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Clinical education in undergraduate nursing in Ghana: a gap analysis

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Abstract

Background Nursing education comprises theory and practice as two complementary parts. In Ghana, the clinical education space is inundated with many challenges, disrupting the intended purpose of clinical education. The multifactorial challenges include student issues, nurse and educator concerns, management and resource issues. To find solutions, there is a need for a critical analysis of the current clinical educational practices to inform the development of feasible and sustainable approaches for nursing education. This article, therefore, reports on a gap analysis of clinical education in Ghana.

Method A qualitative descriptive design underpinned the study and was executed through key informant interviews, focus group discussions and document analysis. A total of seventy-three participants, drawn from four nursing education institutions and eight clinical sites located in four administrative regions in Ghana, participated in the study. These participants comprised four principals, four heads of accounts, eight clinical coordinators, eight nurse educators, twelve preceptors, and thirty-seven final-year undergraduate nursing students. Data analysis was done deductively against the Global Pillars for Nursing Education, yielding three themes and eleven sub-themes.

Results For theme 1, the study revealed a lack of a comprehensive competency-based assessment, ineffective interprofessional communication, and a non-stimulating clinical education climate. For theme 2, disregard for available admission standards and non-integration of interprofessional education into the undergraduate curriculum was found. In the case of theme 3, insufficient clinical experience of nurse educators was detected, financial resources to support clinical activities optimally were insufficient, and nursing schools lacked independence to support nursing education effectively.

Conclusion This study identified gaps in the clinical education of undergraduate nurses in Ghana when measured against the Global Pillars for Nursing Education. Gaps in clinical education compromise competence at graduation, resulting in nursing graduates who negatively impact health outcomes. Implementing targeted strategies could enhance clinical teaching and learning in undergraduate nursing education in Ghana.

Clinical Trial Number Not applicable.

Keywords Clinical education, Gap analysis, GANES, Ghana, Low and middle income, Undergraduate

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Background

There has been a reported decline in the quality of nursing services, ineffective nursing practices, and job attrition attributable to the gap between theory and practice [1, 2]. Various factors are attributed to this decline in the quality of nursing services, including the incompetence of newly graduated nurses. The incompetence of freshly graduated nurses has been cited [3, 4] as creating problematic situations in clinical settings [3]. Nursing education is expected to produce practice-ready nurses competent in rendering quality and safe nursing care [3], which is not the case in many countries globally.

Clinical competence in nursing is the capability to integrate knowledge, experience, clinical reasoning, sound clinical judgment, skills, beliefs, values, and attitudes into the accomplishment of one's professional role as a nurse in a given clinical situation [5]. Clinical education in nursing is focused on adopting approaches to drive the development of clinical competency of nursing students to fulfil professional standards and requirements [6]. Clinical education allows students to integrate and transfer theoretical knowledge into direct patient care and develop problem-solving and decision-making skills [7], time-management skills, and collaboration with other healthcare providers, ultimately developing clinical competence [8–10]. A crucial connection exists between the quality of clinical nursing education experience and the development of clinical competence. All nursing graduates must develop clinical competencies [11] in high-quality clinical learning environments.

Several factors have been cited to influence clinical learning and teaching outcomes directly. For instance, a well-resourced clinical environment [12, 13] and an adequate number of nurses in the clinical environment [14] have been identified as supportive factors in clinical education. Conversely, multifaceted challenges have been reported to disrupt the intended outcome of clinical education. The curriculum, the administration of NEIs, students, clinical staff, a lack of resources, and the clinical learning environment (CLE) have been reported to compromise the quality of clinical education for undergraduate nursing students [14–16]. Consequently, these challenges contribute to the theory–practice gaps [17–19], poor transfer of learning for undergraduate nursing students, and ultimately compromise competence development and attainment among nursing students. This is a concern for practitioners, educators, and students [19, 20]. Low-income settings have been reported to have compromised CLE, which eventually affects the quality of nursing graduates.

Like other settings, the clinical education of nursing students in Ghana is engulfed in many challenges emanating from a lack of resources and support of clinical nurses, ineffective clinical supervision, and insufficient classroom preparation of students [17, 21–23]. Other drawbacks are poor student–clinical nurse relationships [22, 24], poor collaboration between NEIs and the clinical sites [25], theory–practice confusion among students [26], and the attitude of students toward clinical education [27]. These reported challenges compromise the development of competence among nursing students in Ghana. Ghana battles with a complex disease burden [28], a shortage of health professionals [29], and limited opportunities for post-registration mentorship and induction for newly qualified nurses [30]. Nurses in Ghana must be competent at graduation to serve the communities effectively.

Preceptors play instrumental roles in nursing students' clinical learning [31–33]. The preceptorship model [34] has been touted as one of the most useful models in clinical education, where preceptors support students in developing clinical competencies [34]. The adoption of the preceptorship model to guide the clinical learning and teaching of nursing students at the placement sites in Ghana has not yet yielded the desired clinical learning and teaching outcomes [35].

Nursing education's theory and practice components can be likened to the two sides of the same coin; they are interconnected and inseparable. Although clinical education occurs mainly in the clinical placement site and simulation laboratories, it is crucial to acknowledge that activities within the clinical milieu are highly influenced by the curriculum content that guides the nursing program and the NEI responsible for its implementation. Earlier studies conducted in Ghana on similar issues related to clinical education appear to have viewed clinical education as separate from nursing education, hence losing sight of the complex, influential factors that have the propensity to optimise or disrupt clinical learning outcomes [36]. As a result of those studies ignoring the complexity of clinical education as part of a bigger program, recommendations from such work may not be useful and sustainable in addressing the root causes of challenges in Ghana's current clinical learning environment. To improve the outcomes of clinical education, there is a need to view the clinical education of nursing students as an interconnected part of the broader nursing educational system.

The Global Alliance for Leadership in Nursing Education and Science (GANES) has developed global pillars for nursing education [37] in response to the World Health Organization's (WHO) call on the international community to scale up, transform, and strengthen the capacity and quality of nursing education [38]. The global framework outlines specified expectations for three interrelated pillars. The three pillars acknowledge the complexity of nursing education, reflecting an integration of learning, practice, and administrative standards related

to undergraduate nursing education (see Fig. 1). The first pillar is learning outcomes, including knowledge and practical skills, communication and collaboration, critical thinking, clinical reasoning, clinical judgement, professionalism and leadership. The second pillar is related to standards for nursing education programmes, which focus on the curriculum, admissions, and learning experiences. The third pillar reflects educational institution standards, including faculty, instructors and preceptors, resources, leadership and administration, and outcomes [37].

