

A framework to enhance clinical learning and teaching in undergraduate nursing education in Ghana

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ARTICLE INFO

Keywords:

Clinical
Framework
Nursing
Theory of change
Undergraduate

ABSTRACT

Background: Nursing education is intended to produce practice-ready nurses at graduation to render high-quality care to the deserving populace. This expectation is, however, far-fetched amid the numerous challenges confronting clinical education. Although frameworks for nursing education have proved effective in guiding clinical education, nurse educators in low-income contexts acknowledge the difficulty in identifying appropriate frameworks to guide clinical education. Currently, clinical education in Ghana is compromised and fragmented, and the existing frameworks are not aligned with context-specific needs, resulting in undesirable outputs, and are not informed by practice needs or the needs of the broader community involved in clinical education. A need to develop a framework that aligns with the prevailing needs in clinical nursing education, leading to desirable outcomes, was identified.

Purpose: The current study, therefore, aimed to develop a theory-informed framework to enhance clinical learning and teaching in undergraduate nursing education in Ghana.

Methods: A multi-method research design underpinned by the theory of change logic model guided the development of the framework through a three-phased approach. Preceding the development of the framework, two separate studies were conducted. Triangulated data from the two earlier studies were used to develop a draft framework. Twelve (n = 12) expert stakeholders were purposively invited to participate in a one-day workshop to refine and validate the framework.

Result: The final framework visualises the six theory of change logic model components, and incorporates the best available evidence and stakeholders' inputs.

Conclusion: The developed framework could enhance clinical learning and teaching in undergraduate nursing education in Ghana.

1. Introduction

“Knowing where you are headed is critical to picking the best route to use” (Knowlton & Phillips, 2013). Nurses are the nucleus of most healthcare systems and constitute most of the healthcare workforce (Ahmady & Khani, 2022; Boniol et al., 2019). Nurses form a vital part of the national and global strategic plans related to health priorities, such as primary healthcare (PHC) and universal health coverage (UHC) (Englund, Basler, Meine, & McArthur, 2020; World Health Organization, 2020). As the largest health workforce, nurses are essential in responding to emergency health-related events and disasters, such as the

recent COVID-19 pandemic (Al Thobaity, Plummer, & Williams, 2017; Said & Chiang, 2020). The disease burden of low-income countries has changed from communicable to non-communicable diseases, with healthcare tasks shifting to lower-skilled nurses (Bollyky, Templin, Cohen, & Dieleman, 2017).

Current advancements in the healthcare delivery system require complex competencies from graduating nurses. Clinical competence in nursing is a blend of skills, attitudes, knowledge, and abilities that every nurse should possess to carry out nursing duties related to patient care (Levett-Jones, Gersbach, Arthur, & Roche, 2011). Examples of such complex competencies for graduating nurses are those of functioning

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<https://doi.org/10.1016/j.ijans.2025.100830>

Received 21 August 2024; Received in revised form 29 January 2025; Accepted 24 February 2025

Available online 26 February 2025

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effectively within an interprofessional team (Fischer, 2017), rendering quality evidence-based healthcare, as well as competence in quality improvement, negotiation, and evidence-based practice (Balakas & Smith, 2016; Fischer, 2017). The clinical competence of nursing graduates is however criticised (Haddad, Moxham, & Broadbent, 2017). Evidence indicates that deficiencies in the knowledge and skills of newly graduated nurses have created unfavourable clinical situations since these nurses are expected to be ready for practice (Haddad et al., 2017). This brings to question the ability of newly qualified nurses to provide competent care to the patients in their care (Nazari & Mohammadi, 2015). To improve healthcare outcomes, the World Health Organization (WHO) requested the international community to transform, scale up, and augment the capacity and quality of nursing education to address the global need for well-qualified nurses (World Health Organization, 2016). Four years on, in the 2020 State of the World's Nursing Report, the WHO expressed its concerns regarding the poor quality of nursing education globally (World Health Organization, 2020). Nurse educators are therefore mandated to deliver quality nursing education in line with current trends in health to embrace the dynamics of the healthcare delivery system.

Nursing education comprises two complementary parts: theory and practice. The foundational knowledge necessary for practice is taught in the classroom, and the clinical setting offers the platform to consolidate and transfer this knowledge (Flott & Linden, 2016). Clinical education in nursing cannot be isolated from the nursing education system. To reiterate this stance is the evidence that the planning and execution of students' clinical education is situated within the entire nursing educational programme. The planning related to nursing students rendering quality nursing care in a highly dynamic and complex healthcare milieu is overwhelming for nurse educators and clinicians (Repsa, Quinn, & Peters, 2020).

