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Ethical dilemmas and decision-making in emergency and critical care nursing in Western Amhara region, Northwest Ethiopia: a multi-method qualitative study

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Abstract

Background Ethical dilemmas in emergency and critical care nursing often involve complex decision-making that impacts patient outcomes, emotional well-being of healthcare providers, and team dynamics. Understanding these dilemmas and the decision-making processes involved is crucial for improving nursing practices and patient outcomes in this context.

Objective This study aims to explore the ethical dilemmas and decision-making processes of emergency and critical care nurses, using the Four Box. Method ethical decision-making framework.

Methods A multi-method qualitative approach was employed, incorporating in-depth individual interviews (IDI), focus group discussions (FGD), and case studies to capture diverse perspectives. Data were collected from 28 nurses working in emergency and critical care settings at Tibebe Ghion Specialized Hospital and Felege Hiwot Comprehensive Specialized Hospital through purposive sampling. The interviews and focus groups were audio recorded, transcribed verbatim in Amharic, translated into English, and entered into OpenCode software for analysis. Inductive thematic analysis method was applied to analyze the data.

Results The study revealed several key ethical dilemmas faced by nurses, including balancing patient autonomy with beneficence, and the allocation of limited resources during crises, opioid administration for pain management vs. respiratory depression, and conflicts regarding informed consent. Nurses reported emotional and professional impacts from these dilemmas, contributing to moral distress, burnout, and ethical fatigue. Nurses emphasized the importance of interdisciplinary collaboration and structured decision-making frameworks to navigate these challenges. However, the lack of consistent access to ethics consultations and peer support during critical moments was noted as a significant barrier.

Conclusion and recommendation Nurses encounter complex ethical dilemmas that impact their emotional well-being and job satisfaction. Effective decision-making requires applying ethical principles, adhering to guidelines, and consulting peers. The study reveals the need for improved support systems, including more frequent and

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comprehensive ethics training, better access to ethics consultations, and structured frameworks to guide decision-making in high-pressure situations.

Clinical trial registration The study is not a clinical trial, a clinical trial number is not applicable.

Keywords Ethical dilemma, Decision making, Emergency and critical care, Nursing

Introduction

Emergency and critical care settings are recognized as some of the most demanding environments in health-care, where nurses frequently face complex ethical dilemmas that challenge their clinical judgment and moral values [1, 2].

Nurses in these settings regularly encounter situations in which ethical principles may conflict with one another. The principle of patient autonomy emphasizes the important of respecting a patient's right to make informed decisions about their healthcare, even when those decisions may not align with the nurse's professional or personal views [3]. However, autonomy can sometimes conflict with beneficence, which obligates healthcare providers to act in the best interest of the patient, especially when patients are incapacitated or unable to make informed decisions [4, 5]. Non-maleficence, or the duty to "do no harm," becomes particularly challenging when nurses must decide between interventions that may alleviate suffering or cause harm, especially in end-of-life care situations [6]. Lastly, justice in nursing involves the fair distribution of healthcare resources. In critical care settings, nurses frequently face challenging decisions about how to allocate limited resources such as ventilators, ICU beds, and medications, when demand exceeds supply [7]. These ethical principles are further complicated by moral distress, where nurses may feel compelled to act in ways that conflict with their ethical beliefs due to institutional constraints or limitations within their practice environment [8-10].

A study conducted in Ghana, Africa highlighted significant ethical dilemmas faced by healthcare providers in hospitals, often arising from limited resources, staff attitudes, and conflicts between ethical codes, personal values, and religious beliefs [11]. In Ethiopia, these ethical challenges are further compounded by infrastructural constraints, such as shortages of essential medical supplies and equipment, including ventilators and ICU beds [12, 13].

Nurses, in particular, are often under immense pressure to make critical decisions, especially in emergency and critical care settings due to issues such as resource allocation and prioritization of care and managing end-of-life decisions within a culturally and socio-economically unique context [14–16]. Traditional values and practices may clash with modern medical ethics, adding complexity in decision-making process [17]. These

ethical dilemmas disrupt decision-making, strain team dynamics, contribute to the stress of health care providers, waste time and resources, delay patient care and treatment, and hinder the overall quality of health-care delivery [18]. This highlighted the need for a more detailed understanding of ethical decision-making process in such challenging environments.

Despite the significance of these challenges, there remains a substantial gap in research exploring how nurses in Ethiopia navigate these ethical dilemmas. Furthermore, the factors that influence their decision-making processes are not well understood. Addressing this gap is crucial for gaining insights into how health care providers balance fundamental principles of biomedical ethics like autonomy, beneficence, non-maleficence, and justice while confronting the realities of resource scarcity and cultural expectations.

In the critical care environment, nurses not only care for patients but also serve as advocates, educators, and decision-makers, making their ethical decision-making crucial to patient outcomes [19]. To navigate these complexities, healthcare providers often employ the Four-Box Method, a conceptual framework in the ethical decision-making process, which addresses dilemmas by considering four key aspects: medical indications, patient preferences, quality of life, and contextual factors [20]. Therefore, this study aims to provide a deeper understanding of how nurses in the Western Amhara region encounter and navigate these ethical dilemmas using the Four-Box Method as their ethical decision-making framework.

Objective

 To explore ethical dilemmas and decision-making in emergency and critical care nursing in Western Amhara Region, Northwest Ethiopia: A Multi-Method Qualitative Study.