Undergraduate clinical nurse education in Ghana does not develop competent nurse graduates optimally. Current models adopted for clinical education do not seem to improve the quality of nursing education [35]. Moreover, studies that have investigated clinical education in Ghana appear not to have engaged critically with the complex dynamics of nursing education, as they present clinical education as isolated from other facets of nursing education [26, 36, 39]. This article reports on a gap analysis conducted in the southern zone of Ghana, which was aimed at understanding the gap between expected clinical and educational practice and the prevailing practice in Ghana from the lens of the Global Pillars for Nursing Education. This article argues that clinical education is interconnected with theory and the entire nursing educational programme. Understanding the contextual factors influencing gaps in clinical education practice is vital. Understanding the reasons behind the gap between practice and expectation would provide insight into developing feasible and sustainable approaches to enhance clinical education in Ghana.

Methods

Aim of study

This study aimed to explore the gaps in clinical learning and teaching context in undergraduate nursing education in Ghana.

Design

The current study employed a descriptive qualitative design executed through key informant interviews (KIIs), focus group discussions (FGDs), and document analysis. The design allowed the researchers to explore the participants' perspectives on clinical learning and teaching [40]. In addition, document analysis as an additional qualitative methodological design made it possible to systematically review, describe, interpret, and integrate text in relevant documents regarding a concept or phenomenon [41]. The current study used document analysis

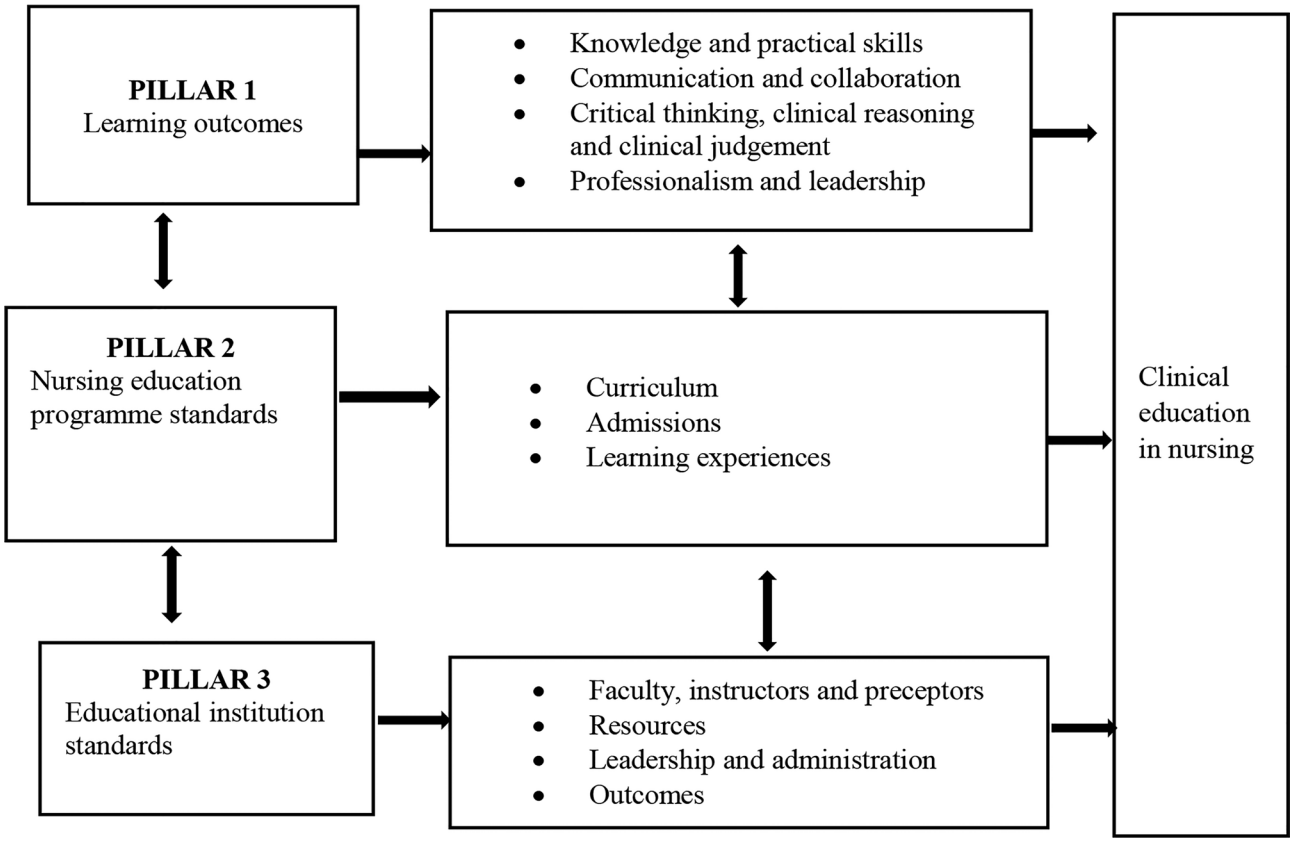

Fig. 1 Conceptual representation of the global pillars for nursing education

to complement the other data sources to understand the gap between current and expected education practices within clinical education for undergraduate nursing in Ghana.

Setting

The study was conducted in four public NEIs and at eight clinical sites drawn from four administrative regions in the southern zone of Ghana. The clinical sites included in the study are facilities available to all NEIs for clinical learning. These sites were conveniently chosen due to geographical accessibility and feasibility for the researcher, as they represented a typical clinical education site for nurses in Ghana. Table 1 shows the characteristics of the study sites.

Population and sampling technique

The population for this study ($N=73$) comprised the principals of each of the four NEIs ($n=4$) and their corresponding heads of account ($n=4$), two nurse educators from each of the selected NEIs ($n=8$), final-year diploma in nursing students ($n=37$) from the four chosen NEIs. A clinical coordinator each ($n=8$), and preceptors were ($n=12$) from eight clinical placement sites of the selected NEIs. A purposive sampling technique was employed to select the 73 participants for this study. The purposive sampling technique was appropriate for this study as it allowed the authors to recruit participants who could provide relevant information and detailed descriptions of the clinical education of undergraduate nursing students.

