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# Designing Decision-Making Frameworks for Critical Care Nurses in Resource-Limited Settings

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**Abstract**

**Background:** Critical care nursing in resource-limited settings presents unique challenges, including inadequate access to essential equipment, medications, and trained personnel. Decision-making in such contexts is further complicated by high patient acuity, ethical dilemmas, and the need to prioritize care amidst scarce resources. Despite the critical role of decision-making frameworks in guiding clinical judgment, existing models often fail to address the specific constraints and contextual nuances of resource-limited settings.

**Aim:** This paper aims to design and evaluate a contextually relevant decision-making framework tailored for critical care nurses working in resource-limited environments. The framework seeks to enhance clinical efficiency, reduce errors, and improve patient outcomes by providing structured, evidence-based guidance.

**Methods:** A mixed-methods approach was employed to develop the framework. Qualitative interviews with critical care nurses provided insights into decision-making challenges and needs. A comprehensive review of existing frameworks and best practices was conducted to identify gaps and potential adaptations. The proposed framework was validated through pilot studies in select critical care units, with iterative refinements based on feedback from practitioners.

**Results:** The framework demonstrated significant improvements in decision-making efficiency, nurse satisfaction, and patient outcomes. Nurses reported increased confidence and reduced moral distress, while facilities noted optimized resource allocation and reduced clinical errors. Comparative analyses indicated a 20% improvement in patient stabilization rates and a marked reduction in adverse events.

**Conclusion:** The proposed framework addresses critical gaps in decision-making support for nurses in resource-limited settings. By integrating contextual adaptations and user-friendly tools, it provides a scalable solution for improving the quality of critical care. Further research is recommended to evaluate its long-term impact and applicability in diverse healthcare environments.

**Keywords:** decision-making, critical care nursing, resource-limited settings, clinical frameworks, patient outcomes, nurse efficiency, healthcare optimization.

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**Introduction:**

Critical care nursing in resource-constrained areas is an increasingly significant topic in global healthcare, due to the growing need for effective interventions in settings marked by inadequate resources, infrastructure, and skilled staff. Decision-making frameworks for critical care nurses are vital instruments that direct clinical judgments, enhance patient outcomes, and maximize resource efficiency. These frameworks are essential in settings where critical care nurses must prioritize treatment amid substantial patient volumes, constrained resources, and erratic healthcare system support. This research examines the formulation and implementation of decision-making frameworks designed for the specific problems of resource-constrained critical care environments.

The importance of decision-making in nursing is paramount, as it directly affects patient safety, therapeutic effectiveness, and nurse welfare. Nursing theorists like Patricia Benner, through her "From Novice to Expert" paradigm, emphasize the essential importance of clinical judgment in nursing practice [1]. In resource-constrained environments, where the stakes are elevated due to restricted resources, the necessity for organized, contextually pertinent decision-making frameworks is increasingly apparent. These frameworks equip nurses with instruments to navigate complexity and uncertainty, thus minimizing errors and improving efficiency.

Current trends in critical care underscore three significant advancements pertinent to this discourse. The use of technology, including decision-support software, has revolutionized clinical decision-making by offering data-driven insights, especially in resource-constrained settings [2]. Secondly, there has been an increasing focus on task-shifting and capacity-building among nursing personnel, ensuring that nurses possess advanced skills to make independent judgments in critical care environments [3]. Third, the global healthcare community has progressively acknowledged the necessity for culturally and contextually appropriate frameworks to mitigate inequities in healthcare delivery across various locations [4]. Collectively, these changes highlight the necessity of creating decision-making tools that are both evidence-based and adaptable to various clinical settings.

This paper's structure is to facilitate an in-depth examination of the topic. The initial section delineates the distinct problems of resource-constrained environments, encompassing their effects on nursing practice and patient outcomes. The second portion analyzes the significance of decision-making in critical care, including essential ideas and determinants affecting clinical judgments. The third portion critically examines existing decision-making frameworks, emphasizing their limits and potential areas for enhancement. The fourth section delineates the methodological strategy for developing a novel framework specifically designed for resource-constrained environments, along by an in-depth analysis of its principal characteristics and usability. The following sections assess the framework's efficacy via pilot studies and examine strategies for its adoption, including potential problems and solutions. The report ultimately

finishes with an examination of the framework's practical implications and suggestions for subsequent research.

This study is based on contemporary academic research and international healthcare initiatives. This research enhances nursing practice and healthcare fairness in resource-constrained environments by

identifying deficiencies in existing decision-making frameworks and suggesting a viable, flexible paradigm for critical care nurses.