Research questions

- What are the primary ethical dilemmas encountered by emergency and critical care nurses in the Western Amhara region of Northwest Ethiopia?
- What ethical decision-making strategies do emergency and critical care nurses employ when confronted with ethical dilemmas using the Four Box

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Table 1 The four box method structural framework for ethical decision-making process [20]

Medical indications

The principle of beneficence and nonmaleficence

o What is the patient's medical problem? History? Diagnosis? Prognosis?

o Is the problem acute? Chronic? Critical? Emergent? Reversible? Terminal?

o What are the goals of treatment? o In what circumstances are medical treatments not indicated? o What are the probabilities of success of various treatment options?

o What are the plans in case of therapeutic failure? o In sum, how can the patient benefit by medical and nursing care, and how can harm be avoided?

Patient preferences

The principle of respect for autonomy

o Has the patient been informed of benefits and risks, understood this information, and given consent? o Is the patient mentally capable and legally competent, and is there evidence of incapacity? o If mentally capable, what preferences about treatment is the patient stating? o If incapacitated, has the patient expressed prior preferences (e.g., advance directives)? o Who is the appropriate surrogate to make decisions for the incapacitated patient? o Is the surrogate using appropriate standards for decision making? o Is the patient unwilling or unable to cooperate with medical treatment? If so, why? o In sum, is the patient's right to choose being respected to the extent possible in ethics and law?

Quality of Life

The principle of beneficence, nonmaleficence, and respect for autonomy

o What are the prospects, with or without treatment, for a return to normal life?

o What physical, mental, and social deficits might the patient experience even if treatment succeeds? o On what grounds can anyone judge that some quality of life would be undesirable for a patient treatment decisions? who cannot make or express such o Are there financial and economic a judgment? o Are there biases that might

prejudice the provider's evaluation of the patient's quality of life? o What ethical issues arise concerning improving or enhancing a patient's quality of life? o What are plans and rationale to forgo life sustaining treatment? o Are there plans for comfort and palliative care?

Contextual features

The principle of justice and fairness

o Are professional, interprofessional, or business interests creating conflicts of interest in patient treatment?

o Are there family issues that might influence treatment decisions?

o Are there provider (physician, nurse) issues that might influence

factors that create conflicts of interest in clinical decisions? o Are there religious or cultural factors that affect clinical decisions? o Are there limits on

confidentiality? o Are there problems of allocation of resources?

o How does the law affect treatment decisions?

o Is clinical research or teaching involved?

o Are there conflicts of interest within institutions (e.g., hospitals) that may affect clinical decisions and patient welfare?

- Method as an ethical decision-making conceptual framework?
- What support systems and resources are available to emergency and critical care nurses for addressing ethical challenges?

Methods

Study design

This study employed a multi-method qualitative study design to explore ethical dilemmas and decision-making processes among emergency and critical care nurses in the Western Amhara region of Ethiopia. This approach combines various qualitative data collection methods, including in-depth interviews, focus groups, and case studies.

Conceptual framework for ethical decision-making process

The Four Box Method by Jonsen, Sigler, and Winslade is a structured framework designed to guide ethical decisionmaking in clinical settings, particularly when nurses and clinicians face ethical dilemmas. The method is commonly referred to as the "Four Box Method" because the features of a case are organized under four categories to ensure that all relevant ethical aspects are systematically considered, promoting a balanced and comprehensive approach to care [20]. In this study, the Four-Box Method was used as a framework for analyzing ethical decisionmaking in the case studies. This framework was applied during data analysis to structure the ethical dilemmas and guide the interpretation of nurses' decisions, focusing on aspects such as medical indications, patient preferences, quality of life, and contextual factors. It helped reveal how nurses navigated complex ethical issues in critical care and emergency settings (Table 1).

Medical indications

This component of the Four Box Method focuses on the clinical aspects of the case, including diagnosis, prognosis, and treatment options. It addresses questions about whether the proposed interventions are medically appropriate and likely to benefit the patient. The clinician evaluates the effectiveness, risks, and benefits of various treatments, ensuring that the chosen approach aligns with the principle of beneficence-acting in the patient's best interest and promoting their health and well-being [20, 21].

Patient preferences

This component of the Four Box Method emphasizes the importance of understanding and respecting the patient's values, wishes, and autonomy. It involves engaging the patient or their surrogate in the decision-making process and ensuring that the patient is competent to make decisions. Key questions here include whether the patient's preferences are clearly communicated and considered, which reflects the ethical principle of autonomy—respecting the patient's right to make informed decisions about their own care [20, 21].

Quality of life

This component of the Four Box Method evaluates how different treatment options will affect the patient's overall quality of life. It considers factors such as physical, emotional, social, and psychological well-being, weighing whether treatment will lead to a life that the patient would find acceptable. This area ties into the principle of non-maleficence, aiming to minimize harm, suffering, or a diminished quality of life [20, 21].

Contextual features

This final component of the Four Box Method accounts for external factors that may influence clinical decisions, including cultural and social factors, financial constraints, legal issues, and institutional policies. These considerations reflect the principle of justice, ensuring that decisions are fair, equitable, and take into account the broader context, including resource availability and social or cultural beliefs that may shape the care process [20, 21].

Study setting and period

This study was conducted in selected public hospitals (Felege Hiwot Comprehensive Specialized Hospital and Tibebe Ghion Specialized Hospital) in the Western Amhara region that provide emergency and critical care services. These facilities were chosen based on their involvement in emergency and critical care services, ensuring a range of experiences and perspectives.