Data collection and management

Data were collected between November 2023 and May 2024 using document analysis, KIIs, and FGDs. Relevant documents were procured from stakeholder institutions, such as the Nursing and Midwifery Council (N&MC) of Ghana, the Ghana Tertiary Education Commission (GTEC), and the selected NEIs. The documents procured from the N&MC were the Diploma in Nursing programme curriculum [42], a logbook for tutors and lecturers [43], training institution and clinical and field practice schedule for Diploma in Nursing students [44], and the procedure manual for the Diploma in Nursing programme. The document detailing the job description for the various cadres of tutors in public NEIs was procured from the selected NEIs. Furthermore, the standards for tertiary institution libraries in Ghana and the standards for physical facilities for tertiary institutions in Ghana were procured from the GTEC. The documents used for assessing students' clinical performance were procured from the selected NEIs. Thirty-six [36] KIIs and four FGDs involving 37 students were conducted. The participants for the KIIs were chosen from the NEIs and the clinical sites included in the study while the students were drawn from the four chosen NEIs and in the groups of 9, 8, 10, and 10 from site 1 to site 4, respectively. The venue, date and time for the interviews and FGDs were scheduled at the convenience of the participants. The KIIs were conducted individually and face-to-face. In the case of the FGDs, the heads of programmes of the selected institution assisted in choosing the appropriate venue and time for the discussions in each institution. All the KIIs and FGDs were conducted in English by the first author. Interviews lasted between 45 and 120 min, and probes were used to elicit detailed information (see supplementary file 1 for the KIIs interview guide and supplementary file 2 for the FGDs guide). The KIIs and the FGDs were audiotaped with participants' consent, while participants' informal non-verbal cues were documented in the field notes. Signed informed consent forms were kept in a locked cabinet. Participants were assigned unique codes to ensure confidentiality and anonymity. The codes were formulated by combining site, population, and recruitment order. For instance, the codes for site 1 participants are as follows: S1Pr, S1ACC, S1NE1 and S1NE2, S1STN1 to S1STN9, S1CC1, and SICC2, S1P1 to S1P3 to represent the principal, accountant, nurse educators 1 and 2, student nurses 1–9, clinical coordinator, and preceptor respectively. The codes for

Table 1 Characteristics of the study sites

Study site	Final-year student population	Educational programmes	Clinical placement sites (CPSs)	Type of health facility or hospital	Bed capacity	Number of preceptors
Site 1	135	RGN	CPS1	Teaching	306	20
		RCHN	CPS2	Municipal	150	19
Site 2	228	RGN	CPS1	Regional	470	25
		RM	CPS2	Teaching	531	10
Site 3	134	RGN	CPS1	Municipal	96	13
		RM	CPS2	Polyclinic	50	3
Site 4	247	RGN	CPS1	Regional	262	30
		RM	CPS2	Municipal	103	3

* CPS: clinical placement site *RGN: Diploma in Nursing* RM: Diploma in Midwifery* RCHN: Diploma in Community Health Nursing*

the remaining three sites were formulated using the same approach.

Methodological integrity

Trustworthiness is the application of techniques to ensure the accuracy of findings in a qualitative study [45]. The trustworthiness of the current study was guided by the criteria proposed by Lincoln and Guba [46]. They are credibility, confirmability, dependability, and transferability.

These were ensured in the current study as follows:

Credibility This was ensured through prolonged engagement with the participants at all the study sites. Participants were given the information sheet about the study, a consent form, and guiding questions for the interview. This provided the participants with knowledge about the study. The guiding questions for the key informant interviews and the focus group discussions were pretested to refine any ambiguous questions before the main interviews and discussions.

Confirmability The KIIs and the FGDs were audiotaped, and member checking was conducted. The first author and one of the supervisors analysed by independently coding two transcripts and comparing codes to reach a consensus. The first author and all the supervisors reviewed all the codes. Afterwards, the first author used the agreed-upon codes to code all the transcripts.

Dependability The researchers used demographic data collection forms, audio recordings, and field notes to ensure all necessary data were collected. An audit trail was maintained throughout the entire research process.

Transferability Although all the data were included in the data analysis, the findings of this study may not be transferable due to the context specificity of the findings. Nevertheless, a comprehensive description of the study settings, methodology, and background of the participants was provided to determine the applicability of the findings in similar situations.

The documents analysed in this study were procured from authentic sources.

Data analysis

Deductive analysis was done in this study to determine the gaps in undergraduate nursing clinical education. The researcher transcribed all the informant interviews and focus group discussions verbatim. Two data analysis cycles were completed, as suggested by Saldaña [47]. The first cycle involved multiple steps, where the initial step involved the researcher reading and re-reading the data to obtain a general picture of the participants' views. This general impression was recorded on a separate data sheet. The transcripts were then exported to the ATLAS. ti version 24 software for coding. The next step comprised coding the data. Initial, open and in vivo coding were used to code the data generated from the transcripts. Initial and open coding were used to reveal the participants' unique experiences. In contrast, in vivo coding supported the analysis by allowing some poignant expressions to be captured throughout the data processing. The second data analysis cycle was done using pattern coding [47] to code the data emerging from the first cycle, including comparisons with the findings of the document analysis. Eleven code groups were generated based on the Global Pillars for Nursing Education. Structural coding was used to group the data from the interview transcripts and the documents against the Global Pillars for Nursing Education. The merged codes and the information gathered from the document analysis were aligned with the code groups to identify the gaps in clinical learning and teaching in undergraduate nursing education in Ghana.

Results

The demographic characteristics of the participants are illustrated in Table 2 below. The outcome of the thematic analysis is subsequently presented according to the global pillars.

The gap analysis results are presented under the three global pillars for nursing education as central themes and their supporting eleven sub-pillars as sub-themes. The themes and sub-themes are presented in Table 3 below.

Theme 1: learning outcomes

According to the GANES, learning outcomes focus on the competency expectations that the nursing graduate should be able to implement after the programme in the specific areas of knowledge, skills, and attitudes. The first theme describes the learning outcomes under four sub-themes: knowledge and practice skills, communication and collaboration, critical thinking, clinical reasoning, clinical judgement, and professionalism and leadership.

Knowledge and practice skills

The programme is expected to prepare the graduate to demonstrate essential competencies regarding knowledge and practice skills upon completion. However, the lack of a comprehensive competency-based assessment approach was identified, where the current practice was sporadic and not aligned with best practices. Evidence showed that the assessment of clinical skills during students' clinical placement was verbal. A preceptor from site 4 shared:

> *Before I sign the assessment form for a student, I ask the student if they have achieved the clinical objec-*

Table 2 Demographic characteristics of study participants

Variables	Principals (*n* = 4)	Accountants (*n* = 4)	Nurse educators (*n* = 8)	Clinical coordinators (*n* = 8)	Preceptors (*n* = 12)	Nursing students (*n* = 37)
Gender						
Male	1	3	2	2	1	15
Female	3	1	6	6	11	22
Age group (years)						
21–25	–	–		–	–	28
26–30	–	–		–	–	9
31–35	–	–		–	–	–
36–40	–	1	2	5	3	–
41–45	–	1	3	3	7	–
46–50	–	2	2	–	2	–
51–55	2	–	1	–	–	–
56–60	2	–	–	–	–	–
Level of education						
Bachelor's	–	–	2	3	7	–
Master's	4	4	6	5	5	–
PhD	–	–	–	–	–	–
Number of years in position						
3–5	1	1	2	2	8	–
6–8	1	3	2	6	4	–
9–11	2	–	4	–	–	–

Table 3 Themes and sub-themes

Themes	Sub-themes
Theme 1: Learning outcomes	Knowledge and practice skills
	Communication and collaboration
	Critical thinking, clinical reasoning, and clinical judgement
	Professionalism and leadership
Theme 2: Nursing education programme standards	Curriculum
	Admissions
	Learning experiences
Theme 3: Educational institution standards	Faculty/instructors/preceptors
	Resources
	Leadership and administration
	Outcomes

> *tives. If the student says he or she can check vital signs … I ask the student … to tell me how to check BP [blood pressure] step by step …, and then I assess him or her.* **[S4P1]**

Although analysis of the Diploma in Nursing curriculum document showed courses to expose students theoretically to the care of varied individuals, it was gathered from the KIIs and FGDs that students lack clinical placement in some clinical departments they are expected to work in upon graduation despite theoretical learning in the classrooms. The reason for this gap is students' limited exposure to diverse clinical opportunities.