The clinician's behaviour and competence directly influence the capacity of nursing students to learn clinical competencies in the clinical environment (Ismail, Aboushady, & Eswi, 2016; Ramzan, Kousar, Jabeen, Waqas, & Gilani, 2017). These competencies of clinicians include effective communication skills, clinical nursing competence, and coaching (Ismail et al., 2016; Niederriter, Eyth, & Thoman, 2017). Adequate material and human resources have also been noted to influence clinical learning among nursing students positively (Kamphinda & Chilemba, 2019; Mbakaya et al., 2020). Good clinical supervision and assessment of students during clinical placement support the clinical learning of nursing students (Adjei, Sarpong, Attafuah, Amertil, & Akosah, 2018; Gemuhay, Kalolo, Mirisho, Chipwaza, & Nyangena, 2019). The literature, however, reports a non-alignment between the content taught in the classroom, and what students learn at the clinical sites, causing theory-practice confusion among students (Adjei et al., 2018; Jahanpour, Azodi, Azodi, & Khansir, 2016).

Clinical facilitators perform several roles in clinical education, and require formal education in clinical facilitation from academic institutions (Needham, McMurray, & Shaban, 2016). In Ghana, registered nurses generally assume the roles of clinical facilitators out of their own desire to teach students during placements. On the other hand, some registered nurses may however not support students for various reasons, such as the incompetence related to student support and the lack of motivation related to supporting students. Earlier studies in Ghana have mentioned the need to educate clinical facilitators to empower them to meet the clinical teaching and learning needs of students during clinical placement (Asirifi et al., 2019). Regardless of the myriad factors affecting the quality of clinical education, practice-ready registered nurses are required to render competent care to the deserving populace (World Health Organization, 2016).

In Ghana, the number of nursing institutions has increased due to an unmatched number of health facilities for clinical placement, with most of the nurses being trained through three-year diploma level programmes (Bell, Bam, & Acheampong, 2015). There are many challenges confronting clinical nurse education in Ghana. As in other settings, such

as Malawi (Bvumbwe, Malema, & Chipeta, 2015) and Angola (Marchi-Alves et al., 2013), the lack of material resources at the clinical learning sites is the bane of clinical nurse education in Ghana (Adjei et al., 2018). There are inadequate health facilities, inadequate classroom spaces, and small and poorly equipped skills laboratories with a lack of basic nursing equipment (Nachinab & Armstrong, 2022; Salifu, Heymans, & Christmals, 2022). Despite these deficits, admittance into nursing education institutions (NEIs) is high (Salisu, Sadooghiasi, Yakubu, Abdul-Rashid, & Mohammed, 2020), resulting in overcrowding in the classrooms, skills laboratories, and clinical learning sites (Salifu et al., 2022), which hampers clinical teaching and learning. Quality assurance mechanisms for nursing education are relatively new and do not influence nursing education standards effectively.

Nursing education has migrated from hospital-based apprenticeship training into higher education, and institutions must have the requisite structures to produce graduates that can embrace the technological advancement of healthcare. For example, most hospitals have migrated their operations to electronic platforms with computerised documentation (Gyamfi, Mensah, Oduro, Donkor, & Mock, 2017). It is necessary to train students to embrace these innovations. Most NEIs, however, do not have well-set-up information communication technology (ICT) centres or even computers to support their students in terms of these innovations (Salisu et al., 2020). Where schools may have ICT facilities, anecdotal evidence indicates that students are not exposed to electronic documentation as part of the teaching-learning process in the schools. Additional challenges include: poor competency assessment practices (Anim-Boamah, 2022); poorly motivated and negative student attitudes (Nachinab & Armstrong, 2022; Salifu, Gross, Salifu, & Ninnoni, 2019); inadequate teaching staff in schools (Nachinab & Armstrong, 2022); and poor collaboration between NEIs and the practice settings (Kwashie, 2019; Salifu et al., 2019). Based on the many challenges outlined, clinical education in Ghana can best be described as compromised and fragmented.

Several studies have recommended improving clinical education in Ghana (Anim-Boamah, 2021; Asirifi, Mill, Myrick, & Richardson, 2017; Atuut, 2016). The preceptorship model has been adopted (Asirifi et al., 2017) to improve clinical education without desired outcomes (Nyarko-Mensah et al., 2021). A framework for assessing clinical competence has since been developed (Anim-Boamah, 2021). However, it appears it has not been implemented. Furthermore, (Nachinab & Armstrong, 2024) recently developed a framework for clinical education in Ghana underpinned by the proposed model for clinical nursing education and training in South Africa by the Nursing Education Stakeholders (NES) Group of South Africa (Nurse Educators Stakeholder Group, 2012). The upsurge in the development of frameworks for clinical education in Ghana underscores the current clinical complexities in nursing education with the need for a solution.