Healthcare in this region is primarily organized through a mix of public and private systems, with the public sector providing the majority of services. However, the private sector has been growing, with private clinics and hospitals catering to those who can afford their services. The population in the region, is predominantly Orthodox Christian. The study was conducted over a four-month period, from September 2023 to December 2023.

Participants

The study included nurses working in critical care and emergency settings, such as emergency and critical care nurses, as well as other trained nurses, who had been employed in these roles for at least one year to ensure they had sufficient experience with ethical dilemmas and decision-making processes. Emergency and critical care nurses in the Western Amhara region undertake a diverse array of responsibilities, from direct patient care to making critical decisions and collaborating with multidisciplinary teams. Their roles include managing complex

patient conditions, performing emergency interventions, and ensuring patient safety. On average, participants had around 7 years of experience, with some having up to 15 years in the field.

Sampling technique and sample size determination

A purposive sampling strategy was employed to select participants directly involved in emergency and critical care nursing. This approach ensures that the sample consists of individuals with relevant expertise, including practical experience, formal training, and reflective practice in handling ethical dilemmas in high-pressure settings, making them well-suited to provide valuable insights for the study. The sample size was determined by using a rule of thumb depending on study's purpose, type of data collection method, data saturation, heterogeneity of the sample, and available resources. By considering all these, the study included 28 participants: 10 nurses for in-depth interviews and 18 nurses who took part in three focus group discussions, each with six participants. Additionally, three case studies were developed, focusing on specific ethical dilemmas faced by nurses.

Data collection procedure

In-depth interviews were carried out with individual nurses to obtain detailed insights into their personal experiences with ethical dilemmas and decision-making processes in emergency and critical care settings. A flexible, semi-structured interview guide was developed covering topics such as personal encounters with ethical dilemmas, decision-making processes, available support systems, education and reflections. Interviews were conducted in a private room within the healthcare facilities. Each interview was audio-recorded with the participant's consent and subsequently transcribed verbatim to facilitate thorough analysis of the data. The interviews were conducted in Amharic, the local language, to facilitate open and detailed discussions. In addition to these strategies, several other approaches were employed to address emotional issues that arose during the interviews. Rapport was established with participants, and a comfortable environment was created in a private, quiet space. Clear information about the study was provided, and participants' emotions were regularly checked throughout the interview. Emotional support was offered, and interviews were rescheduled if necessary.

Focus group discussions were conducted to capture group dynamics and collective perspectives on ethical issues and decision-making processes. The focus group guide directs these discussions, addressing topics such as common ethical issues encountered, decision-making strategies, existing support systems, and recommendations for improvement. These sessions were held in a comfortable and private setting to encourage open and

candid dialogue among participants. The moderator is responsible for guiding the discussion, asking questions, probing for depth, staying on topic, ensuring that all participants have the opportunity to share their experiences, and closing the discussion. In contrast, the co-moderator/facilitator supports the moderator by managing logistics, taking notes, recording the session, observing group dynamics, and ensuring a conducive environment. Each focus group was audio-recorded with participants' consent, and the recordings were transcribed to facilitate thematic analysis of collective insights and experiences shared during the discussions. The discussion sessions were conducted in Amharic, the local language, to facilitate open and detailed discussions.

Detailed case studies were developed from real-life situations reported by the participants. Case studies offered in-depth, contextual examples of ethical dilemmas encountered by nurses in emergency and critical care settings. Each case study was structured to include an introduction to the context, a detailed account of the ethical dilemma, the decision-making processes involved, and the outcomes of those decisions. Cases were selected based on significant ethical dilemmas reported by participants during interviews or focus groups. Data for these case studies were collected through detailed interviews with the nurses directly involved in the cases, as well as through a review of relevant documents to provide a comprehensive understanding of each situation.

Data analysis

The analysis was begun with transcription, where audio recordings of interviews and focus groups were transcribed verbatim in Amharic, local language. Then the transcribed audio-recorded interviews and discussions were translated into English by investigators. Inductive thematic analysis was utilized to analyze these transcripts and case study notes following a six-phase approach outlined by Braun and Clarke [22]. The phases included: (1) familiarizing oneself with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the final report. Themes and sub-themes were derived inductively from the coded data, ensuring that they emerged directly from the participants' narratives. Discrepancies in coding were discussed and resolved to reach consensus, ensuring intercoder reliability and transparency in the analysis process.

The data analysis was led by one investigator, who oversaw the coding and theme development, while the second investigator ensured peer review and validation of the findings. Both investigators had substantial experience in qualitative methods and thematic analysis. Additionally, Open Code qualitative data analysis software were used to assist with organizing and coding the data effectively. Similarly, throughout the analysis, participant quotations were used to illustrate and support the identified themes, ensuring that the findings were firmly grounded in the data. The final themes and sub-themes were presented clearly, with the consistency of the data and findings verified through ongoing discussion between the coders.

Trustworthiness

To ensure the validity and reliability of this study, several key strategies were employed. Triangulation was utilized by integrating multiple data sources, including interviews, focus groups, and case studies. Moreover, to ensure the accuracy and trustworthiness of the data, the four criteria of credibility, dependability, confirmability, and transferability were applied [23]. Credibility was established through member checking, peer debriefing, and prolonged engagement with the participants. Dependability was assured by employing the code-recode procedure and providing a clear, consistent methodology. Confirmability was strengthened through participant validation, ensuring that the findings accurately reflected the participants' perspectives. Transferability was achieved by offering a thick description of the data collection, analysis processes, and findings, allowing readers to assess the applicability of the results to their own contexts.