> *Since I started clinical placement in my first year, I've always been in the medical ward. I've never been to the surgical ward, so I don't know what a surgical patient looks like. But I've been taught the pre-, intra- and post-operative care in the classroom. But I don't know how a surgical patient is cared for on the ward.* **[SISTN9]**

Another gap was that students had limited support from clinical nurses during clinical placement. The ward nurses expect students to carry out procedures based on the knowledge they acquired from the classroom.

> *We are learning as students; the ward nurses should help us. During a clinical placement, I was asked to catheterise a male patient. I remember the theory, but the practical aspect was a challenge. The ward nurse said that because I am in my final year, I should be able to catheterise a patient. It was a difficult one for me. [***S3STN7***]*

Additionally, it was identified that clinical placement opportunities were not aligned with clinical learning objectives.

Sometimes, I send some students to the other units, such as the laboratory, even though it is not part of their clinical objective. **[S3P3]**

Another gap identified was the weak educational outcomes on global perspectives on human rights, social justice, health equity, global awareness, and the interconnectedness of systems. Analysis of the Diploma in Nursing curriculum revealed no content on these global perspectives.

Communication and collaboration

The document analysis revealed that in the Diploma in Nursing curriculum, courses such as therapeutic communication and professional adjustment in nursing prepare students for communication at the clinical site. However, the clinical placement assessment tool does not align with the expected learning outcomes.

On the assessment form of the students from some of the schools, there is a communication component to assess the students' verbal or written communication skills during placement. The fact is, we don't assess. I just write or tick something for the student on the assessment form to represent something. That is all. **[S4P2]**

Additionally, the Diploma in Nursing curriculum has the informatics in nursing and midwifery course, designed to expose students to documentation on electronic platforms. However, the analysis revealed that students had documentation challenges at the clinical placement site. Some hospitals have integrated electronic documentation into their operations, and students are unfamiliar with the system. Due to the migration to an electronic platform, there is a lack of paper copies of the temperature, pulse, respiration, blood pressure charts and nurses' notes for students to use for documentation.

Students have difficulties with documentation because this hospital has gone paperless [electronic] … The students are not granted access to the electronic system. Sometimes, I allow the students to document on the electronic platform, but they seem not to have any idea. Also, we don't have paper copies of the nurses' papers for them to document … **[S4CC2]**.

Another gap identified in the gap analysis is the non-alignment of clinical placement and assessment objectives on communication. The reason is that the clinical objectives do not include clear objectives for communication.

When you go through the clinical placement objectives, you will never find

a single objective stated to measure anything related to communication.
NEIs should include clinical objectives for communication. **[S3P2]**

Ineffective interprofessional communication was an additional gap identified. This is because nursing and other health professions education students mostly do not communicate during clinical placement. The students do not deem it necessary to communicate among themselves during clinical placement.

You don't see nursing students communicating with medical or physician assistant students … they [health professions education students] need to be sensitised on interprofessional communication. **[S2P2]**

- ***Critical thinking, clinical reasoning, and clinical judgement.***

Another gap identified was students' ineffective application of the nursing process during clinical placement. Some of the reasons were that students did not understand the care plan from the classroom, and there were no opportunities to draw the care plan on the ward during placement.

There is a problem: the students do not understand the care plan. What they are taught in the classroom is abstract. When they come to the ward, they must draw the care plan using real patients. They are supposed to identify a patient's problems and … select the best care strategies for the patient to feel better. But it is not done. **[S4CC1]**

Another gap identified was a lack of self-direction among students in clinical learning. This was because some students were not interested but were forced into nursing, so they were not motivated. Some students reflected on being disappointed at the quality of responses they received to their questions from some of the staff during clinical placement. Others do not get answers to their questions at all. Yet more students were embarrassed by the nurses when they asked questions during placement.

In the first place, I was pushed into nursing, so nothing motivates me to take the initiative to learn in the classroom, skills laboratory or clinical site. **S3STN3**.
We don't receive answers when we [students] ask questions on the ward. Sometimes, the nurses will

embarrass us. So, I have decided not to ask any questions when I go to the ward. **S1STN1**.
Also, nursing was seen as an apprentice-based approach. The reason is for students to learn ward routines.
Whenever we [students] went to the clinical placement site, we were made to follow the
Nurses, observe and learn from them. When they [clinical nurses] are performing the
procedures, they tell you [the student] to watch closely so that you [the student
can repeat the same steps. **[S2STN6]**

A non-stimulating clinical education climate was also identified as a gap in students' clinical learning and teaching. The reason could be that the clinical environment is not conducive to learning.

The school's poorly equipped skills laboratory makes teaching and learning difficult. … as a nursing student, I expect that when I go for clinical placement, it should make a difference, but no, I just go empty and come back empty. **[S1STN9]**

Besides, there was an absent culture of evidence-based practice (EBP) among nursing students, even though the students are taught research methods as a course in the Diploma in Nursing curriculum document. One reason for this gap is the poor collaboration between NEIs and the practice setting.

As a clinical coordinator, I can say that nursing students are unprepared for evidence-based practice. They are taught research, so I think the system should be structured so that we meet to talk about research for students to see. Such meetings should be organised to share and discuss research findings and even do research together. But there is nothing like that. How will students embrace evidence-based practice? **[S1CC1]**

Again, analysis of the Diploma in Nursing curriculum document revealed a course called 'First Aid, Emergency Preparedness and Disaster Management'. Findings from the KIIs, however, showed an absence of emergency and disaster-related opportunities for students, which may be due to a lack of simulation facilities and expertise.

*Students are taught first aid as a course in the classroom … However, the problem is that we cannot make students feel the practical part of the course's preparedness and disaster management aspects. How will we do that if we don't have the simulation facilities and the expertise? [***S3NE1***]*

Professionalism and leadership

Analysis of the Diploma in Nursing curriculum indicated that the professional adjustment course is designed to provide information on ethical codes and principles. A gap identified was that students had challenges transferring learning from classroom teaching on professionalism to clinical practice due to a non-conducive learning environment.