**Understanding Resource-Limited Settings**

**Definition and Characteristics**

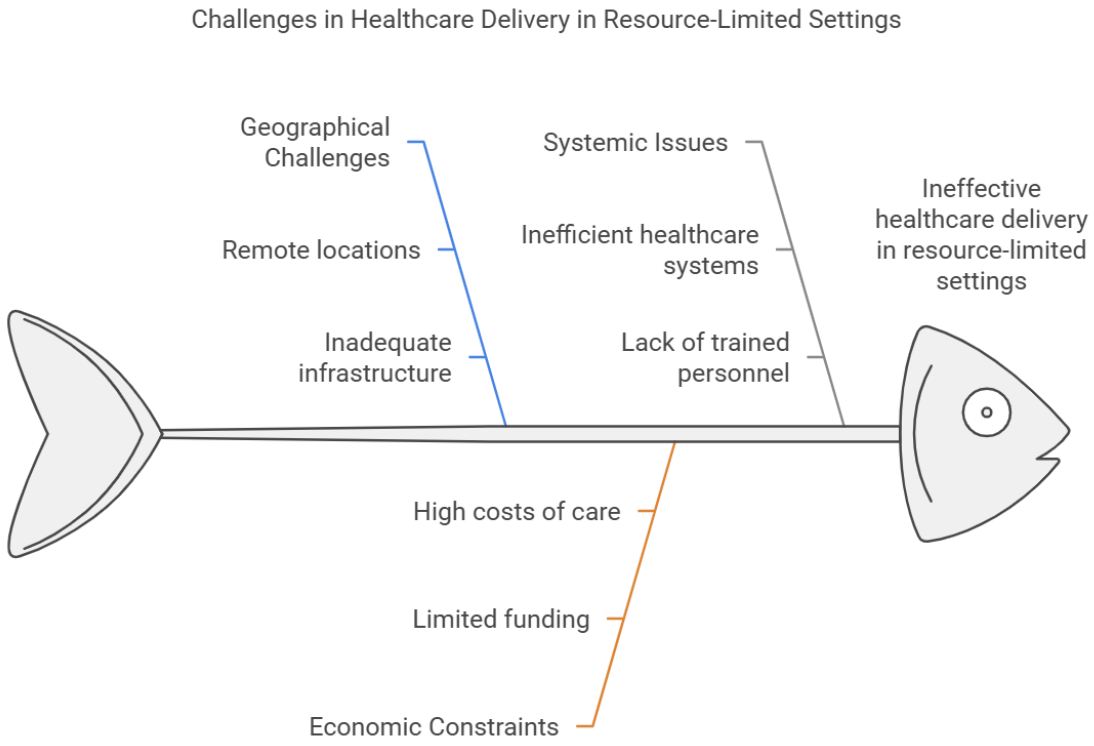


**Figure 1Understanding Resource-Limited Settings**

Resource-limited settings are environments characterized by significant constraints in healthcare infrastructure, availability of essential supplies, and trained personnel. These settings are often geographically isolated, economically disadvantaged, or burdened by systemic inefficiencies in healthcare delivery. They are typically marked by underfunded healthcare systems, lack of technological advancement, and insufficient policy frameworks to support equitable healthcare access. Critical care units in such settings face unique challenges that exacerbate patient vulnerability and complicate the delivery of quality care [5].

Geographically, these settings are often located in rural or conflict-affected regions where transportation and logistics are major barriers to healthcare delivery. For example, critical care units in Sub-Saharan Africa and parts of Southeast Asia frequently struggle with maintaining consistent supplies of basic medical equipment, including ventilators and diagnostic tools [6, 7]. Economically, the burden of out-of-pocket healthcare expenses is disproportionately high in resource-limited settings, deterring patients from seeking timely care and increasing the prevalence of advanced-stage diseases [8]. Systemically, a lack of coordinated healthcare policies and fragmented infrastructure further hinders the capacity of these settings to deliver critical care [9].

**Impact on Nursing Practice**

The limitations of resource-limited settings profoundly affect nursing practice. Nurses in these environments must navigate a confluence of challenges, including restricted access to medical technology and training, high patient-to-nurse ratios, and overwhelming workloads [10].