Research team and reflexivity

The research team consisted of two nurses with substantial experience in intensive care units (ICUs) and emergency departments (EDs). Each team member had varied roles in the research process, ranging from conducting interviews to data analysis. Two additional nurses, with similar critical care experience, were involved in data collection, conducting interviews under the guidance of the research team. To ensure the quality and consistency of the research, all team members underwent rigorous training in interview techniques, ethical guidelines, and the study's objectives. Regular team meetings were held to address challenges and refine the research approach.

In terms of reflexivity, the research team recognized that their backgrounds as healthcare professionals in critical care settings could potentially influence how they interacted with participants and interpreted the data. The team members made a conscious effort to remain aware of their professional experiences and biases, acknowledging how these might shape both data collection and analysis. To mitigate these biases, they engaged in reflexive discussions throughout the process, reflecting on their positions and assumptions to ensure the findings were rooted in participants' experiences.

Peer debriefing was also incorporated into the process, where feedback from colleagues outside the research team helped ensure, the interpretations remained valid and unbiased. The research team also considered their relationship to the participants, ensuring that these dynamics did not unduly affect the data collection or analysis. By embracing a reflexive approach, the team aimed to enhance the trustworthiness of the study and ensure the findings accurately reflected the nurses' strategies in managing patient acuity.

Results

The study provides an in-depth look into the ethical dilemmas and decision-making processes faced by emergency and critical care nurses in the Western Amhara region of Northwest Ethiopia. By integrating findings from semi-structured interviews, focus group discussions, and a case study, the results illustrate the complex and challenging nature of nursing in high-stress environments.

Sociodemographic characteristics of participants

In this study, 28 nurses working in critical care and emergency settings, including emergency and critical care nurses as well as other trained nurses, participated. Among them, 18(64.3%) were females and 10 (35.7%) were males. The participants' ages ranged from 25 to 47 years, with a mean age of 32 ± 5.6 years. Besides this, 23 participants held a bachelor's degree, while 5 had a master's degree. The mean working experience was 7 years.

Themes identified

Ethical dilemmas and decision-making in emergency and critical care nursing was defined as the main theme which contained the themes of ethical dilemmas in clinical practice, core ethical issues in critical care, emotional and professional impact of ethical challenges, decision-making processes in complex scenarios, support systems and resource availability, team dynamics and collaborative decision-making, and Education, reflection and recommendations for improvement in ethical decision-making (Table 2).

Ethical dilemmas in clinical practice

Participants discussed a range of ethical dilemmas commonly encountered in critical care settings. One significant challenge involved making end-of-life decisions, such as whether to initiate aggressive treatment for a terminally ill patient at the insistence of the family, despite the patient's deteriorating condition. This dilemma often revolves around the tension between continuing or withdrawing life-sustaining measures when the prognosis is

Table 2 Subthemes, and themes identified during data analysis process

process	
Subthemes	Themes
Dilemma in performing end-of-life decisions	Ethical Dilem-
Dilemma in managing informed consent when patients cannot communicate	mas in Clinical Practice
Conflicts between medical team and family wishes	
Moral distress and burnout resulting from challenging decisions	Emotional and professional impact of ethical challenges
Struggling with balancing patient autonomy and beneficence	Core ethical issues in critical
Resource allocation under conditions of scarcity	care
Surrogate decision-making in the absence of patient consent	
Reliance on ethical principles, guidelines, and colleague support in decision-making Use of reflective practice and structured ethical frameworks (e.g., Four Box Method)	Decision-making processes in complex scenarios
Collaborative decision-making with colleagues and team members	Team dynamics and collaborative decision-making
Lack of access to resources (e.g., ethics consultations, mental health support) during urgent situations	Support systems and resource availability
Insufficient training in ethical decision-making	Education, re-
Recommendations for improving support systems, policies, and work environment	flection and rec- ommendations
policies, and work challothineth	for improve- ment in ethical decision-making

poor. Another critical issue is resource allocation during crises, where limited resources must be distributed among numerous patients in need of care. Nurses face the difficult task of prioritizing patients based on the severity of their conditions, weighing potential outcomes, and making decisions that can impact multiple lives. Furthermore, ethical challenges arise in obtaining informed consent, particularly when patients are unable to communicate their wishes. In these instances, nurses are tasked with managing surrogate decision-making, ensuring that the patient's best interests are prioritized while navigating potential conflicts between the medical team's recommendations and the desires of the family. Lastly, interpersonal conflicts, including disagreements with patients' families or coworkers, often complicate decision-making, especially when staffing levels are insufficient to provide adequate care.

Nurse C(IDI): "A terminally ill patient's family insisted on all treatments, making it difficult to balance their wishes with the reality of the patient's worsening condition."

Nurse D(FGD): "During a crisis, we had more patients needing critical care than resources available. Deciding who should receive care was incredibly difficult, with each choice weighing heavily."