Students are taught professional adjustment, a course expected to expose them to ethical issues and acceptable professional nursing behaviour, such as avoidance of absenteeism, lateness, proper dressing … However, they do the opposite when they come for clinical placement, and I don't know why. **[S1P3]**

There was inadequate supervision and cognitive support for students during placement. The reason could be the preceptors' lack of knowledge of student supervision and support during clinical placement. This led to students performing some procedures without supervision and support from experienced clinical nurses:

*I was asked to feed a patient, which I had never done before. When I told the nurse to come and guide me, she asked me to feed the patient the way I feed my younger siblings at home. I fed the patient to the best of my ability and encouraged the patient to eat all the food. The next day … I was informed that the patient had passed on. Was it that I overfed him? [***SISTN6***]*

As part of the professionalism and leadership sub-pillar, students are expected to be advocates for clients and their families to optimise health and well-being. However, students were reported to be deficient in advocacy competencies because of their difficulties in communication during placement.

The students cannot communicate well when they come for placement. Some can only do so in the local language, not English. As a nurse, you cannot perform the advocacy role if you cannot communicate with the patient and the family. **[S2CC1]**

Theme 2: nursing education programme standards

According to GANES, nursing education programmes are anticipated to meet some expected standards in the domains of the programme curriculum, admissions, and learning experiences. The gaps identified in the three areas are subsequently presented.

Curriculum

The analysis of the total hours allotted for theory and practicum in the Diploma in Nursing in Ghana, as reflected in the curriculum document, shows 1,568 and 1,632 h, respectively. Although the hours for practicum are 64 h higher than those of theory, the gap identified during KIIs and FGDs was the insufficient clinical experience of nursing students, attributable to the short duration of clinical placement.

> *I don't understand how students will come and spend 1 week on the ward. They cannot learn anything, the clinical placement time is too short, and it is not enough for the students to gain clinical experience.* **[S3P3]**

Standards require that the curriculum development and review process include key stakeholders. Nevertheless, evidence from the 2021 Diploma in Nursing curriculum document revealed that students and alumni have been excluded from the development and review process of the 2021 Diploma in Nursing curriculum, demonstrating a less consultative approach.

Admissions

Analysis of the GTEC standards regarding physical facilities for tertiary institutions in Ghana revealed that class sizes should be between 30 and 100. Contrary to these standards, high student intake is disproportionate to the available educators and resources in nursing schools. The reason could be a lack of collaborative planning between the Ministry of Health (MoH), Health Training Institutions (HTIs) secretariat, and the heads of NEIs to consider their nurse educator and infrastructure strength before admissions.

> *The ministry [MoH] does not check with the principals about their teaching staff capacity and available infrastructure before the admissions … admissions will end. Still, the ministry [MoH] will keep sending students to us. The first-year class is 300 and over, and the Tutors are suffering.* **[S1Pr]**

Another gap identified was a disregard for available admission standards in nursing education. Various factors influence this process, including weak leadership in nursing education and political interference.

> *Every year, applicants are informed about the time to apply with entry requirements and all the necessary information. However, the fact remains that the admission standards for nursing education are not respected … the politicians do whatever they want with our admissions.* **[S3Pr]**

Learning experiences

As part of the learning experiences, students should be exposed to learning opportunities through simulation and placement in various clinical settings and with diverse populations. However, a significant gap identified in this study was scheduling students to only one unit during their clinical placement without recourse to their clinical objectives. This situation could be attributable mainly to poor coordination in students' clinical placements.

> *Each time we come for clinical placement … our clinical objectives are presented to the clinical coordinators so that they can place us in various units to learn the skills we are supposed to know. But … the coordinator decides which unit you should go to … in our case, we [the entire group of students] have only been to the medical and surgical wards. We have never been to the public health unit, the maternity ward or the theatre, so we don't know what is happening there … we pleaded to be placed in other units to no avail …* **[S3STN7]**.

Another gap identified under this sub-theme is the non-integration of interprofessional education into the Diploma in Nursing programme curriculum. It might be that stakeholders tasked with developing and reviewing the curriculum have not considered this subject matter.

> *Interprofessional education is a topical issue, and we cannot do away with it. It must have its place clearly in the nursing curriculum. I had an opportunity to join a few interprofessional education sessions, and … it was wonderful …* **[S4Pr]**.

Theme 3: educational institution standards

The educational institution is supposed to meet essential expectations. Gaps were identified, indicating that the standards were not met. These gaps are captured under four sub-themes.

Faculty, instructors and preceptors

The gap analysis of the clinical teaching and learning milieu revealed that educators were not up to date with EBP, with a possible cause being that there is no active, continuous professional development (CPD) in terms of EBP or that educators are not motivated to engage in clinical-oriented CPD.

> *Nurse Educators must be abreast with EBP issues to enrich their clinical knowledge base; it must be a personal drive. A few do, but most expect the school to nominate them before they go. We nomi-*

nate sometimes, but tutors must be hungry for EBP knowledge. **[S4Pr]**

Nurse educators were found to have insufficient clinical experience. This was linked to the disregard for the clinical expertise of nurse educators during the tutor recruitment process and the non-enforcement of the tutor logbook initiative by N&MC and HTI:

HTI no longer considers the clinical experience required to be a tutor. This is because some tutors posted to the schools are theory-based tutors. The clinical skill knowledge is not there at all. One thing that may help such tutors enrich their practical skills base is when the logbook initiative by N&MC is enforced. HTI should consider the logbook during promotion interviews for tutors … **[S2Pr]**.

Another gap revealed was the poorly implemented clinical-oriented CPD for nurse educators. This is attributable to N&MC's inability to monitor the tutor logbook.

I am a nurse educator, and I can say that when it is time to renew our PIN [personal identification number], the N&MC does not check our CPD status. I once asked why it is so, and I was told that because I am a tutor, it is presumed that I read new things every day, so I am abreast with the current issues. N&MC should be checking the logbook for tutors. It will motivate us to improve our CPD obligations. **[S4NE2]**

Again, the inadequate number of nurse preceptors was identified as a gap in the clinical education of nursing students. The reason for this is the failure of stakeholders to identify and train more preceptors.

The preceptor work is not easy; there are not many of us. In this hospital, there are only four or five preceptors. More preceptors need to be identified and trained. **[S3P2]**

Additional gaps were the preceptors' lack of clinical experience and expertise in clinical teaching. The most probable reason is the absence of preceptorship training programmes and the lack of orientation or induction into preceptorship.

I am the clinical coordinator in this hospital, and I can say that some of the preceptors lack experience in teaching students. Not everybody can be a preceptor; a lot goes into preceptorship. There should be a training programme to equip the preceptors with the knowledge needed for preceptorship. The N&MC, MoH and HTI must collaborate and train preceptors. I heard about a national preceptorship workshop; I hope this will see the light of day. **[S2CC2]**

The next gap identified is the unclear job description of nurse preceptors. This gap is attributable to the failure of stakeholders to appoint nurses officially as preceptors, as there is an appeal for the utilisation of the preceptorship model for the clinical education of nurses in Ghana.