The context specificity of a framework is vital for its adoption, implementation and sustainability (Moullin, Sabater-Hernandez, Fernandez-Llimos, & Benrimoj, 2015). For instance, the above-mentioned proposed model for clinical nursing education and training in South Africa by the NES Group is based on a consultative process from other stakeholders in South Africa to reflect the realities of that context. It may be a challenge to transfer a framework developed in one setting to another for an intervention, as the contextual issues may not align, undermining the suitability and applicability of the framework (Moullin et al., 2015). Interventions and frameworks that support education must be co-created by stakeholders who have a bearing in the direct implementation.

Earlier studies conducted in Ghana on clinical education seem to have perceived clinical education as only centralised at the placement site (Adam, Druye, Kumi-Kyereme, Osman, & Alhassan, 2021; Nyarko-Mensah et al., 2021), and the same could be said of the recently developed framework (Nachinab & Armstrong, 2024). As established by (Jeppesen, Christiansen, & Frederiksen, 2017), nursing education integrates theory and practice; hence, making clinical education

interconnected and dependent on the overall nursing education programme. This could be likened to an ecosystem with a broader membership than just limited to the clinical placement site. The existing framework is not aligned with context-specific needs, do not result in desirable outputs, and is not informed by practice needs or the needs of the broader community involved in clinical education (Nachinab & Armstrong, 2024). There is therefore a need to develop a contextually informed framework that aligns with the prevailing needs in practice and theory and which leads to desirable outcomes.

This article thus describes the development and validation of a framework to enhance clinical teaching and learning in undergraduate nursing education in Ghana.

2. Theoretical underpinning of the framework

The theory of change (ToC) logic model (Kellogg Foundation, 2004) guided the development of the framework reported on in this study. A ToC can be used to design, implement, or evaluate programmes (Davies, 2018). According to Peta (2018), the ToC is frequently used in organisations to develop initiatives that may include approaches to engaging with complex issues. Davies, (2018) states that the ToC is a tool that defines a set of events that are anticipated to yield specific desired outcomes. The ToC presents a pictorial description of how activities and resources result in outcomes and clarifies the assumptions fundamental to implementing plans and strategies (Gooding, Makwinja, Nyirenda, Vincent, & Sambakunsi, 2018).

A ToC logic model comprises a sequence of components that conceive framework development, execution, and evaluation by enlightening how, why, and to what degree change can materialise (Kellogg Foundation, 2004; Mertens & Wilson, 2019). The ToC of a programme is depicted in a logic model by conceptualising programme planning through a graphic description of activities (Kellogg Foundation, 2004; Mertens & Wilson, 2019). This is done by showing connection pathways, the interactions between and causal linkages (Mayne, 2017) of the projected framework. A consultative engagement with expert stakeholders is crucial in developing a ToC (Kellogg Foundation, 2004; Mayne, 2017). Knowlton and Phillips (2013) believe that presenting a draft framework to stakeholders in a workshop will ignite discussions to confirm the meaning, credibility, and ownership of the initiative intended by the framework. Stakeholder participation in validation workshops involves three overlying issues:

consultation; dissemination of information and knowledge; and decision-making, brainstorming and discussions to agree on developing a context-specific framework (Mayne, 2017).

The ToC has been tested and used to develop health-related frameworks (Chelagat, 2015; Hernandez & Hodges, 2006; Reid & Botma, 2012); complex healthcare interventions, which are effective, sustainable, and scalable (De Silva et al., 2014); public health interventions (Breuer, Lee, De Silva, & Lund, 2015); planned advanced care in nursing homes (Gilissen et al., 2018); and curricular innovation in a midwifery programme (Nyoni & Botma, 2019).

3. Theory of change logic model components

A ToC logic model comprises six interrelated elements: the problem or issue, community needs, desired results, influential factors, evidence-based strategies, and assumptions. The *problem or issue* the framework is anticipated to address should be explicitly defined (Kellogg Foundation, 2004). *Community needs* are the exact needs of the community as described and experienced by the community with a problem or issue (Kellogg Foundation, 2004; Mertens & Wilson, 2019). *Desired results* consist of outputs, outcomes, and impact, which should be stated explicitly in the theory of change (Kellogg Foundation, 2004; Knowlton & Phillips, 2013). These anticipated results present an idea of the impact of implementing the framework or the changes expected in the community (Kellogg Foundation, 2004). *Influential factors* are situations that

can either support or impede change in the community by implementing the programme (Kellogg Foundation, 2004). *Evidence-based strategies* represent the actions or activities required to realise the desired results (Kellogg Foundation, 2004). *Assumptions* are statements explaining why and how the strategies will work. Fig. 1 illustrates the components of the ToC logic model.

4. Methods

The current framework was developed through a three-phased, sequential multiple-methods research approach (Brewer & Hunter, 2006), guided by the theory of change. Multiple-method designs involve research methods from the same or multiple paradigms used in series or parallel (Creswell, 2014). Fig. 2 illustrates the multi-phase approach to framework development.