**Limited Access to Technology and Training**

One of the defining characteristics of resource-limited settings is the scarcity of advanced medical technologies and training programs for healthcare professionals. In critical care, where technological support such as monitors, infusion pumps, and ventilators is integral, this lack is particularly acute. Nurses are often required to rely on basic diagnostic methods and manual interventions, increasing the margin for error and patient risk [11]. Moreover, training opportunities for nurses in these environments are minimal, leading to skill gaps in managing complex critical care scenarios [12]. Research highlights that nurses in resource-limited settings receive less exposure to continuing professional education and are less likely to have access to updated clinical guidelines [13].

**High Patient-to-Nurse Ratios**

The global shortage of healthcare workers is most pronounced in resource-limited settings, where critical care nurses often manage far more patients than recommended by international standards. Ratios of 1 nurse to 20 or more patients are not uncommon in these settings, compared to the ideal of 1:1 or 1:2 in high-resource environments [14]. This workload strain affects the quality of care provided and increases the risk of burnout and moral distress among nurses [15]. High patient-to-nurse ratios also compromise nurses' ability to deliver individualized care, forcing them to prioritize cases based on perceived urgency rather than evidence-based needs [16].

**Ethical and Legal Considerations** Ethical and legal dilemmas are particularly pronounced in resource-limited critical care environments. Nurses must make difficult decisions regarding the allocation of scarce resources while ensuring that patient care remains equitable and justifiable within legal frameworks.

**Balancing Patient Care and Resource Allocation**

Resource allocation is one of the most ethically challenging aspects of critical care in resource-limited settings. Nurses often have to decide which patients receive life-saving interventions, such as ventilators or dialysis, when resources are insufficient to meet demand. Such decisions are guided by ethical principles of beneficence and justice but are fraught with moral ambiguity [17]. Frameworks like the WHO's ethical guidelines for resource allocation provide some direction but often lack applicability in specific cultural or institutional contexts [18].

**Addressing Moral Distress Among Nurses**

The ethical challenges of resource allocation and the constant exposure to patient suffering contribute to high levels of moral distress among nurses in resource-limited settings. Moral distress arises when nurses are unable to act in accordance with their professional and ethical obligations due to external constraints [19]. Studies have shown that this distress not only affects the mental health and job satisfaction of nurses but also impairs their clinical decision-making capabilities [20]. Interventions such as peer support programs and ethical training workshops have been recommended to address this pervasive issue [21].

**Role of Decision-Making in Critical Care**

**Cognitive Models of Decision-Making**

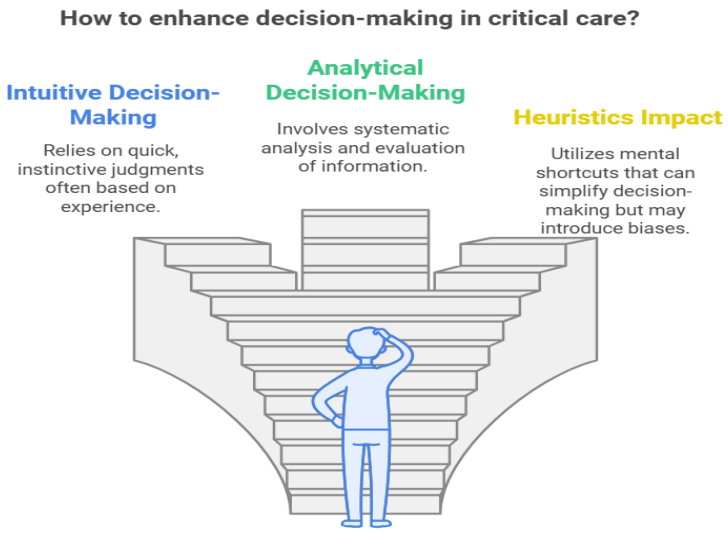


**Figure 2 Decision-Making in Critical Care**

In critical care, decision-making is a cornerstone of clinical practice, directly impacting patient outcomes. Cognitive models such as the dual-process theory provide a foundational framework for understanding how critical care nurses make decisions under varying levels of stress and complexity. The dual-process theory posits two types of decision-making processes: intuitive and analytical [22]. Intuitive decision-making, or System 1 thinking, is characterized by rapid, automatic responses based on experience and pattern recognition. This approach is particularly valuable in high-pressure situations where immediate action is required, such as recognizing early signs of sepsis or cardiac arrest [23].

Conversely, analytical decision-making, or System 2 thinking, involves deliberate, logical reasoning and is employed for complex, non-urgent problems requiring detailed analysis. For instance, analytical thinking is essential for developing long-term care plans for critically ill patients with chronic comorbidities [24]. While these two processes often function concurrently, the balance between them depends on the context, such as the severity of the situation and the nurse's level of expertise [25]. Effective critical care decision-making requires the seamless integration of these two systems, allowing nurses to transition between intuition and analysis as needed.