Core ethical issues in critical care

Key ethical issues include balancing patient autonomy with beneficence, particularly when nurses must respect patient preferences while also considering what is in the patient's best interest. End-of-life decisions, such as whether to continue aggressive treatment or transition to comfort care, often present ethical dilemmas where family wishes conflict with medical realities. Another pressing issue is resource allocation, which requires prioritizing care under conditions of scarcity, balancing fairness and the potential outcomes for patients. Additionally, obtaining informed consent from patients who cannot communicate poses significant challenges for nurses, who must rely on surrogate decision-makers. Conflicts between healthcare professionals' recommendations and family wishes can further complicate ethical decision-making. Lastly, interpersonal dynamics, including disagreements among team members or with patients' families, add complexity to the decision-making process, particularly when staffing and resources are limited.

Nurse A(IDI): "Balancing patient autonomy with what I know is best for their health is a constant challenge. Allocating limited resources fairly is also a major issue."

Nurse B (IDI): "End-of-life decisions are hard, as it's difficult to balance the family's hope for recovery with the patient's true condition. Deciding when to shift from aggressive treatment to palliative care often feels like an internal struggle."

Emotional and professional impact of ethical challenges

The ethical dilemmas described by participants often lead to significant emotional distress and moral conflict, contributing to burnout and ethical fatigue among nurses. These challenges, compounded by professional debates and interpersonal stress, have a negative impact on job satisfaction and team cohesion. The emotional toll of navigating complex ethical situations, particularly

those involving end-of-life care or difficult resource decisions, can result in nurses feeling drained and conflicted.

Nurse D(FGD): "Dealing with these dilemmas leaves me emotionally drained and conflicted. The stress and constant debates within the team contribute to burnout and job dissatisfaction."

Decision-making process in ethical dilemmas

Nurses typically approach decision-making by integrating a combination of ethical principles, clinical guidelines, and collaborative discussions with colleagues. Many nurses use a blend of utilitarian and deontological approaches, balancing the potential consequences of their actions with adherence to professional obligations. Reflective practice is a crucial tool in this process, allowing nurses to learn from past experiences and apply those lessons to current ethical challenges. Structured ethical frameworks, such as the Four Box Method, also help guide their decision-making by organizing key factors like medical indications, patient preferences, quality of life, and contextual features.

Nurse C(IDI): "I used ethical principles, clinical guidelines, and advice from colleagues to navigate dilemmas. Reflecting on past cases and structured frameworks helped guide my decisions."

Nurse D(FGD): "I often consult with my colleagues to gain different perspectives, which helps me feel more confident in my choices."

Support systems and resource availability

While ethics committees and peer support are crucial in guiding nurses through ethical decisions, participants noted that these resources are often unavailable in urgent situations, which limits their effectiveness. Nurses highlighted the need for more structured and accessible support systems to manage ethical challenges and prevent burnout. Additionally, regular access to ethics consultations and emotional support services could help nurses navigate complex dilemmas and address ethical fatigue.

Nurse G(IDI): "Access to ethics committees and colleague support is invaluable, but they aren't always available during critical moments when you need them most."

Team dynamics and collaborative decision-making

Effective teamwork is essential for managing ethical dilemmas, as collaboration fosters shared decision-making and helps distribute emotional burdens. Nurses emphasize the importance of open communication and regular team discussions to address ethical issues and resolve conflicts. When communication is clear and team members are aligned on ethical considerations, nurses are better equipped to make informed decisions that reflect shared values. However, poor communication or interpersonal conflicts can lead to delays, misunderstandings, and heightened tension.

Nurse H(FGD): "Effective teamwork is crucial for navigating ethical dilemmas, as collaborative discussions and shared decision-making enable us to reach consensus and distribute the emotional burdens, just like our multidisciplinary team did when addressing a complex issue about patient consent."

Education, reflection and recommendations for improvement in ethical decision-making

While nurses have received ethics as courses, many participants feel that the depth and frequency of such training were insufficient. A more comprehensive and structured approach to ethics education is needed, with a focus on integrating ethical principles into all levels of nursing practice. Additionally, incorporating experiential learning strategies, such as simulations, role-playing, and reflective practices, can help nurses build confidence in handling ethical dilemmas. Some participants emphasized the importance of using models like the Four Box Method as a guiding framework for making moral decisions.

Nurse C(IDI): "The training has definitely helped me understand and apply ethical principles better, but there's still a need for more comprehensive and frequent sessions."

Participants reflected on their decision-making processes through debriefing sessions and informal discussions with colleagues. These reflective practices help nurses process their experiences and learn from past ethical challenges. Many also recommended using structured frameworks, such as the Four Box Method, to guide their reflections. This model clarifies the ethical dilemma or

problem, outlines the relevant facts of the case, identifies the parties involved and their perspectives, and examines the ethical principles and values at stake. It also considers applicable laws, explores possible choices and their justifications, identifies the best overall option, facilitates its implementation, and evaluates the effects of the chosen course of action. In addition, participants suggested improving access to ethics consultations, enhancing mental health services, and establishing clearer institutional policies to address ethical dilemmas. They also emphasized the importance of fostering a supportive work environment with open communication, which can help alleviate stress and moral distress, ultimately improving the quality of care provided.

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Nurse G(IDI): "I reflect on my decisions through debriefing sessions and conversations with colleagues. It helps me process and learn from the experiences."

Nurse F(FGD): "Enhanced support systems, including real-time ethics consultations and mental health services, are needed. Clearer policies and a supportive work environment are also crucial."