Preceding the development of the framework, two separate studies were conducted and are reported elsewhere, namely the identification of evidence-based strategies through a scoping review (Hobenu, Adefuye, Naab, & Nyoni, 2024b) and the identification of community needs through a gap analysis (Hobenu, Adefuye, Naab, & Nyoni, 2024a). The next subsection presents a summary of the outcomes of each of the studies.

4.1. Phase I: A scoping review

The objective of the first study was to conduct a scoping review to identify evidenced-based strategies used in other settings to improve clinical teaching and learning in undergraduate nursing education. Literature was sought from databases to retrieve articles published from January 2011 to September 2023 focusing on strategies to enhance clinical learning and teaching in undergraduate nursing education. Data were extracted and analysed from the articles that met the inclusion criteria. Table 1 outlines the strategies identified in the scoping review.

4.2. Phase II: Community needs

The purpose of the second phase was to establish the community needs related to clinical teaching and learning of undergraduate nursing students in Ghana. A gap analysis was conducted using a qualitative descriptive design (Mayan, 2001), which was executed through key informants' interviews (KIIs), focus group discussions (FGDs), and document analysis. Four nursing education institutions were purposively selected from four administrative regions in Ghana, including eight clinical placement sites. The KIIs involved heads of the colleges (n = 4), heads of accounts (n = 4) of those selected colleges, nurse educators (n = 8), clinical coordinators (n = 8), and preceptors (n = 12). A FGD was conducted in each of the four selected colleges, involving thirty-seven purposively selected final-year nursing students: site 1 (n = 9), site 2 (n = 8), site 3 (n = 10), and site 4 (n = 10). The time and venue for the KIIs and the FGDs were determined at the convenience of the participants. Eventually, the rooms that were considered ensured the privacy of participants and had limited noise and distraction to enhance the concentration and quality of the audio-tape recordings during the data collection process. The conversations were audio-tape recorded with the permission of the participants. Adequate probes were used to explore the experiences and perspectives of participants on clinical teaching and learning in undergraduate nursing education in Ghana. On average, the KIIs and the FGDs lasted between 40 and 120 mins.

Relevant documents were procured from the selected NEIs and other institutions of interest. For instance, the NM&C provided the Diploma in Nursing Programme curriculum, logbook for tutors and lecturers, training institution clinical and field practice schedule for Diploma in Nursing students, and the Diploma in Nursing Programme procedure manual. The Ghana Tertiary Education Commission provided the standards for tertiary institution libraries in Ghana and the standards for physical facilities for tertiary institutions in Ghana. Additionally, the

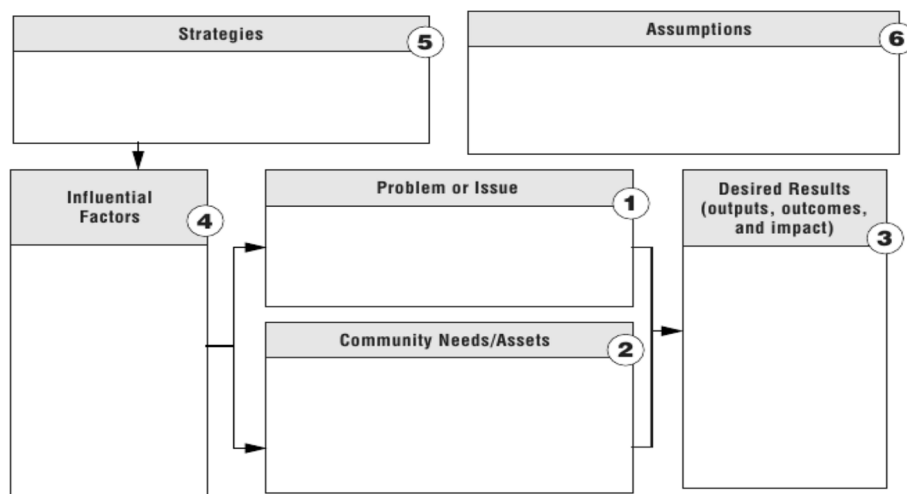


Fig. 1. Theory of change logic model components.

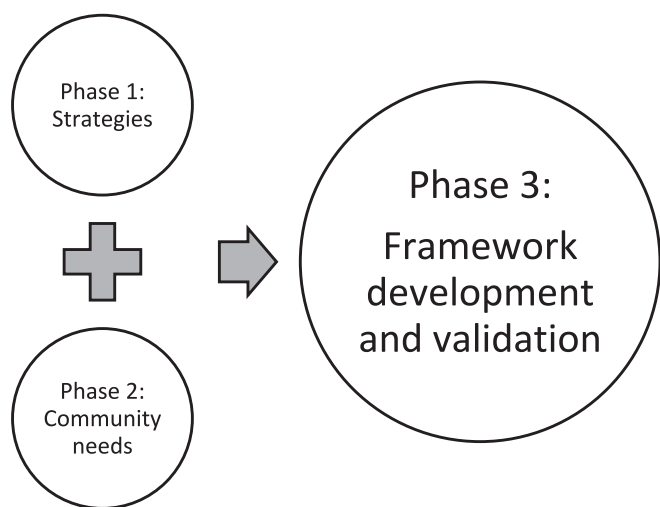


Fig. 2. Multi-phase approach to framework development.

health training institution secretariate of the Ministry of Health provided the job description of tutors, while the students' clinical performance assessment documents were sourced from the selected nursing education institutions included in the study.