They said I am a preceptor … I don't know what exactly I am to do and not to do. There is no document showing that I am a preceptor; we need to sign an agreement with the stakeholders so that … I know what I am supposed to do and the reward package. **[S2P3]**

The next gap recognised was nurse preceptors' demotivation in teaching student nurses. The reason is the lack of incentives and recognition as a preceptor.

The preceptor's job is not easy. You must manage and teach students as you perform routine nursing duties. The key issue here is that, as a preceptor, we are not motivated … **[S1P1]**.

Furthermore, a fragmented clinical teaching approach was identified as an added gap. This was due to a lack of collaborative planning between the NEIs and clinical practice.

Nursing is both theory and practice. For us to succeed in the clinical education of nursing students, tutors, preceptors, and clinical coordinators must plan together. We need to collaborate in clinical teaching and supervision. As tutors, when we go for clinical supervision, we must spend some time and perform procedures with students, but we don't. **[S4NE2]**

The final gap under this sub-pillar is the poor clinical training outcomes attributable to large student numbers due to poor adherence to GTEC standards.

The number of students being admitted into nursing is too high. The wards always get crowded … when they come for placement. This affects their clinical skills acquisition, and supervision and teaching become challenging. They hide behind the huge numbers, absent themselves, and loaf around … most don't learn anything in the clinical setting. We are training quantity and not quality. **[S2CC1]**

Resources

Concerning resources, inadequate library and internet facilities in NEIs were identified as the first gap. This is due to poor adherence to the library standards of GTEC.

> *The school's library is too small for the huge student population …the books are too old. Also, the school does not provide internet services to the students or the tutors. We need the internet to support the teaching-learning process.* **[SINE2]**

The second gap related to resources is the inadequate resources at the school and clinical sites. The main reasons for this gap were cited as the high student enrolments combined with the lack of infrastructural support by the government.

> *We don't have enough resources in the school. Classroom and hostel accommodation are inadequate for the large number of students. Clinical sites have no care plans, vital signs charts, or equipment for performing nursing procedures.* **[S3STN4]**

The third resource-related gap identified was the logistical and transportation challenges of the NEIs. This is partly due to the high student enrolment numbers exceeding the existing infrastructure and the inability of the government to provide schools with sizable vehicles.

> *The school does not have vehicles for our operations, such as student clinical supervision. Our bus is old … and too small for the large student population.* **[S3Pr]**

Inadequate teaching and learning resources are reflected in the fourth gap. This is due to a lack of support from the government.

> *We do not have enough teaching and learning resources … when teaching nursing procedures, you must show the various equipment to students, but we don't have them. It makes teaching and learning difficult. Sometimes, we download videos of procedures, but they … don't fit our context.* **[S3NE1)**

Another gap found was the inadequacy of clinical skills and simulation laboratories. This is also an infrastructure constraint.

> *Our demonstration room is too small; there are too many students. Sometimes, we move the beds or equipment to the classroom for demonstrations.* **[S3NE2]**

Besides, a lack of awareness among clinical nurses regarding the approved procedure manual on the N&MC open-access mobile application has been identified as another gap. This is due to insufficient publicity among the nursing fraternity.

> *N&MC needs to bring copies of the procedure manual to the ward … if there is a mobile application, as you have just said, I have not heard or know about it.* **[S1P2]**

Insufficient financial resources to support clinical activities optimally comprised the final resource-related gap. The reason for this gap is the unrealistic amount allocated for the clinical-related activities on the students' itemised bill.

> *The government determines the students' bills … The amount allocated for clinical-related activities on the bill is inadequate. For the right amount to be determined, they must list the various clinical education-related activities …* **[S2ACC]**.

Leadership and administration

Regarding leadership and administration, the lack of independence of NEIs to support nursing education effectively has been identified as a gap. The NEIs are under the MoH; hence, the MoH has substantial control over the NEIs and does not allow principals to make critical decisions.

> *Principals … should be granted some autonomy in managing the schools. The MoH determines when students should reopen and vacate, students 'bills, and even admissions. However, if the MoH could grant the principals autonomy, a lot would change in the positive direction.* **[S1NE1]**

Moreover, one of the gaps identified was the absence of a clear memorandum of understanding (MoU) between NEIs and clinical facilities as a GTEC accreditation requirement. This gap is attributable to leadership and administrative lapses.

> *As part of the GTEC accreditation requirements, the schools are expected to have an MoU with the clinical sites. The … Ghana Health Service promised to issue the MoU on behalf of all public NEIs. However, that has not been done. As a principal, I have done so at a few facilities where students from this institution visit for clinical learning, but not all.* **[S4Pr]**

In addition, weak quality assurance (QA) mechanisms related to clinical teaching and learning have been

identified as one of the gaps. This gap stems from the lack of commitment and collaboration of stakeholders in the clinical education of nursing students.

> *The NEIs do not share their academic calendar with the clinical sites for planning; N&MC does not monitor the NEIs and clinical sites regularly, deliver students' clinical logbooks to NEIs on time; students do not know how to complete the clinical logbook … some NEIs do not submit clinical placement intention letters early to placement sites for planning.* **[S1CC1]**

Outcomes

Regarding the standards for educational institution outcomes, an ineffective implementation of programme evaluation by HTIs and the MoH was found to be a gap. The reason for this gap is a perceived lack of commitment by the HTIs and the MoH regarding programme evaluation.

> *The MoH and HTI should do more regarding the monitoring of the NEIs. Since I resumed as a principal, the HTI has never been here to monitor.* **[S3Pr]**

Poor implementation of ongoing evaluation and analysis of the evaluation data collected is an additional outcome-related gap. It has been established that, although some of the NEIs collect the evaluation data, analysis is not done. The reason for this gap is a lack of commitment from the NEIs to implement the tutor and the course evaluation initiative of the HTI and MoH.

> *The MoH and HTI initiated the tutor and the course evaluation on a semester basis. In this institution, we evaluate but do not analyse and use the report. We have all gone to sleep.* **[S2Pr]**

Likewise, the lack of implementation of evaluation data to improve nursing education was yet another gap identified in this study. The absence of commitment to the evaluation process may again be responsible for this gap.

> *Every semester, we evaluate the tutors and the courses they teach online. It's a good thing to evaluate our tutors and how they teach … But I have seen that they don't use the evaluation report for anything. It is just a formality, that is all.* **[S2STN8]**

The final gap identified concerning outcomes was the inefficient use of student evaluation data from clinical placement sites by NEIs. Equally, the lack of commitment by the NEIs to the clinical teaching-learning outcomes of nursing students is deemed responsible for this gap.

> *Due to the many students, we cannot review the assessment reports they bring from the clinical site. So, we are unable to make interventions for individual students.* **[S4NE1]**

Discussion

This article reports on one part of an overarching study aimed at developing a framework for enhancing clinical learning and teaching in undergraduate nursing education in Ghana. Reporting on a phase of the overarching study, we sought to explore and describe the clinical learning environment for undergraduate nursing education in Ghana. Data were analysed through the lens of the three Global Pillars for Nursing Education, which reflect an understanding of the interlinked elements of a nursing education programme.