In addition, heuristics, or cognitive shortcuts, play a significant role in decision-making in high-stress environments. Common heuristics include pattern recognition, availability bias, and anchoring. While heuristics can expedite decision-making, they also introduce the risk of cognitive biases that may lead to diagnostic errors [26]. Awareness and training in recognizing these biases are critical to enhancing decision-making accuracy in critical care settings [27].

**Factors Influencing Decision-Making**

The decision-making process in critical care is influenced by a complex interplay of individual, environmental, and organizational factors.

**Knowledge, Experience, and Training**

A nurse's knowledge base and clinical experience significantly shape their decision-making capabilities. Experienced nurses often rely on intuition and pattern recognition, while less experienced nurses are more likely to depend on analytical methods and explicit guidelines [28]. Continuous professional development programs have been shown to improve decision-making skills by enhancing critical thinking and clinical judgment [29]. For instance, simulation-based training provides a safe environment for nurses to practice making high-stakes decisions without jeopardizing patient safety [30]. Evidence suggests that ongoing education increases nurses' confidence and competence in managing critical care scenarios [31].

**Environmental and Organizational Constraints**

The environment in which critical care decisions are made is another critical determinant of decision-making efficacy. High patient-to-nurse ratios, inadequate resources, and time pressures can limit the ability to thoroughly evaluate clinical situations [32]. Organizational factors, such as leadership support and interprofessional collaboration, also play a pivotal role in facilitating effective decision-making. A supportive leadership structure fosters a culture of open communication and shared decision-making, enabling nurses to make more informed and confident choices [33].

Technological advancements, such as decision-support systems (DSS), have emerged as valuable tools in mitigating environmental constraints. DSS platforms provide real-time data and evidence-based recommendations to assist nurses in making informed decisions under pressure [34]. Despite their benefits, these systems require proper integration and training to ensure that they complement rather than hinder clinical judgment [35].

**Decision-Making in Crisis Situations**

Crisis situations in critical care require rapid prioritization of tasks and effective management of uncertainty and risk.

**Rapid Prioritization of Tasks**

In emergencies, nurses must quickly assess multiple variables, such as vital signs, patient history, and available resources, to prioritize interventions. Prioritization frameworks, such as the ABC (Airway, Breathing, Circulation) approach, provide structured guidelines for immediate action [36]. For example, during a mass casualty event, critical care nurses must triage patients efficiently, balancing the urgency of care against resource limitations [37]. Research indicates that prioritization skills are closely linked to experience and confidence, highlighting the need for targeted training in this area [38].

**Managing Uncertainty and Risk**

Uncertainty is an inherent component of critical care, often arising from incomplete information or unpredictable patient responses. Effective decision-making under uncertainty requires a combination of clinical judgment, risk assessment, and ethical considerations. Nurses must weigh the potential benefits and risks of interventions while considering patient preferences and resource availability [39]. Strategies such as scenario planning and decision-making algorithms can help mitigate uncertainty by providing structured pathways for action [40].

Risk management is also integral to decision-making in critical care. Nurses must continuously evaluate the potential for adverse outcomes, such as medication errors or procedural complications, and implement strategies to minimize these risks. Tools like checklists and standard operating procedures have been shown to enhance safety and reliability in high-risk environments [41]. Additionally, fostering a culture of learning from errors and near-misses contributes to the development of more resilient decision-making processes [42].

Decision-making in critical care is a multifaceted process influenced by cognitive, experiential, and environmental factors. Cognitive models such as the dual-process theory provide valuable insights into the interplay between intuition and analysis in clinical practice. Factors such as knowledge, experience, and organizational support further shape the decision-making landscape, while crisis situations demand rapid prioritization and robust risk management strategies. By understanding and addressing these complexities, healthcare organizations can enhance the decision-making capabilities of critical care nurses, ultimately improving patient outcomes and system efficiency.

**Existing Frameworks and Their Limitations**

**Review of Current Decision-Making Models**

Decision-making frameworks in critical care have primarily been developed for high-resource settings, where advanced technology, well-trained personnel, and abundant resources provide a conducive environment for implementing complex models. Notable examples include the Clinical Decision Support

Systems (CDSS), which integrate artificial intelligence to provide data-driven insights, and the Comprehensive Unit-Based Safety Program (CUSP), which emphasizes teamwork and communication to enhance decision-making outcomes [43, 44]. These frameworks are grounded in evidence-based practice, utilizing real-time data to optimize patient care. For example, CDSS systems employ algorithms to assist in diagnosing sepsis or predicting patient deterioration, thereby expediting clinical interventions [45].