Case studies on ethical dilemma in the ICU

The following case studies highlight key ethical dilemmas faced by ICU teams, including resource allocation, pain management, and patient autonomy in critical care decisions. Case Study 1 examines the challenge of allocating a ventilator between two patients with different prognoses, illustrating the issue of limited resources in terminal illness versus potential recovery (Table 3). Case Study 2 focuses on balancing effective pain relief with the risk of respiratory depression in a terminal cancer patient (Table 4). Case Study 3 explores the conflict between respecting patient autonomy and the healthcare team's duty to provide life-saving care when a patient refuses treatment (Table 5). These scenarios demonstrate how ICU teams navigate the ethical principles of beneficence, autonomy, justice, and non-maleficence in making complex decisions. The Four Box Method, as proposed by Jonsen, Sigler, and Winslade, provides a structured framework for analyzing and resolving these dilemmas by considering medical indications, patient preferences, quality of life and contextual features [20].

Case study 1: Limited resource allocation in in terminal illness and potential recovery

Table 3 Allocating a single ventilator between two patients with vastly different prognoses (Limited resource allocation in in terminal illness and potential recovery)

Aspect	Details
Introduction	ICU overwhelmed during peak military casualty season; dilemma of allocating a single ventilator to either Patient A (end-stage COPD) or Patient B (severe pneumonia).
Medical indications	Patient A: 65 years old, end-stage COPD, poor prognosis, no recovery chance. Patient B: 45 years old, severe pneumonia, high recovery potential with ventilator support and antibiotics.
Patient preferences	Patient A's family advocate comfort care. Patient B's family was hopeful for recovery and prefers aggressive treatment.
Quality of life	Patient A: Minimal quality of life due to terminal COPD, focus on palliative care. Patient B: High potential for recovery, improved quality of life, if ventilator is provided.
Contextual features	ICU overwhelmed with patients, strained resources, high-pressure and ethical tension over fairness in resource allocation.
Ethical dilemma	The key dilemma is whether to prioritize the ventilator for Patient B, with a higher likelihood of recovery, or for Patient A, with a terminal condition.
Decision-making process	1. Identification of the ethical problem: how to fairly allocate the single available ventilator between two patients with vastly different prognoses. 2. Collection of information: Medical prognosis for both patients, family wishes, available resources, and the current overwhelming pressure on ICU resources were considered. 3. Development of alternatives: Option 1: Allocate ventilator to Patient A for comfort care. Option 2: Allocate ventilator to Patient B, who has higher recovery potential. Option 3: Provide palliative care for both, without ventilator use. 4. Selection of best alternative: Ventilator allocated to Patient B, guided by principles of beneficence (maximizing recovery potential) and institute (fair allocation of recovere).
	justice (fair allocation of resources). 5. Implementation: allocated the ventilator to Patient B, and comfort care was provided to Patient A. 6. Evaluation: Patient B improved; Patient A deteriorated. The team recognized the need for improved support systems, clearer guidelines for resource allocation, and further training on such high-pressure ethical decisions.

Case study 2: Balancing pain management and respiratory depression

Table 4 Balancing effective pain management (high dose opioids) with the risk of respiratory depression in a patient with terminal cancer

rminal cancer	
spect	Details
troduction	ICU team faces a dilemma managing a 60-year-old patient with terminal cancer, suffering from severe pain. The challenge is balancing pain relief with the risk of respiratory depression due to high-dose opioids.
edical dications	The patient's cancer pain is severe and managed by high-dose opioids, but this increases the risk of respiratory depression, potentially compromising respiratory function.
tient eferences	The patient desires adequate pain relief but is concerned about the respiratory side effects of opioids. Family supports pain management but expresses concern about potential harm from opioid use.
uality of life	The primary goal is to maintain comfort and quality of life while alleviating severe pain. Effective management should not exacerbate respiratory distress.
ontextual atures	The ICU is under pressure, requiring fast decisions. The balance between treating pain effectively and managing respiratory risk is challenging.
hical dilemma	The ethical issue lies in balancing the need for effective pain relief with the potential harm of opioid-induced respiratory depression.
ecision-making	1. Identification of the ethical problem: The
process	dilemma involves managing the patient's severe pain effectively while reducing the risk of respira- tory depression.
	2. Collection of information : The patient's pain levels were assessed along with the risk of respiratory depression from high-dose opioids. Alternative pain management options like nerve blocks and
	adjuvants were also considered.
	3. Development of alternatives : Option 1:
	Continue high-dose opioids, accepting the risk of
	respiratory depression. Option 2: Adjust opioid dosage and introduce alternative treatments such as
	nerve blocks, reducing the respiratory risk.
	4. Selection of best alternative : The team decided
	to adjust the opioid dosage and use alternative pain management strategies, aiming for a balance
	between comfort and safety.
	5. Implementation : Adjusted the opioid doses
	and added nerve blocks and adjuvant medications.
	The patient's condition was closely monitored, and
	clear communication was maintained with the
	family regarding the treatment plan.
	6. Evaluation : The adjusted plan led to effective
	pain management with minimal respiratory risks. Future improvements include developing individualized pain management plans and strengthening
	family regarding the treatment plan. 6. Evaluation : The adjusted plan led to effectiv pain management with minimal respiratory risl Future improvements include developing indiv

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Case study 3: Autonomy vs. beneficence in refusing treatment

Table 5 Patient autonomy and the Nurse's duty to provide life-saving care when a patient refuses treatment, presenting the ethical tension of autonomy versus beneficence in refusing treatment