Regarding the first theme, it was evident that the practices related to programme design, classroom education, clinical education, and practice were not aligned with best education practices. Balancing a heavy workload and the lack of opportunities for CPD reflect nurse educators' challenges in low-income settings towards aligning their praxis with evidence [48].

Accurate clinical nursing assessment of students' knowledge, skills, and attitudes guides in identifying students who have developed competence [49] and those who may need remedial action. In the current study, the application of poor assessment methods during the clinical placement of nursing students was evident. Some reasons for the sporadic assessment approaches were workload and a lack of knowledge of best assessment strategies. In their study, Norcini et al. [50] concur with these reasons and propose the development, guidance and training of teaching staff regarding effective assessment, feedback, and the criteria for good assessment. Nurse educators and the clinical facilitators involved in the clinical teaching of undergraduate nursing students should be trained in best assessment practices for more objective assessment outcomes.

Interprofessional communication and collaboration among healthcare workers ensure quality and safety in healthcare [51]. Interprofessional learning would improve communication and collaboration between students and prepare them for interdisciplinary teamwork after graduation [52]. However, in the current study, the nursing students demonstrated ineffective interprofessional communication and collaboration with other health professions students at clinical placement sites. Even though the current curriculum for the Diploma in Nursing has a communication course, there is no explicit content on interprofessional communication and collaboration. It is, therefore, imperative to employ strategies to improve interprofessional communication and collaboration among students in health professions.

Nurses are expected to possess critical thinking, clinical reasoning, and clinical judgement skills to provide quality and safe health care to patients, as it has been reported that this is implemented through the nursing process [53–55]. A significant finding from the current study was the ineffective application of the nursing process in clinical placement. Some reasons are that most nurse educators and clinicians have a challenge in teaching the care plan – part of the nursing process – in the classroom and the clinical setting, leading to students' lack of understanding and application of the nursing process in individualised patient care planning. Previous studies have reported difficulties applying the nursing process in many African settings [56, 57]. This prompts an interesting question regarding understanding the current nursing models being used in practice, their impact on the professional identity of nursing, and whether the expected evidence-based nursing science is being practised in healthcare settings. A collaborative initiative for planning between the NEIs and the clinical staff is required to teach and apply the nursing process.

Per the current Diploma in Nursing curriculum, students are taught professionalism in nursing in the professional adjustment course. However, nursing students participating in the current study experienced challenges in transferring their learning of professionalism to clinical practice. The students improperly used phones at the clinical sites, absented themselves without permission, and reported late to the clinical site. The use of phones in nursing education has benefited students at the school and clinical sites. Improper use could, however, be distracting to the student and affect learning. Factors influencing training transfer in nursing include trainee characteristics, training design, and the working environment [58]. All members of the health profession are expected to be role models and to teach and inculcate the required values, attitudes, and behaviours in students [59].

The second theme focuses on standards for nursing education programmes. Nursing education is expected to meet specific expectations in curriculum, admissions, and learning experiences. A curriculum is the heart of every educational enterprise [60]. In Ghana, the N&MC is responsible for developing and revising the curricula to train the different cadres of nurses. Interprofessional collaboration is crucial to optimal healthcare delivery. Evidence exists that healthcare delivered by a team of well-functioning multi-professionals yields desirable care outcomes [61]. Although the Diploma in Nursing curriculum currently has relevant courses, it may also be seen as unresponsive to current trends, as there is no module on interprofessional education. An educational model where students of health professions programmes would learn theoretically and practically about, from, and with each other while in training may result in interprofessional collaboration in practice after graduation.

High student intake disproportionate to the number of educators has become common at the NEIs in Ghana. Regulatory bodies in Ghana set standards and entry requirements for the admission of students into NEIs [62, 63]. For instance, the GTEC specifies that classes should accommodate between 30 and 100 students. Furthermore, the WHO [64] set educator–student ratios at the following minimum levels: theory 1:25, tutorial 1:10, skills laboratory 1:15, and clinical 1:8. All the NEIs involved in the current study, however, had large student numbers, causing overcrowding in classrooms and skill laboratories, and at clinical placement sites similar to earlier studies [65, 66]. Although an inadequate health workforce has been identified as a basic hindrance to achieving the Sustainable Development Goals [52] and, hence, the necessity to train more nursing professionals, the quality of nursing education programmes cannot be overlooked. Nursing is a practice-based profession; its graduates are expected to gain the necessary competence to render high-quality care. Admitting high student numbers without the supporting infrastructure, material, and human resources could affect clinical learning and teaching in diverse ways, thus defeating the intended purpose. It is, therefore, necessary for NEIs to adhere to admission standards to have a student population that can be adequately trained with existing human and material resources.

The third theme is standards for educational institutions expected to be met by NEIs in faculty, instructors and preceptors, resources, leadership and administration, and outcomes. It was evident from the current study that nurse educators in NEIs lack sufficient clinical experience. One of the reasons for this occurrence is poor enforcement of the tutor logbook initiative of the N&MC, which is intended to keep the clinical skills of nurse educators updated. Another reason is the failure of HTIs to recruit nurse educators with the recommended five years of clinical experience into the NEIs. It was found that nurse educators were not familiar with EBP related to both educational and clinical practice. Student nurses in a related study mentioned the lack of supervisors' knowledge of current practices as a challenge to a good clinical learning experience [67]. Nurse educators are indispensable stakeholders in nursing students' clinical education; hence, they need enriched clinical skills to teach students. The N&MC, MoH, and HTIs could make the tutor logbook and evidence of clinical – oriented CPD as promotion prerequisites to encourage nurse educators.

The participants in the current study mentioned inadequate numbers and a lack of training of preceptors as other gaps bedevilling clinical learning and teaching. Preceptors occupy a pivotal position in the clinical education

of nursing students by serving as role models, tutors, coaches, mentors and supervisors [31–33]. In Ghana, the preceptor role is assumed mainly by registered nurses. However, an inadequate number of registered nurses has been reported [22], resulting in workload pressure on the few registered nurses. This could interfere with their support of students during clinical placement. Many recommendations on the preceptor–student ratios are available, such as 1:6 [68, 69], 1:15 [68, 70], and 1:15–20 [71]. The Ghanaian government and the Ghana Health Service (GHS) may have to consider employing newly qualified registered nurses to augment the workforce base at clinical learning facilities. Furthermore, stakeholders should consider a sustainable training programme for preceptors to improve their pedagogical skills.