Data were deductively analysed through the lens of the global pillars for nursing education as the standard (Global Alliance for Leadership in Nursing Education and Science, 2019). Furthermore, the researcher examined the gap between the expected standards and the current performance at the institutions (Hobenu et al., 2024a). The gaps were captured under the three global pillars: Pillar 1, learning outcomes; Pillar 2, nursing education programme standards; and Pillar 3, educational institution standards see Table 2. The findings of Phase II were used to populate the community needs component of the draft framework.

4.3. Phase IIIA: Development and validation of the framework to enhance clinical learning and teaching in undergraduate nursing education in Ghana

The third phase of the study was the development and validation of the framework, which was done in two successive stages: phases IIIA and IIIB. Phase IIIA aimed to develop a draft framework to enhance clinical learning and teaching for undergraduate nursing education in Ghana. In this study, the strategies identified from the scoping review were

combined with best practices from literature and participants to populate the strategies components of the ToC logic model. In this phase, the authors synthesised the phases of the study with the various components of the ToC logic model (see Table 3 for synthesis) and Fig. 3 for draft framework (Supplementary material 1).

Phase IIIB sought to validate the developed framework through stakeholder input (Gilissen et al., 2018). Purposive sampling was used to include individuals who understood the context of clinical education for nursing in Ghana. The first author sent invitation letters detailing the date, time, venue, description and aim of the study and the validation to prospective individuals who have vast knowledge of nursing theory and practice and key gatekeepers requesting their participation in the one-day framework validation workshop. The gatekeepers include Ghana's Nursing and Midwifery Council, the Ghana Registered Nurses and Midwives Association, and the Health Training Institution of the Ministry of Health. Interested participants were recruited to participate in the validation workshop.

A one-day in-person validation workshop was conducted with expert stakeholders to validate the draft framework. Twelve (n = 12) stakeholders were invited to participate in the workshop the first and third authors facilitated. Stakeholders included a preceptor, clinical coordinator, nurse manager, a representative each from the Health Training Institution of the Ministry of Health and the Ghana Registered Nurses and Midwives Association, two nurse researchers, two representatives from the curriculum development and review division of the Nursing and Midwifery Council of Ghana, and three nurse educators. Before the commencement of the discussions of the draft framework, a synopsis of the previous studies and the application of the theory of change logic model to the current framework development was presented to the expert stakeholders. A forward and backward mapping process was employed during the stakeholders' engagement to clarify and discuss the various components of the draft framework in relation to the ToC logic model. The stakeholders suggested strategies for specific needs and influential factors to augment the framework. The strategy for the specific needs is presented in Table 4.

4.4. Stakeholder influential factors

The influential factors from the stakeholders included stakeholder involvement, technological advancement, positive political influence as supportive factors that may influence the achievement of desired results. On the other hand, the stakeholders added resistance to change as a barrier to achieving desired results. After the discussions, stakeholders' inputs were integrated into the draft framework, and the final framework was validated during the workshop. See Fig. 4 for the final

Table 1
Strategies to enhance clinical learning and teaching for undergraduate nursing education.

Strategies to enhance clinical education of nursing students	Techniques
Scaffolding the nursing curriculum	<ul style="list-style-type: none"> • Deliberate sequencing of clinical learning experiences in the curriculum • Integrating the usage of smartphones into the curriculum • Integrating student dyads into foundational stages of clinical education
Transformative teaching and learning approaches	<ul style="list-style-type: none"> • Embedding experiential learning theories in clinical education • Encouraging peer-assisted learning and collaborative learning in clinical education • Employing PhotoVoice in clinical education • Improving clinical preceptor roles • Using the nursing process and an educational model • Implementing clinical associate resources and support orientation programme • Using a multiple intelligence teaching approach • Iterative problem-solving approach • Conducting post-clinical conference
Integrating simulation-based education	<ul style="list-style-type: none"> • Simulation as a pedagogic method • Simulation-based programme • Use of high-fidelity simulation • Clinical pause approach in simulation debriefing • Engaging in virtual simulation • Adopting a train-the-trainer model • Interprofessional mass casualty incident simulation
Dedicated education units for clinical placement	<ul style="list-style-type: none"> • Creating dedicated education units at clinical sites
Applying technology in clinical education	<ul style="list-style-type: none"> • Utilisation of smartphones in clinical education • Adopting instant messaging • Collaborative clinical learning mobile application • Introduction of a desktop-based virtual reality platform • Mobile augmented reality technologies • Virtual patient-based social learning • Collaborative learning in a virtual team • Development of digital educational resources using designed thinking
Developing interprofessional teamwork and collaboration	<ul style="list-style-type: none"> • Online problem-based learning • Peer support approach • Bearing witness approach • Clinical partnership model • Improving faculty–practice relationship • Interprofessional collaboration • Interprofessional mentoring
Integrative inter-country clinical experience	<ul style="list-style-type: none"> • International clinical placement programme

framework ([Supplementary material 2](#)).