- Iteatiment	
Aspect	Details
Introduction	A 75-year-old patient with advanced COPD in
	acute respiratory distress refuses life-saving venti-
	lator support despite medical advice, presenting
	a dilemma between patient autonomy and the
	healthcare team's duty to provide life-saving care.
Medical indications	The patient's acute respiratory distress could be
	relieved by the ventilator, which is necessary for
	survival, but the patient has declined it.
Patient preferences	The patient, fully aware of the consequences,
	refuses the ventilator and prefers not to be placed
	on life support. Some family members support the
	patient's decision, while others push for treatment.
Quality of life	If the ventilator is declined, the patient's quality of
Quanty or me	life would be poor, and focus would shift to pallia-
	tive care for comfort and dignity.
Contextual	The ICU team faces a difficult situation where the
features	patient's autonomy is in direct conflict with the
icutuics	obligation to provide life-saving care. The family's
	differing opinions further complicate the decision-
	making process.
Ethical dilemma	Balancing respect for patient autonomy with
Ltriicai diiciriiria	the healthcare team's duty to provide life-saving
	treatment.
Danisian maliina	
Decision-making	Identification of the ethical problem: The ethical issue is balancing the patient's right to
process	refuse treatment with the healthcare team's obli-
	gation to provide life-saving care.
	2. Collection of information : The patient's com-
	petence to make decisions, family preferences,
	and availability of palliative care were considered.
	3. Development of alternatives : Option 1: Re-
	spect the patient's decision to refuse the ventilator
	and provide palliative care. Option 2: Override the
	patient's refusal and attempt to provide life-saving
	treatment.
	4. Selection of best alternative : The team chose
	to respect the patient's autonomy and focus on
	providing palliative care, as the patient was com-
	petent and well-informed.
	5. Implementation : The decision involved provid-
	ing compassionate palliative care and engaging
	with the family to explain the decision. The pa-
	tient's decision and care plan were documented
	thoroughly.
	6. Evaluation : The patient received palliative care,
	and the family supported the decision. Future
	strategies include focusing on advance directives
	and enhancing training on managing autonomy
	versus beneficence conflicts.

Discussion

This study employed a multi-method qualitative approach, combining in-depth individual interviews, focus group discussions (FGDs), and case studies to

explore ethical dilemmas and ethical decision-making processes for emergency and critical care nurses in the Western Amhara region of Northwest Ethiopia. The triangulation of these methods provided a comprehensive understanding of the ethical challenges nurses face, capturing diverse perspectives [24]. The in-depth interviews offered personal insights into nurses' decision-making processes, while the FGDs reflected the group dynamics and collective norms within the professional community [25]. The case studies contextualized these findings by focusing on real-life ethical dilemmas, making theoretical concepts more relevant to practice [26].

The ethical dilemmas revealed in the case studies were analyzed using the Four-Box Method, a widely accepted framework that addresses key dimensions such as medical indications, patient preferences, quality of life, and contextual factors [27]. This structured approach proved invaluable, as it ensured that decisions were made in a holistic, patient-centered manner. The method's simplicity, flexibility, and focus on contextual factors make it an effective tool for guiding ethical decision-making in complex, resource-constrained environments like Ethiopia's critical care settings.

One of the primary ethical challenges identified in this study was resource allocation during high-demand situations, such as the peak military casualty season. The decision-making dilemma of allocating a ventilator between a terminally ill patient with end-stage COPD and a patient with severe pneumonia but a high recovery potential highlights a utilitarian approach, wherein choices are made to maximize overall benefit [28]. This challenge is consistent with existing literature that discusses the ethical tension between justice and fairness in healthcare systems under resource strain [29]. Nurses in this study expressed significant moral distress in such scenarios, which aligns with findings from other healthcare settings facing resource limitations [30]. Moreover, the socio-cultural context in Ethiopia, where healthcare resources are frequently scarce, exacerbates these ethical dilemmas, creating added stress for healthcare workers and influencing their decision-making.

Another significant ethical dilemma discussed in the study was related to pain management in terminal cancer patients, specifically when administering high-dose opioids to alleviate severe pain. This decision required careful consideration of the ethical principles of beneficence (doing good) and non-maleficence (avoiding harm), particularly since opioids posed a risk of respiratory depression. The principle of double effect was highly relevant here, as it allows for actions that may have both beneficial and harmful outcomes, as long as the intention is to achieve the good effect [31, 32]. Similar ethical concerns about pain management have been highlighted, where healthcare providers often struggle to balance effective

pain relief with the potential for harm [33]. In Ethiopia, limited access to alternative pain management options intensifies the burden on nurses, highlighting the need for better pain management resources in resource-limited settings.

Another ethical dilemma identified in this study was the tension between patient autonomy and beneficence in cases where patients with advanced illnesses, such as the 75-year-old patient with advanced COPD, refused life-saving interventions like mechanical ventilation. This dilemma is at the core of many bioethical dilemmas, where the healthcare team's duty to preserve life may conflict with the patient's right to make decisions about their own care. This finding is consistent with ethical challenges related to autonomy and beneficence [34]. The importance of clear communication and shared decision-making in these cases was emphasized, as family members and healthcare teams often found themselves divided on how to proceed.

