicians to

optimise respiratory support. An important aspect of critical care practice is emergency response. Nurses are actively involved in emergency operations. They quickly recognise cardiac arrest, respiratory failure, shock and other life-threatening crises and perform resuscitative measures according to the Advanced Cardiac Life Support (ACLS) standards [14]. Preventing infection is a prime responsibility. Nurses use stringent aseptic methods, hand hygiene, prevention of catheter-associated infections, monitoring of invasive devices and ensure infection control measures are followed. Critical care nurses also give psychological and emotional support for patients and families. They help explain processes, reduce anxiety, help with communication, provide counselling during critical illness and provide compassionate support during end of life care. Good communication and collaboration across disciplines are crucial. Nurses collaborate with doctors, chemists, physiotherapists, respiratory therapists, nutritionists and other health professionals to monitor and provide complete management and continuity of care. Another crucial position is that of patient advocate. Critical care nurses are responsible for protecting patients' rights, promoting informed decision-making, maintaining confidentiality, and upholding ethical standards in challenging clinical situations. Critical care nurses also participate in health education, clinical recording, supervision of junior nurses and students, quality improvement programs, research and continuing professional development. Their superior clinical knowledge and compassionate care are essential to achieving better patient outcomes, lower mortality, increased patient safety and overall quality of health care services[11].

Challenges in Critical Care Nursing

Critical care nursing is one of the most demanding areas of healthcare, caring for patients with life-threatening diseases that require ongoing surveillance, complicated interventions, and advanced technology. Critical care nurses are essential in enhancing patient survival and recovery; yet, they face several problems that affect their physical health, mental health, job performance, and the quality of patient care. These issues have been exacerbated by rising patient acuity, rapid technological improvements, personnel shortages and expanding healthcare needs. Heavy workload and inadequate manpower is one of the biggest difficulties. Many intensive care units (ICUs), particularly in low- and middle-income nations, sometimes have shortages of certified critical care nurses. This typically results in suboptimal nurse-to-patient ratios, with nurses managing numerous critically sick patients at the same time. The increased burden leads to weariness, delays in patient care, decreased monitoring, medication errors and poor quality of nursing services. Staffing shortages also reduce possibilities for rest, continuing education and professional development, with eventually an impact on workforce retention[8]. Another major problem is the problem of burn-out and psychological stress. Critical care nurses often care for patients with serious illnesses, injuries, organ failure, and life-threatening emergencies and see pain, suffering, and death. Repeated exposure to emotionally charged events can lead to chronic stress, compassion fatigue, anxiety, melancholy, emotional weariness and burnout. Burnout has been linked to reduced job satisfaction, interpersonal connections, clinical judgement, and productivity, as well as greater absenteeism and staff turnover. Another problem in critical care nursing is the intricacy of technology. Modern ICUs have sophisticated equipment such mechanical ventilators, haemodynamic monitoring systems, infusion pumps, dialysis machines, extracorporeal membrane oxygenation (ECMO), and advanced patient monitoring devices. These devices improve patient outcomes, but require specialised knowledge and ongoing training. However, nurses might not have enough knowledge or expertise to use complicated equipment, which might increase the risk of technical errors and compromise patient safety[10]. Ethical and legal quandaries are also part of the daily practice of critical care nurses. These often include difficult decisions about withdrawing life support, end-of-life care, organ donation, resuscitation orders and allocation of precious hospital resources. Moral doubt and emotional anguish may be experienced by nurses when conflicts emerge among health care providers, patients, and family members regarding treatment decisions. Sound clinical judgement and good communication are needed to balance ethical concepts such as patient autonomy, beneficence, nonmaleficence, and fairness[6].

Occupational risks are another serious problem. Critical care nurses are constantly exposed to infectious infections through contact with blood, bodily fluids, respiratory secretions and invasive procedures. The COVID-19 pandemic has revealed the vulnerability of frontline health care workers to new infectious diseases, even in the midst of strong infection protection protocols. Also, lengthy periods of standing, repeated lifting of critically ill patients, bad ergonomics and exposure to radiation or dangerous chemicals, all raise the risk of musculoskeletal injuries and occupational disorders. The hard work environment also adds to the physical tiredness. Long working hours, overtime, night work, sleep deprivation, and lack of rest periods diminish nurses' physical endurance and cognitive function. Fatigue can affect focus, clinical decision-making, communication and patient monitoring, and increase the chance of adverse events and medical errors[9]. Another difficulty is limited resources, especially in the developing world. Shortages of key medicines, monitoring devices, ventilators, personal protective equipment (PPE) and intensive care beds are being felt throughout many healthcare institutions. These shortages impede the delivery of evidenced-based care and create stress for nurses who must prioritise limited resources while still protecting patient safety. Communication difficulties are widespread in critical care environments, as patients are frequently unconscious, sedated, intubated, or otherwise unable to communicate. Nurses must use advanced evaluation skills and communicate effectively with family members and interdisciplinary teams. Poor communication among health care personnel can lead to delays in interventions, duplications in care, prescription errors, and poor continuity of care. Professional development is another challenge for