4.5. Rigour

Throughout the development and validation process of the framework, rigour was ensured by integrating the four criteria of methodological integrity: credibility, validity, transferability, and triangulation (Brink, Van der Walt, & Van Rensburg, 2017). **Credibility** was ensured using the ToC logic model, which has been tested and used as the organising framework for designing programmes for a desired change (Gilissen et al., 2018). The iterative process adopted in developing this framework was used to clarify the connections between the model components. This helped to ensure internal **validity**. Sourcing data from a scoping review and gap analysis through document analysis and a qualitative exploratory, descriptive approach in developing the

Table 2
Community needs identified from gap analysis according to global pillars.

Pillar	Needs
Pillar 1: Learning outcomes Knowledge and practice skills	<p>The lack of a comprehensive competency-based assessment approach. Students lack practical skills in caring for individuals across the lifespan, families, communities, and citizens. Limited support for students during clinical placement. Clinical placement opportunities are not aligned with clinical learning objectives. Weak educational outcomes in terms of global perspectives on human rights, social justice, health equity, global awareness, and interconnectedness of systems.</p>
Communication and collaboration	<p>Assessment strategies do not effectively assess communicative skills. Inadequate integration of electronic documentation and students challenged with paper-based documentation. Non-alignment of clinical placement and assessment objectives on communication. Ineffective interprofessional communication.</p>
Critical thinking, clinical reasoning and clinical judgement Professionalism and leadership	<p>Ineffective application of the nursing process in clinical placement. A lack of self-direction among students. Nursing seen as an apprentice-based approach. Non-stimulating clinical education climate. Absent culture on evidence-based practice (EBP) among students. Absence of emergency and disaster-related learning opportunities.</p> <p>Challenges in transferring learning on professionalism to clinical practice. Inadequate supervision of and cognitive support for students. Deficient advocacy competencies of students.</p>
Pillar 2: Nursing education programme standards Curriculum	<p>Ineffective application of the nursing process in clinical placement. Insufficient clinical experience of students. Exclusion of students and alumni from curriculum development and review process.</p>
Admissions	<p>High student intake is disproportionate to the number of educators. Disregard for available admission standards.</p>
Learning experiences	<p>A lack of coordination in the clinical placement of students. Non-integration of interprofessional education into the diploma the Diploma in Nursing curriculum.</p>
Pillar 3: Educational institution standards Faculty/Instructors/ Preceptors	<p>Educators not up to date with EBP. Insufficient clinical experience of educators. Poorly implemented clinical-oriented continuous professional development (CPD) for nurse educators. Inadequate number of nurse preceptors. Preceptors lack clinical experience and expertise in clinical teaching and learning. Unclear job description for nurse preceptors.</p>

(continued on next page)

Table 2 (continued)

Pillar	Needs
Resources	Demotivation of nurse preceptors in terms of the teaching of student nurses. Fragmented clinical teaching approach. Poor clinical training outcomes attributable to large student numbers.
	Inadequate library and internet facilities in schools. Inadequate resources at the school and clinical sites. Logistical and transportation challenges of training schools. Inadequate teaching and learning resources. Inadequacy of clinical skills and simulation laboratories. Lack of awareness among clinical nurses regarding the new procedure manual on the Nursing and Midwifery Council (NMC) of Ghana open-access mobile application. Insufficient financial resources to support clinical activities optimally.
Leadership and administration	A lack of independence of nursing schools to support nursing education effectively. Absence of a clear memorandum of understanding (MoU) between nursing education institutions and clinical facilities. Weak quality assurance mechanisms related to clinical teaching and learning.
Outcomes	Ineffective implementation of programme evaluation by HTIs and the Ministry of Health (MoH). Poor ongoing implementation of the evaluation process and analysis of the evaluation data collected. Lack of use of evaluation data to improve nursing education.

Table 3
Synthesis of Phases I and II with Theory-of-change Logic Model.