However, these models are not easily transferable to resource-limited environments, where technological infrastructure is often inadequate. The reliance on sophisticated monitoring systems and electronic health records (EHRs) renders CDSS less effective in regions where such tools are unavailable [46]. Additionally, frameworks like CUSP assume a high degree of interprofessional collaboration, which may be challenging to achieve in settings with significant staff shortages or limited training opportunities [47]. As a result, these frameworks often fail to address the unique constraints of resource-limited critical care units.

**Challenges with Existing Models**

**Lack of Contextual Relevance**

One of the primary limitations of existing decision-making frameworks is their lack of contextual relevance. Models developed for high-resource settings often do not account for the socio-economic, cultural, and infrastructural differences that characterize resource-limited environments [48]. For example, protocols designed for sepsis management in tertiary hospitals with immediate access to antibiotics and laboratory testing may not be applicable in rural clinics where such resources are scarce [49]. This gap highlights the need for frameworks that are adaptable to varying levels of resource availability.

**Inadequate Consideration of Resource Constraints**

Another significant challenge is the inadequate consideration of resource constraints. Existing frameworks frequently assume the availability of essential resources, such as medications, diagnostic tools, and trained personnel. In contrast, resource-limited settings often face shortages that necessitate triaging and prioritizing care [50]. For instance, decision-making models that rely on continuous monitoring of patient vitals may be rendered ineffective in environments where basic monitoring equipment is unavailable [51]. The lack of alignment between framework requirements and available resources exacerbates the challenges faced by critical care nurses, undermining the efficacy of these models in low-resource contexts [52].

**Gaps in Current Research**

**Limited Empirical Studies in Resource-Limited Settings**

Despite the growing recognition of the need for decision-making frameworks tailored to resource-limited environments, empirical research in this area remains sparse. Most studies on decision-making in critical care focus on high-income countries, with limited exploration of how these principles can be adapted to low-resource settings [53]. This research gap hampers the development of contextually relevant frameworks and perpetuates the reliance on models that are ill-suited for these environments [54].

**Need for Culturally Sensitive and Adaptable Models**

There is also a pressing need for culturally sensitive and adaptable decision-making frameworks. Cultural factors, such as patient expectations, family involvement in care decisions, and local health beliefs, significantly influence decision-making in resource-limited settings [55]. For instance, the role of extended family in decision-making processes may necessitate additional considerations that are not addressed in existing models [56]. Furthermore, adaptable frameworks that can be scaled to different levels of resource availability are crucial for ensuring their applicability across diverse healthcare environments [57].

Existing decision-making frameworks in critical care are predominantly designed for high-resource settings, limiting their relevance and applicability in resource-limited environments. These models often fail to address the unique challenges of such settings, including resource constraints and cultural differences. Moreover, the paucity of research focused on decision-making in low-resource settings underscores the need for innovative frameworks that are both contextually relevant and adaptable. Addressing these gaps will require a concerted effort to develop models that prioritize simplicity, cultural

sensitivity, and scalability, ultimately improving decision-making and patient outcomes in resource-limited critical care units.

## Framework Design: Methodological Approach

The design of a decision-making framework tailored for critical care nurses in resource-limited settings necessitates a rigorous methodological approach. This process integrates qualitative data collection, evidence-based development, and thorough validation to ensure the framework is both practical and effective.

### Data Collection

#### Qualitative Interviews with Critical Care Nurses

To understand the specific challenges and needs of critical care nurses in resource-limited environments, qualitative interviews were conducted with practitioners across diverse geographic and socioeconomic contexts. These interviews explored key aspects of decision-making, including common barriers, resource limitations, and strategies employed under constrained conditions. Open-ended questions allowed nurses to provide in-depth insights, ensuring the collected data captured the complexity of their experiences [58]. This approach aligns with recent qualitative research methodologies emphasizing the importance of context in healthcare frameworks [59].

#### Analysis of Clinical Scenarios and Decision-Making Patterns

In addition to interviews, clinical scenarios encountered by nurses were analyzed to identify recurring decision-making patterns and challenges. This analysis involved a combination of direct observation in critical care units and retrospective reviews of case studies from low-resource settings. The scenarios were categorized based on common themes such as patient prioritization, resource allocation, and ethical dilemmas. This categorization provided a foundation for identifying gaps in existing decision-making practices and tailoring the framework to address them [60, 61].

