Enhancing Clinical Nursing Practice with the use of Clinical Decision-Making (CDM) Models In low resource setting

This paper intends to inform practicing nurses about the different forms of Clinical-Decision-Making (CDM) models that can be used in low resources environment to enhance clinical nursing practice.



A group of nursing students. *Source: Freepic*

Abstract

Aim: To describe and critically analyze clinical decision-making (CDM) models that nurses in low-resource settings, particularly in the East African region, can adopt to strengthen nursing practice.

Design: A discursive approach using CDM models as guiding principles. Their relevance, application, and adaptability to East African contexts are discussed.

Results: Several CDM models are outlined, with emphasis on their concepts, potential benefits, and limitations in enhancing nursing practice in resource-constrained environments.

Conclusion: Nurses in East Africa face multiple systemic and disease-related challenges. Proper application of CDM models can help mitigate these challenges, improve clinical judgment, and enhance patient outcomes. Further integration into education and practice is needed.

Public contribution: The paper introduces practicing nurses to CDM models relevant to low-resource environments.

Key words: Clinical Decision-Making, Clinical Reasoning, Low-resource settings, Nursing Practice, East African Region

Bio: Godfrey Katende, Aga Khan University, Kampala, Uganda, katendeg@yahoo.com

Background

Nursing education globally has evolved and now plays a pivotal role in shaping the profession[1]. However, low-income countries continue to face significant challenges related to emerging and re-emerging infectious diseases, non-communicable diseases, and increasing patient demands due to demographic shifts[1]. Nurses in East Africa, organized under the East African Community (EAC)—comprising Burundi, Democratic Republic of Congo, Kenya, Rwanda, South Sudan, Tanzania, and Uganda—are central to addressing these healthcare challenges. Harmonizing nursing and midwifery education, while addressing disparities in training and healthcare delivery, remains a critical regional issue[2].

Developing nurses' competencies in critical thinking, clinical reasoning, and decision-making is essential for preparing them to meet dynamic health needs[3]. Evidence shows that strong clinical decision-making supports quality care, improved patient outcomes, and effective teamwork in clinical environments4. Therefore, integrating CDM models into nursing education and practice is highly relevant for East Africa.

Significance

Nursing education in low-resource settings has grown substantially. Graduate-level programs and the inclusion of evidence-based practice in curricula across East Africa are steps towards strengthening clinical nursing practice[5]. These reforms are consistent with global recommendations that encourage nurses to practice to their full scope[6].

The incorporation of CDM models is particularly relevant as they provide structured frameworks that help nurses analyze patient problems, apply reasoning, and select evidence-based interventions[7]. By bridging theory and practice, CDM models can foster critical thinking, reduce diagnostic errors, and improve patient safety.

Methods

This paper employed a discursive approach, using CDM models as guiding principles to discuss their application in low-resource settings. It will emphasize contextual adaptation, practical knowledge, and problem-solving suited to specific environments. This analysis draws on published literature to highlight the conceptual underpinnings, practical applications, and limitations of selected CDM models.

Results and discussion

Clinical Decision-Making Models

Hypothetical-deductive theory

Originally applied in medicine, this theory emphasizes hypothesis testing through induction and deduction7. It was later adapted for nursing. Inductive reasoning begins with data collection and leads to hypothesis formulation, while deductive reasoning tests the hypothesis against data8. In practice, this model allows nurses to interpret data systematically, improving diagnosis and treatment planning. However, it is time-intensive, unsuitable for emergencies, and highly dependent on the practitioner's knowledge base8. For novice nurses, this model may be overwhelming, but it remains valuable for training and structured clinical reasoning.

Benner's Model of Skill Acquisition

Benner (1984) described five stages of nursing development: novice, advanced beginner, competent, proficient, and expert[9]. Progression through these stages depends on experiential learning and clinical exposure. In East Africa, mentorship and supervised practice are crucial to helping nurses move beyond the novice stage. This model emphasizes the importance of reflection, mentorship, and gradual skill acquisition in environments characterized by complex disease burdens[9].

Barrows and Pickell Model

This nine-step problem-solving approach includes hypothesis generation, inquiry strategy, clinical skill application, diagnostic decision-making, and reflection[10]. By focusing on the patient as a whole, this model fosters holistic assessment and communication. Its structured steps help reduce errors and support reflective practice. Nurses using this model can also identify areas for professional development. Reflection, in particular, is critical for self-improvement and lifelong learning10.

Cognitive Continuum Theory (CCT)

Proposed by Hammond (1981), CCT explains how human judgment varies between intuitive and analytical reasoning[11]. It identifies three core concepts: enactive (action-based), iconic (image-based), and symbolic (language-based) cognition[11]. CCT is particularly relevant in East Africa, where nurses often face complex cases requiring both rapid and reflective decision-making. By recognizing where their decisions fall on the continuum, nurses can balance intuition with structured analysis.

Intuitive Decision-Making Model

This model emphasizes non-conscious, experience-based judgments[12]. Intuition can enable rapid decision-making in emergencies, where time is critical. Its strengths include flexibility, creativity, and adaptability. However, reliance on intuition risks unconscious bias, overconfidence, and emotional influence[12]. To mitigate these risks, reflective practice and continuous professional development are necessary. Nurses in East Africa can combine intuitive reasoning with evidence-based frameworks for balanced decision-making.

Relevance to Nursing Practice, Research, Education, and Policy

Practice: Nurses must align CDM with professional standards, ethical frameworks, and scopes of practice[13]. Collaboration with patients and multidisciplinary teams enhances decision-making and patient outcomes[13]. In contexts where patients are increasingly aware of their rights, ethical principles such as autonomy and beneficence must guide nursing judgments.

Education: Nursing curricula in East Africa should incorporate CDMs as essential tools for cultivating decision-making skills[14]. Simulation, case-based teaching, and scenario-based learning can strengthen students' ability to apply theory in practice. Nurse educators should explicitly model CDM during teaching

and clinical supervision.

Policy: Regulatory bodies must update scopes of practice to reflect nurses' growing expertise. Although many nurses hold graduate degrees, restrictive policies limit their capacity to fully apply specialized skills [15]. Expanding task-shifting policies and providing institutional support are essential for maximizing nurses' contributions.

Research: Further studies are needed to explore CDM use in African contexts. Understanding barriers, such as guideline non-compliance[16], shortages of resources, and limited mentorship opportunities, can inform interventions to improve decision-making and patient safety.

Challenges in the East African Context

Scope of practice: Despite advanced training, many nurses are restricted by outdated scopes of practice.

Compliance with guidelines: Studies show low adherence to national guidelines, partly due to lack of support during training and weak implementation frameworks.

Systemic inadequacies: Shortages of supplies, reference materials, and staffing create stressful environments that contribute to burnout and attrition.

Brain drain: Migration of nurses due to better opportunities abroad further reduces capacity.

These challenges underscore the need for supportive policies, adequate resources, and professional development opportunities to enable effective CDM.

Conclusion

Nurses in East Africa face multifaceted challenges in low-resource health systems. CDM models offer structured frameworks that can enhance decision-making, improve patient outcomes, and foster professional development. Integration of CDM models into education, supported by mentorship and reflective practice, is essential. Policymakers should create enabling environments by updating scopes of practice, supporting evidence-based care, and addressing systemic challenges. Future research should focus on context-specific strategies for implementing CDM in low-resource settings.



The joy of being a well trained nursing student.
Source Freepic

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