Phase of study	Articulation with ToC Logic Model
Phase I	Strategies
Phase II	Problem or issue Community needs/assets Influential factors Desired results
Phase III A	Community needs/assets Assumptions Desired results Influential factors Problems Strategies

framework guaranteed content validity. Moreover, input from expert stakeholders was integrated into the framework. The authors cannot vouch for the **transferability** of this framework to other settings. The authors, however, provide ample information about the research context, processes, and participants to determine the applicability or otherwise of the framework to other settings. In addition, an audit trail on the developmental process of the framework is available. Employing varied methods, which entailed a scoping review, document analysis, interviews with key informants, focus group discussions and an expert validation workshop to collect data enhanced methodological **triangulation**, and data triangulation was ensured by incorporating the findings into the framework. The date for this validation workshop was selected at the convenience of the stakeholders.

5. Ethical considerations

The study received ethical approvals from the Health Sciences Research Ethics Committee of the University of the Free State (UFS-HSD2023/0654/2811), and the Ghana Health Service Ethics Research

Table 4
Stakeholders' validation workshop outcome.

Community need	Added strategy from stakeholders	Rationale
Pillar 1 (Professionalism and leadership) Challenges in transferring learning on professionalism to clinical practice	All registered nurses should assume the role of preceptor and teach students professionalism during clinical placement	Teaching students at the clinical site is part of the job description for registered nurses
Pillar3 (Faculty/ instructors/ Preceptors) Inadequate number of nurse preceptors	All registered nurses should assume the preceptor role	Teaching students at the clinical site is part of the job description for registered nurses
Pillar 3 (Resources) Logistical and transportation challenges of training schools	The Conference of Heads of Health Training Institutions in Ghana to set up regional simulation centres	The regional simulation centres would solve the logistical and transportation challenges of nursing training schools

Committee (GHS-ERC: 003/07/23). The authors observed all ethical principles applicable to human participants, including verbal and written informed consent, confidentiality, privacy, and participants' liberty to withdraw from the study at any stage without any punitive measures. Throughout the validation process, the authors upheld the principles of beneficence – doing good and no harm to the participants. All procedures were performed in compliance with relevant laws and institutional guidelines.

6. Results

The framework developed to enhance clinical learning and teaching in undergraduate nursing education for Ghana is presented in Fig. 4 and depicts the result of the study.

7. Discussion

Clinical teaching and learning in undergraduate nursing in Ghana are compromised and fragmented (Nachinab & Armstrong, 2022; Salifu et al., 2022). The purpose of the current study was, therefore, to develop and validate a framework to enhance clinical teaching and learning in undergraduate nursing education in Ghana using the ToC logic model as a guide. The stakeholders validated the problem as relevant to Ghana, which is congruent with the situation in other low- and middle-income countries (Bvumbwe et al., 2015; Mbakaya et al., 2020). Frameworks for nursing education have been identified to be effective in response to the incessant call to develop approaches to direct nursing education (Jayasekara et al., 2018). Nurse educators have been reported to have difficulty identifying the best framework for clinical practice education (Landers, O'Mahony, & McCarthy, 2020). Frameworks that guide clinical education must be aligned with contextual realities and stakeholder involvement for acceptance and applicability.

Regarding community needs, the expert stakeholders thought community needs had been extensively captured, hence validating all the needs suggested in this framework. For clarity, the needs were organised according to the global pillars for nursing education: Pillar 1 – learning outcomes; Pillar 2 – nursing education programme standards; and Pillar 3 – educational institution standards. The needs presented in the framework are contextual realities of the clinical education space in Ghana demonstrating the interconnectedness of clinical education with the nursing education system rather than being an isolated part. Similar needs have been documented in studies that have viewed clinical education as isolated (Adjei et al., 2018; Nyarko-Mensah et al., 2021).

Desired results are reflected in the third section of the framework. The desired results involve the vision the developers intend for the community as users of the framework (Kellogg Foundation, 2004). The

desired outcome of the proposed framework is the long-term effect of successfully implementing the framework (Kellogg Foundation, 2004). In Fig. 3, the desired results component shows a list of anticipated outcomes in clinical teaching and learning in undergraduate nursing education after implementing this framework. The desired results component reflects outputs and outcomes. The **outputs** are the direct products of the activities of this framework, and are presented according to the global pillars. **Outcomes** are focused on the specific changes in every facet of the problem that necessitated the study. The current study organised specific outcomes according to the three global pillars. It follows that every community need was matched with a specific strategy, leading to an output and, ultimately, an outcome. The expected ultimate impact of the current framework is enhanced clinical teaching and learning in undergraduate nursing education in Ghana. Other studies have indicated similar outcomes, such as creating dedicated education units in the clinical setting increased learning opportunities for students (Hooper, Al Mekki, Williams, Thompson, & Zeeman, 2020),

organising training courses for preceptors enhanced their pedagogical skills and their ability to influence knowledge transfer to students (Macey, Green, & Jarden, 2021), employing simulation in nursing education has demonstrated positive learning outcomes (Eyikara & Baykara, 2017).