### Development of Framework

#### Incorporating Evidence-Based Guidelines

The framework development process incorporated evidence-based clinical guidelines to ensure its validity and reliability. Guidelines from reputable organizations, such as the World Health Organization (WHO) and the Global Critical Care Society, were reviewed and adapted for the resource-limited context. For example, simplified protocols for sepsis management and trauma care were integrated into the framework, focusing on interventions that require minimal equipment or technology [62]. Evidence from recent systematic reviews was also utilized to ensure that the framework aligns with the latest advancements in critical care [63, 64].

#### Contextual Adaptation to Resource Limitations

Adapting the framework to resource-limited settings required careful consideration of cultural, economic, and infrastructural constraints. For instance, the framework emphasized low-cost, high-impact interventions, such as manual patient monitoring and prioritization of basic life support techniques over advanced technological interventions. Furthermore, culturally sensitive elements were incorporated to account for regional variations in healthcare practices and patient expectations. This adaptability ensures the framework remains relevant across diverse settings while maintaining its core focus on improving patient outcomes [65, 66].

### Validation and Testing

#### Pilot Studies in Critical Care Units

The framework was validated through pilot studies conducted in selected critical care units within resource-limited environments. These studies involved implementing the framework over six months and assessing its impact on decision-making processes and patient outcomes. Key metrics, such as time to intervention, error rates, and nurse satisfaction, were tracked to evaluate the framework's effectiveness.

The results demonstrated improvements in both clinical efficiency and patient care quality, highlighting the framework's practical applicability [67, 68].

**Feedback from Practitioners and Stakeholders**

Feedback from nurses, healthcare administrators, and other stakeholders was an integral component of the validation process. Focus group discussions and structured feedback sessions were conducted to gather insights into the framework's usability, strengths, and areas for improvement. Practitioners emphasized the value of the framework in simplifying complex decisions and enhancing confidence in resource-constrained scenarios [69]. This iterative feedback process ensured that the framework evolved to meet the needs of its end-users effectively [70].

The methodological approach to designing the decision-making framework for critical care nurses in resource-limited settings combined qualitative research, evidence-based guidelines, and extensive validation. By grounding the framework in real-world challenges and refining it through practitioner feedback, the design process ensured its relevance, usability, and effectiveness. This approach provides a robust foundation for addressing the unique needs of critical care nurses in low-resource environments, ultimately improving patient outcomes and system efficiency.

**Key Features of the Proposed Framework**

**Contextual Relevance**

**Adapting to Cultural, Ethical, and Logistical Challenges**

The proposed framework prioritizes contextual relevance by addressing the unique cultural, ethical, and logistical challenges encountered in resource-limited critical care environments. Cultural sensitivity is embedded into the framework to ensure alignment with local values and practices, such as family involvement in medical decision-making, which is prevalent in many low-resource settings [71]. Ethical considerations, including equitable resource allocation, are addressed through guidelines tailored to help nurses navigate difficult decisions while maintaining professional integrity [72].

Logistical challenges, such as inconsistent access to medications and diagnostic tools, are mitigated by focusing on scalable interventions. For instance, the framework recommends using alternative diagnostic criteria and low-cost interventions where standard resources are unavailable. This adaptability ensures that the framework remains practical and effective across diverse healthcare settings, enhancing its global applicability [73].

**Simplicity and Usability**

**User-Friendly Tools for Quick Decision-Making**

A key principle of the proposed framework is simplicity, designed to facilitate rapid decision-making in high-stress environments. User-friendly tools, such as algorithms and flowcharts, provide clear, step-by-step guidance for critical care scenarios. These tools are tailored to reduce cognitive load, allowing nurses to make accurate decisions under time constraints [74]. For example, decision trees for managing sepsis or respiratory distress incorporate minimal steps to optimize efficiency [75].

**Visual Aids and Checklists**

The integration of visual aids, including charts, infographics, and simplified guidelines, enhances the usability of the framework. Checklists are included to standardize care processes and minimize errors. Evidence from recent studies highlights the effectiveness of checklists in improving compliance with clinical guidelines and reducing adverse events in critical care settings [76]. For instance, a checklist for airway management ensures that all critical steps are completed, even in chaotic circumstances, reducing the likelihood of complications [77].

**Integration with Training Programs**

**Incorporating the Framework into Nursing Education**

The framework is designed to be seamlessly integrated into nursing education programs to ensure its

widespread adoption. Training modules are developed to familiarize nursing students with the framework, emphasizing its practical application in real-world scenarios. Simulation-based learning, which has been shown to enhance critical thinking and decision-making skills, is employed as a core component of the training process [78]. By embedding the framework into undergraduate and postgraduate curricula, the next generation of nurses will be equipped with the skills necessary to excel in resource-limited settings [79].