critical care nurses. Advances in medical technology, pharmacology and evidence based practice continue to demand ongoing education and competency improvement. But nurses are often excluded from continuing professional education due to limited access to specialised training programs, financial constraints, lack of institutional support, and staffing shortages[15]. Violence and hostility in the health care field is a rising occupational issue. Critical care nurses can face verbal abuse, physical assault, intimidation or threats by distraught relatives of patients or family members overcome with emotion. Such situations result in psychological stress, lower job satisfaction and morale. Finally, the growing burden of chronic disease, ageing populations and global health catastrophes continue to drive demand for intensive care services. This increasing demand places further strain on critical care nurses and healthcare systems, with workforce sustainability becoming a serious issue worldwide[16].

Implications for Nursing Practice:

The issues faced by critical care nurses have substantial ramifications for nursing practice, patient safety, healthcare facilities and the nursing profession. One of the most significant repercussions is the increased likelihood of clinical mistakes. Due to fatigue, stress, staffing shortages and workloads, nurses are unable to provide continuous patient monitoring, give drugs appropriately and respond quickly to crises. These factors raise the risk for prescription errors, delays in intervention, healthcare-associated infections, and bad effects to patients. Poor working conditions also result in less quality of patient care. Critically ill patients require adequate continuous assessment and individualised therapies, yet high workloads may compromise nurses' capacity to deliver complete, patient-centred care. This can negatively affect quality of service, recovery rates and patient satisfaction. Psychological stress is inherent in critical care nursing, which substantially impacts the mental health and well-being of nurses. People suffering from chronic stress, emotional depletion and compassion fatigue suffer more often from anxiety, depression, sleep difficulties and burnout. These mental health difficulties decrease professional dedication and raise absenteeism, which affects workforce stability in the end[17]. Another big impact is the frequent staff turnover and lack of workers. Burnout, professional stress and limited career growth prospects cause experienced nurses to abandon critical care practice or relocate to better-resourced healthcare systems. The departure of qualified professionals exacerbates staffing shortages and contributes to the burden on the remaining healthcare personnel.

Healthcare institutions also face rising financial expenditures for staff recruiting, orientation, continuing education, overtime payments and replacement of experienced workers. Moreover, clinical errors, prolonged hospitalisation, and healthcare-associated consequences also contribute to the fiscal strain on healthcare systems. The institutions, the government and the profession must work together to tackle these issues. Enhancing nurse-to-patient staffing ratios is one of the most effective ways to improve patient safety and reduce nurse burnout. Sufficient staffing enables nurses to offer individualised care, increase patient surveillance, minimise errors and boost job satisfaction. Healthcare organisations should offer complete psychological support programs that include counselling services, peer support groups, stress management courses and employee wellness activities. These strategies allow nurses to cope with emotional strain and develop resilience. Ongoing professional education and competency-based training are necessary to provide high quality critical care practice. Regular workshops, simulation training, certification programmes and continuous professional development activities should be done to improve nurses' clinical competence and confidence in the management of sophisticated technology. Healthcare facilities should also invest in current equipment, digital health technology and clinical decision support systems that reduce burden and improve patient monitoring. Electronic health records, smart infusion pumps, tele-intensive care services and artificial intelligence assisted monitoring may improve clinical efficiency and safety of patient.

Supportive leadership and favourable cultures in the workplace matter just as much. Nurse managers should foster open communication, recognition of professional accomplishments, teamwork and involvement of nurses in the decision-making process. Such leadership tactics raise morale, organisational commitment, and workforce retention[18]. Governments and policy makers need to invest more in critical care services by extending intensive care facilities, supporting specialist nurse education, increasing salary, and enacting worker retention strategies. Strengthening occupational health and safety standards, maintaining adequate supply of personal protective equipment and enforcing violence prevention programs are also vital. Looking forward, the future of critical care nursing will keep evolving as breakthroughs in precision medicine, artificial intelligence, robotic technology, telehealth and remote patient monitoring continue. These advances may promote early diagnosis of clinical deterioration, minimise workload, and facilitate evidence-based decision-making. But these technologies will need continued education, ethical guidance and investment in worker development for them to succeed. Future research should also study effective strategies to reduce burnout, enhance resilience, optimise staffing models and evaluate the influence of developing technology on patient outcomes. International partnership in education, research and policy development will enhance the practice of critical care nursing worldwide[19].

CONCLUSION

As an essential component of modern health care, critical care nursing provides specialised and evidence-based treatment for patients with life-threatening conditions and injuries. Critical care nurses play a fundamental role although they are confronted with a variety of physical, psychological, organisational, technical, ethical and vocational problems that affect negatively their well-being, patient safety and quality of healthcare. To tackle these difficulties, there is a need for better staffing, ongoing professional development, supportive leadership, investments in health infrastructure, psychological support and effective workforce policies. Improving critical care nursing practice will increase patient outcomes, professional satisfaction, workforce sustainability and overall quality of healthcare delivery.

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