The current study exposed the resource constraints at NEIs and clinical placement sites. As a result, students and preceptors are compelled to mimic reality by improvising. Specifically, the transportation challenges of the schools affect the ability to convey students to and from distant clinical sites and the student clinical supervision scheduled by tutors. The chain of challenges from the NEI level to the clinical placement sites could hamper the progress of clinical learning and teaching. Similarly, other studies in Iran [10], Malawi [14, 66], Angola [70], and Ghana [17, 22, 72] have cited resource challenges in the clinical education of nursing students. Some of these gaps could be due to infrastructural deficits, financial challenges, violation of the GTEC standards for physical facilities for tertiary institutions, and the library standards and guidelines for tertiary institutions in Ghana. The government should provide infrastructure and resource support to NEIs and clinical sites, and NEIs should adhere to GTEC standards. Stakeholders in the nursing education landscape may have to consider the application of technology to augment efforts in delivering clinical education.

The lack of independence of the nursing schools to manage their affairs is yet another gap affecting clinical learning and teaching. The MoH determines most activities at the NEI level. Similar observations were made by GTEC [73], which indicated that the MoH has substantial control over the NEIs, leaving minimal space for innovations to meet critical specific needs. For instance, the MoH plays a leading role in admissions, recruitment of nurse educators, preparation of student bills, and determination of vacations and school reopening dates. A lack of autonomy in nursing schools hinders their operations in essential areas, such as recruiting critical staff, admitting students to match the existing infrastructure, teaching staff strength, and budgeting [73]. There may be a need for broader stakeholder consultation to consider granting NEIs autonomy in the management of the institutions.

QA in nursing education encompasses the management of the day-to-day practices in NEIs that are quality-oriented to ensure that the programme meets the standards specified by nursing authorities [74]. An important observation from the current study was the weak QA mechanisms related to clinical learning and teaching, resulting from the failure of NEIs and regulatory bodies to monitor essential activities at NEIs and their affiliated clinical sites. Correspondingly, in an earlier study to assess the internal QA practices in selected NEIs in Ghana, health tutors were unsatisfied with infrequent and ineffective inspection by regulatory bodies [62]. Perhaps Ghana could learn a lesson from India, where the body responsible for regulating nursing education ensures quality in the institutions through regular visits, receiving feedback from students, consumers, hospitals and clinics and, in return, relaying feedback to schools and facilities [74]. Regulatory bodies may have to extend their QA efforts to the NEIs and clinical placement sites to ensure the facilities and personnel meet the quality expectations.

As a subsection of the educational institution standards, the outcomes focus mainly on evaluating the educational programme and programme outcomes and collecting, analysing, and using evaluation results to improve the programme. However, the findings from the current study indicated that, at the time, evaluation practices were ineffective. Formative and summative evaluation of a programme is essential [75]. As part of formative evaluation in nursing programmes, data on student, teacher, and preceptor satisfaction could be collected to improve the system. According to Lewallen [76], programme evaluation is crucial for NEIs to ensure that daily activities and practices reach desired outcomes. The same author [76] further argues that objective data can be examined through programme evaluation to guide decision-making and planning, provide the basis for changes, and improve programme outcomes. Key information regarding programme outcomes could be collected from students and graduates, employment data, national or state examination pass rates, and graduate programme satisfaction data. NEIs, the MoH, and other stakeholder institutions must constantly evaluate the nursing programme at the school and clinical placement levels to identify and rectify challenges that may prevent the nursing institutions from meeting their core goals.

Strengths and limitations of the study

The current study was the first to conduct a gap analysis of Ghana's entire nursing educational system. Involving multiple study sites provided a multidimensional perspective on clinical learning and teaching. Moreover, the employment of document analysis, KIIs, and FGDs (methodological triangulation) provided rich data, hence,

a holistic picture of the gaps in the clinical education landscape.

The transferability of these findings may not be possible due to the contextual realities captured in this study. However, the procurement and use of approved documents, such as the Diploma in Nursing programme curriculum, the tutor and lecturer logbook, and the field practice schedule for use by all public NEIs in Ghana, may make the findings transferable to other settings. A detailed description of the study sites and the characteristics of the participants could guide the determination of the applicability of the findings to similar settings.

Conclusion

The study highlighted critical issues in clinical education, including the lack of a competency-based assessment approach, disregard for admission standards, non-integration of interprofessional collaboration and communication into nursing education, insufficient clinical experience of nurse educators, inadequate number of preceptors and a lack of training. Other gaps are inadequate material resources at the NEIs and clinical sites, poor monitoring and evaluation functions of N&MC, MoH, and HTIs of NEIs and clinical sites, weak QA mechanisms related to clinical teaching and learning and the lack of autonomy of NEIs. These gaps could defeat the desire to produce competent nurses at graduation. Based on the findings of this gap analysis, the researchers make the following recommendations. Development of a comprehensive competency-based assessment approach, NEIs should adhere to admission and accreditation standards set out by the GTEC, revision of the Diploma in Nursing curriculum should consider an interprofessional communication and collaboration module, the HTIs and the MoH should make the logbook for tutors and lecturers a prerequisite for promoting nurse educators, all registered nurses should assume the preceptor role and be trained in preceptorship and pedagogical skills, the government should provide infrastructure and resource support to NEIs and clinical learning sites, N&MC, HTIs, and the MoH should strengthen the monitoring, evaluation, and QA mechanism of NEIs and clinical sites, and give administrative autonomy to NEIs.

Abbreviations

BP	Blood pressure
CLE	Clinical learning environment
CPD	Continuous professional development
CPS	Clinical placement site
EBP	Evidence-based practice
FGDs	Focus group discussions
GANES	Global Alliance for Leadership in Nursing Education and Science
GHS	Ghana Health Service
GRNMA	Ghana Registered Nurses and Midwives Association
GTEC	Ghana Tertiary Education Commission
HTIs	Health Training Institution
KII	Key informant interview
MoH	Ministry of Health
MoU	Memorandum of understanding
NEI	Nursing education institution
N&MC	Nursing and Midwifery Council
QA	Quality assurance
WHO	World Health Organization

Supplementary Information

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Supplementary Material 1

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Author contributions

K.A.H. conceived the idea and discussed it with C.N.N., A.O.A., and F.N., which led to a formal written proposal. K.A.H. collected the data. KAH analysed the data with C.N.N., A.O.A., and F.N. K.A.H. drafted the manuscript, which was critically reviewed by C.N.N., A.O.A., and F.N. The final manuscript was revised and approved by all authors.

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Data availability

The datasets used and analysed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

The study was executed with ethical approval 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 Committee (GHS-ERC: 003/07/23). Gatekeeper permissions were sought from the selected NEIs, the N&MC, the HTI, the GTEC, and the Ghana Registered Nurses and Midwives Association of Ghana (GRNMA). The study was conducted in compliance with the Declaration of Helsinki. The researchers observed all ethical principles applicable to human participants, including verbal and written informed consent, confidentiality, privacy, anonymity and participants' liberty to withdraw from the study at any stage without sanctions.

Consent for publication

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Competing interests

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