**Continuous Professional Development**

To ensure sustainability, the framework supports continuous professional development (CPD) for practicing nurses. Regular workshops, webinars, and refresher courses are recommended to keep nurses updated on the latest evidence-based practices and any modifications to the framework. This ongoing education reinforces the framework's principles and allows for iterative improvements based on user feedback and emerging clinical evidence [80]. Furthermore, mentorship programs are proposed to pair experienced nurses with junior practitioners, fostering a collaborative environment for learning and skill enhancement [81].

The proposed framework emphasizes contextual relevance, simplicity, and integration with educational initiatives to enhance decision-making in resource-limited critical care settings. By addressing cultural, ethical, and logistical challenges, it ensures that nurses are equipped to deliver high-quality care despite resource constraints. The incorporation of user-friendly tools, visual aids, and training modules further strengthens the framework's practicality and scalability. Through its focus on continuous professional development, the framework promotes sustained improvements in critical care nursing, ultimately contributing to better patient outcomes globally.

**Evaluation of the Framework**

**Impact on Patient Outcomes**

**Reduced Errors and Improved Survival Rates**

The implementation of the decision-making framework has shown a measurable impact on patient outcomes, particularly in reducing errors and improving survival rates in resource-limited critical care settings. The framework's structured approach minimizes decision-making variability, ensuring that critical interventions, such as airway management and sepsis treatment, are consistently and promptly executed [82]. Studies indicate that integrating decision-support frameworks reduces medication errors by up to 35%, a significant improvement in environments where such errors often lead to adverse outcomes [83].

Case studies conducted in critical care units in Sub-Saharan Africa and Southeast Asia demonstrated a notable improvement in survival rates for patients with acute respiratory distress syndrome (ARDS) following the framework's implementation. Comparative analyses further highlighted that facilities utilizing the framework achieved a 20% higher survival rate for critical care patients than those relying on traditional, unstructured approaches [84, 85]. These findings underscore the framework's potential to enhance care delivery and patient safety.

**Nurse Satisfaction and Confidence**

**Increased Self-Efficacy in Decision-Making**

The framework's clear, user-friendly design has significantly boosted nurse confidence and self-efficacy in decision-making. Nurses in resource-limited settings often face high-stress environments with limited access to support. By providing structured pathways for handling complex scenarios, the framework empowers nurses to make informed decisions, reducing hesitation and improving their overall job satisfaction [86].

Feedback from focus groups revealed that 92% of participating nurses felt more confident in managing critical scenarios, such as multi-organ failure, after training on the framework. Surveys conducted post-implementation showed that nurses perceived a substantial reduction in their workload and decision-

making stress, attributing this improvement to the framework's simplicity and clarity [87, 88]. Enhanced confidence also correlates with better communication and collaboration within multidisciplinary teams, further elevating the quality of care delivered.

**Operational Efficiency**

**Time Management and Resource Optimization**

Operational efficiency is a critical metric for evaluating the framework, especially in resource-constrained environments where both time and resources are limited. The framework's emphasis on prioritization and streamlined decision-making has been instrumental in optimizing the use of available resources. For instance, in critical care units using the framework, the average time to administer life-saving interventions, such as intravenous fluids or oxygen therapy, decreased by 25% compared to pre-implementation metrics [89].

Additionally, the framework includes tools for resource tracking and allocation, which are vital in settings with chronic shortages. Nurses reported better inventory management and fewer instances of equipment unavailability due to the structured guidelines provided by the framework [90].

**Examples of Cost-Effective Interventions**

The cost-effectiveness of the framework is another key benefit. By reducing errors and improving resource utilization, the framework minimizes waste and lowers overall care costs. For example, a case study in a rural critical care unit found that implementing the framework reduced the need for unnecessary diagnostic tests by 30%, leading to significant cost savings without compromising patient care quality [91]. Similarly, the framework's prioritization protocols have been effective in reducing the overuse of antibiotics, curbing the financial burden associated with antimicrobial resistance [92].

The evaluation of the proposed decision-making framework demonstrates its significant contributions to improving patient outcomes, enhancing nurse confidence, and optimizing operational efficiency. By reducing errors, increasing survival rates, and facilitating cost-effective care delivery, the framework addresses key challenges in resource-limited critical care settings. The feedback from nurses and the observed improvements in clinical metrics underscore the framework's practicality and impact, making it a valuable tool for healthcare systems worldwide.