Influential factors constitute the next component. These factors have the propensity to influence the desired results of a programme, and can either make the implementation of the framework successful or otherwise (Kellogg Foundation, 2004). The influential factors suggested by the stakeholders during the validation workshop were incorporated into the final framework (see Fig. 3). Other researchers cited stakeholder involvement as an influential factor that could support the implementation of a project (Berry, Koski, Verkuil, & Piggot, 2019; Gilissen et al., 2018), and resistance to change as an influential factor that could derail the intended purpose of a project (Klonek, Lehmann-Willenbrock, & Kauffeld, 2014).

In this subsection, the **strategies component** of the framework is discussed. The framework outlines strategies according to the global pillars that could enhance clinical teaching and learning in undergraduate nursing education. These strategies are a combination of evidence-based strategies identified from the scoping review conducted in Phase I, best practices from available literature and expert stakeholders. In this framework, a strategy is proposed for each need identified, and the strategies mentioned in the framework are feasible within the Ghanaian context and could enhance clinical learning outcomes. A framework recently developed in Ghana is intended to guide competency assessment in nursing education, which could improve competency assessment outcomes (Anim-Boamah, 2021). Similar strategies, such as simulation (Eyikara & Baykara, 2017) and dedicated education units (Hooper et al., 2020), were cited to improve clinical education. The stakeholders validated the strategies, and suggested a few for selected needs, stating their reasons as indicated in Table 4.

Assumptions constitute the final component of this framework. The stakeholders ratified all the suggested assumptions. Part of the framework development process requires that assumptions be made (Kellogg Foundation, 2004). These assumptions are fundamental as they are likely to influence the implementation of the framework intended to enhance clinical teaching and learning in undergraduate nursing education. Through critical thinking and reasoning, the authors presumed there would be political will, financing, stakeholder buy-in, political and financial stability, and a growth mindset to support the implementation of the framework. In a related study, Nyoni and Botma (2019) cited similar assumptions that could affect the implementation of a framework.

8. Strengths and limitations of the study

To the best of the authors' knowledge, this is the first single study

that has developed a framework to meet the contextual realities of clinical learning and teaching in undergraduate nursing education in Ghana. The framework incorporated available empirical evidence, the theoretical underpinning of the framework development, active engagement, and consensus building among stakeholders. These ensured the methodological rigour of the study. During the validation session, there was consensus among the stakeholders on all the components of the framework, which ensured approval of the adopted research processes, and expert stakeholders accepted the conclusions reached by the authors. The authors admit that not all stakeholders were conversant with the ToC logic model, which may have affected their interpretation of their role and validation process. Nonetheless, the interactive and discursive approach adopted during the validation workshop limited the likelihood of misinterpreting the framework.

9. Conclusion

A theory-based and contextually informed framework is required to improve clinical teaching and learning in undergraduate nursing education in Ghana. Using the theory of change (ToC) logic model as the theoretical basis for developing the current framework demonstrated how the varied sections of the framework are linked to improving clinical education in Ghana. Again, the model helped the authors to identify strategies to solve the problem and a statement of assumptions is related to why the identified strategies could work. Furthermore, the model made it possible to describe the needs and assets of the communities who are the beneficiaries of clinical teaching and learning and to identify the influential factors that may support or hinder the implementation of the proposed framework. Additionally, using the theory of change logic model paved the way for the authors to describe the desired results of the framework, which is intended to enhance clinical teaching and learning in undergraduate nursing education in Ghana. The final framework is the product of the amalgamation of the community's needs, available empirical evidence, and stakeholders' inputs. Based on the findings of this study, the authors recommend that:

- Stakeholders in nursing education in Ghana should pilot this framework in selected NEIs and their affiliated clinical placement sites.
- Other health professions education disciplines could adopt this framework to plan and implement clinical education of their students
- Individual nursing education institutions, including those that participated in the current study, could implement selected needs and strategies to enhance clinical learning and teaching.

CRedit authorship contribution statement

Kafui A. Hobenu: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Formal analysis, Data curation, Conceptualization. **Antonio O. Adefuye:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Formal analysis, Conceptualization. **Florence Naab:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Formal analysis, Conceptualization. **Champion N. Nyoni:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The manuscript is from a broader study submitted to the University of the Free State, Bloemfontein, Republic of South Africa, for the degree of Doctor of Philosophy in Health Professions Education. We are grateful to all key informants, nursing students who provided invaluable information during the second phase towards the development of the framework, and all expert stakeholders who participated in the framework validation workshop. We are also grateful to Ms Jackie Viljoen for the language editing of the manuscript. The Ghana Nursing and Midwifery Council, the Ghana Registered Nurses and Midwives Association, and the Health Training Institutions Secretariat of the Ministry of Health of Ghana are appreciated for their invaluable contribution to this work.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijans.2025.100830>.

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