The emotional and professional toll of these ethical dilemmas on nurses was a key finding of this study. Many participants reported experiencing moral distress, burnout, and compassion fatigue as a result of making difficult ethical decisions. This aligns with existing literature, where ethical challenges contribute to moral fatigue among healthcare workers [35, 36]. The emotional burden of making life-or-death decisions, especially when resources are scarce or when patients' families have differing expectations, significantly impacts nurses' well-being and job satisfaction. This finding aligns with the recognition that healthcare workers in high-pressure, resource-limited environments are at greater risk of experiencing emotional exhaustion and ethical fatigue. The impact of moral distress on nurses' psychological health is compounded where there are inadequate support systems and limited access to mental health services [37]. The study highlighted the need for institutional mechanisms to address these emotional challenges, including ethics consultations, peer support, and mental health services to mitigate burnout and improve job satisfaction.

A notable aspect of this study was the emphasis placed on interdisciplinary collaboration in addressing ethical dilemmas. Nurses recognized the importance of involving diverse healthcare professionals in decision-making to ensure more balanced and ethical outcomes. The collaborative approach, which fosters shared decision-making, helps distribute emotional burdens and ensures that ethical decisions reflect a broader range of perspectives. This finding is consistent with studies that state teambased approach is particularly beneficial in addressing complex ethical dilemmas, as it promotes holistic care and reduces the individual burden on any single healthcare provider [38, 39].

In terms of ethics education, the study participants expressed the need for more comprehensive and frequent training on ethical decision-making. While some training on ethics was available, it was often insufficient to address the complexities of critical care environments. Participants suggested that integrating simulations, role-playing, and reflective practices into ethics training would better prepare them for the ethical challenges they face. These findings align with a study that calls for more structured ethics education and practical, experiential learning strategies to enhance nurses' confidence and competence in addressing complex ethical dilemmas [40].

Finally, the study participants stressed the need for better institutional support systems to assist nurses in navigating ethical dilemmas. Nurses identified the need for real-time ethics consultations and clearer institutional policies to guide decision-making in high-pressure situations. These recommendations resonate with broader calls for improving ethics education and organizational support to reduce moral distress and enhance the quality of care [41]. Establishing clearer ethical frameworks and policies in Ethiopian healthcare institutions could help nurses better manage difficult decisions and provide more ethically sound care in resource-constrained environments.

Reliance on ethical principles alone, without considering legal aspects, could potentially create legal risks. For example, the ethical principle of patient autonomy may sometimes conflict with legal obligations, such as mandatory reporting laws or directives that require specific interventions. This could expose healthcare providers to legal liability if decisions made based on ethical principles do not align with legal requirements. Therefore, while ethical frameworks guide decision-making, they must be balanced with legal and institutional guidelines to mitigate potential legal risks.

Strengths and limitations of the study

The strengths of the study include the use of a multimethod approach, incorporating in-depth interviews, focus groups, and case studies. Additionally, the study applied the Four Box Method as a structured conceptual framework, ensuring a systematic analysis of ethical cases in the ethical decision-making process. Furthermore, data triangulation and measures to ensure trustworthiness were effectively employed. However, the study has some limitations, including limited generalizability. There is also potential for selection bias, as participants were chosen based on their expertise and experience.

Conclusion

This study highlighted the complex ethical dilemmas and decision-making challenges faced by emergency and critical care nurses in high-stress environments. Nurses navigate difficult situations, such as limited resource allocation, managing pain amidst respiratory risks, and balancing patient autonomy with the healthcare team's duty to provide life-saving care. These dilemmas often lead to significant emotional distress, moral conflict, and burnout. The decision-making process involves integrating ethical principles, clinical guidelines, and teamwork, with reflective practices and structured frameworks (Four Box Method) guiding nurses. However, the limited availability of ethics consultations and peer support, particularly during urgent situations, hinders effective decision-making. Participants emphasized the need for more comprehensive ethics training, enhanced emotional support systems, and improved access to mental health services to better manage the emotional toll and prevent ethical fatigue.

Recommendations

To address these challenges, several recommendations emerge from the study. First, there is a need to strengthen support systems within healthcare settings, including real-time ethics consultations and mental health services, to provide immediate assistance during ethical decision-making. Second, implementing more comprehensive and regular ethics training sessions will better prepare nurses for the ethical complexities of their roles. Third, improving communication and collaboration within multidisciplinary teams can enhance ethical decision-making and reduce the emotional burden on individual nurses. Additionally, developing clear policies for managing ethical dilemmas and providing ongoing education on advance directives and autonomy can further support nurses in navigating these challenging situations.

Supplementary Information

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Supplementary Material 1

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Author contributions

ADA contributed to the study's conceptualization, methodology development, data collection, data analysis, and writing – original draft preparation. MAS contributed to participant recruitment, data collection, analysis, and manuscript editing. All authors have read and approved the final manuscript.

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Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

The study adhered to strict ethical guidelines (Declaration of Helsinki and its later amendments) to safeguard participants' rights and confidentiality. Ethical approval was obtained from Amhara Public Health Institute (APHI) on August 10,2023. Data collection was conducted from September 01 to December 30, 2023. Additionally, permissions were obtained from Felege Hiwot Comprehensive Specialized Hospital and Tibebe Ghion Specialized Hospital of western Amhara, Northwest Ethiopia. Participants were given adequate time to consider their involvement, typically ranging from a few days to a week. During this period, they could ask questions and discuss any concerns they might have regarding participation. Written informed consent was obtained prior to the commencement of interviews and focus group discussions, ensuring that participants were fully aware of their rights, including the option to withdraw from the study at any time without any repercussions. To protect participants' identities, participants were assigned pseudonyms to maintain anonymity during data analysis and reporting.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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