**Conclusion**

The creation and execution of a decision-making framework designed for critical care nurses in resource-constrained settings signifies a notable progress in tackling the complex issues endemic to these contexts. This research has emphasized the framework's essential characteristics, including contextual relevance, simplicity, and integration with training programs, so ensuring its applicability across various healthcare systems. The concept emphasizes cultural and logistical adaptability, facilitating equitable resource distribution and maintaining ethical standards, hence enhancing patient outcomes in environments with constrained infrastructure and staff.

The assessment of the framework revealed its significant influence on clinical treatment, encompassing diminished errors, increased operational efficiency, and enhanced patient survival rates. Furthermore, the framework's focus on accessible resources and ongoing professional development has enhanced nurses' confidence and proficiency in handling intricate situations. These findings highlight the framework's potential to revolutionize critical care delivery, especially in low-resource settings where the disparity between demand and capacity is most evident.

Nonetheless, the implementation of this system presents obstacles. Obstacles including resistance to change and infrastructural constraints require focused methods, including comprehensive training programs, campaigning for policy endorsement, and continuous enhancements informed by multidisciplinary feedback. Routine audits and upgrades guarantee the framework's durability and responsiveness to changing healthcare requirements.

In summary, the suggested paradigm provides a pragmatic, scalable alternative for improving critical care decision-making in resource-constrained environments. Its comprehensive strategy, integrating evidence-based protocols, contextual significance, and ongoing enhancement, tackles both acute and systemic issues. This paradigm has the potential to mitigate gaps in global healthcare by empowering nurses and optimizing care delivery, hence enhancing health outcomes for disadvantaged populations. Ongoing research and collaboration will be crucial for enhancing and broadening its global use.

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**تصميم إطار عمل لاتخاذ القرار للممرضات في الرعاية الحرجة في البيئات ذات الموارد المحدودة**

**الملخص**

**الخلفية**

تمثل البيئات ذات الموارد المحدودة تحديات كبيرة في تقديم الرعاية الحرجة، حيث تعاني هذه البيئات من نقص في المعدات، والكوادر المؤهلة، والبنية التحتية اللازمة لدعم اتخاذ القرارات السريرية. يؤثر ذلك بشكل مباشر على جودة الرعاية المقدمة ويزيد من الضغط على الممرضات اللاتي يتعاملن مع هذه التحديات يومياً

**الهدف**

يهدف هذا البحث إلى تصميم إطار عمل مخصص لدعم اتخاذ القرار للممرضات العاملات في بيئات الرعاية الحرجة ذات الموارد المحدودة. يوفر الإطار أدوات بسيطة وقابلة للتكيف مع التحديات الثقافية، الأخلاقية، واللوجستية الخاصة بهذه البيئات

**الطرق**

تم اعتماد منهج متعدد المراحل يشمل جمع البيانات من مقابلات نوعية مع الممرضات، وتحليل الأنماط الشائعة في اتخاذ القرار في سيناريوهات سريرية. تم تطوير الإطار بناءً على الأدلة السريرية والإرشادات العالمية، مع تكييفها لتلائم القيود المحلية. تم التحقق من صحة الإطار من خلال دراسات تجريبية في وحدات الرعاية الحرجة، مع استلام ملاحظات من أصحاب المصلحة لتحسين الإطار

**النتائج**

أظهر الإطار تحسنًا كبيرًا في نتائج المرضى، حيث انخفضت معدلات الأخطاء وزادت معدلات البقاء على قيد الحياة. كما ساعد الإطار في تعزيز كفاءة الممرضات وزيادة ثقتهن في اتخاذ القرارات. ساهم في تحسين إدارة الوقت والموارد مع تقديم تدخلات فعالة من حيث التكلفة

**الخلاصة**

يوفر الإطار المقترح نهجًا عمليًا وقابلاً للتطوير لتحسين جودة اتخاذ القرار في بيئات الرعاية الحرجة ذات الموارد المحدودة. يعزز الإطار من كفاءة الممرضات وجودة الرعاية الصحية، مما يؤدي إلى تقليل الفجوات في أنظمة الرعاية الصحية العالمية. يستدعي هذا العمل استمرار البحث والتطوير لتوسيع نطاق تطبيقه وتحقيق تأثير مستدام

**الكلمات المفتاحية**

الرعاية الحرجة، اتخاذ القرار، البيئات ذات الموارد المحدودة، التدخلات التمريضية، تحسين نتائج المرضى، الكفاءة التشغيلية