ORIGINAL RESEARCH

Competency-based and primary health care oriented undergraduate nursing programme: Curriculum development and implementation process

Barbara Dube[1], Ntombifikile Gloria Mtshali[1], Alexis Harerimana*[1,2]

[1]School of Nursing and Public Health, University of KwaZulu-Natal, Durban, South Africa
[2]School of Nursing and Midwifery, James Cook University, Townsville, Australia

ABSTRACT

Background and aim: Primary Health Care is a foundational element within the realm of healthcare reforms, serving as a linchpin for achieving Universal Health Coverage and Sustainable Development Goals. Globally, there is a growing emphasis on building a robust primary health care nursing workforce to meet the challenges arising from chronic and complex diseases. Nursing schools are expected to align their educational programmes to the population's health and the country's health context, thus integrating relevant primary health care related competencies into their curricula. The study aimed to analyse the process of developing and implementing a primary health care oriented undergraduate nursing curriculum in South Africa.
Methods: A qualitative grounded theory approach by Strauss and Corbin's framework guided this study. Forty participants—purposively selected—participated in the study. The data were collected using focus group interviews, in-depth interviews, observations, document analysis and memos. The data were analysed using the grounded theory method of constant comparative data analysis through a systematic coding, categorisation and theory-building process.
Results: The development of a primary health care oriented undergraduate nursing curriculum included: creating a curriculum team, establishing the context, obtaining the consensus on graduate primary health care competencies, determining curriculum foundation, selecting and organising the content and learning experiences, selecting experiential learning sites, selecting teaching, learning and assessment strategies. Furthermore, the study revealed competencies in primary health care expected from the students: care provision, professionalism, communication, collaboration, health advocacy, leadership and management and research. The implementation of a competency-based and PHC-oriented curriculum required the capacity building of facilitators, students, clinical mentors and preceptors and effectively adopting transformative teaching, learning and assessment.
Conclusions: A competency-based and primary health care oriented undergraduate nursing curriculum is a tool to assist in producing competent graduates who are relevant and responsive to the population's needs in a primary health care oriented healthcare system.

Key Words: Competencies, Competency-based curriculum, Curriculum, Primary health care, Nursing education, South Africa, Undergraduate

*Correspondence: Alexis Harerimana; Email: alexis.harerimana@my.jcu.edu.au; Address: School of Nursing and Midwifery, James Cook University, Townsville, Australia.

1. BACKGROUND

Primary Health Care (PHC) is a foundational element within the realm of healthcare reforms, serving as a linchpin for achieving Universal Health Coverage (UHC) and the health-related Sustainable Development Goals (SDGs).[1–5] This commitment to PHC was reaffirmed by governments in 2018 through the Astana Declaration.[5, 6] The World Health Organisation (WHO)[7] has meticulously defined PHC as "a whole-of-society approach to health that aims to ensure the highest possible level of health and well-being and their equitable distribution by focusing on people's needs and preferences (as individuals, families, and communities) as early as possible along the continuum from health promotion and disease prevention to treatment, rehabilitation and palliative care, and as close as feasible to people's everyday environment."

On a global scale, a significant emphasis is placed on primary healthcare principles. These principles encompass ease of access, active community involvement, the promotion of health, the prevention of diseases and the fostering of inter-sectoral collaboration.[8, 9] According to Murray-Parahi et al.,[10] "meeting the healthcare needs of local communities requires a focus on PHC and the integration of specialised care and other health sectors, including acute care, aged care, refugee and indigenous health services." With nurses forming the bulk of the health workforce in the healthcare system, producing a competent and effective nursing workforce is vital in transforming the healthcare system.[11, 12] In addition, nurses are central to improving access to quality patient care, enhancing the population's health outcomes and meeting the SDGs.[13]

Nursing education institutions are expected to offer programmes that respond to the healthcare system's demands and produce appropriate graduates in quality, quantity and relevance.[11, 14, 15] A PHC-oriented undergraduate nursing curriculum prepares students to provide comprehensive and holistic care to individuals, families and communities.[10] Adopting a competency-based approach when developing and implementing PHC-oriented curricula is essential.[16] This approach to the curriculum is viewed as a disciplined approach aimed at specifying the health problems in the population as well as the health system needs that need to be addressed and systematically identifying the requisite graduate competencies for health system performance which are used as building blocks and an organised framework around which systematic instruction, assessment, grading, and reporting are based.[17] A competency-based curriculum is gaining popularity in nursing education institutions as it is believed to have the potential to make the desired change in the education and training of nurses by producing competent

nurses who are fit for purpose.[14, 17–19]

In South Africa, the health care system is based on the PHC philosophy, and the country has committed itself to a number of reforms to improve the quality of PHC, such as the introduction of community healthcare workers in ward-based outreach to strengthen community-based health promotion, disease prevention and home-based care.[6] In South Africa, the PHC re-engineering is part of the broader policy commitment to achieving universal coverage.[6]

Globally, there is a growing need to build a solid primary healthcare nursing workforce to meet the challenges arising from chronic and complex diseases.[20] Preparing the next generation of students for PHC has implications for the practice readiness of the future PHC nursing workforce.[10] Nursing graduates are expected to be equipped with PHC-related competencies, and nursing education institutions should align their programmes to the population's health and the country's health context as they do not exist in a vacuum but exist for society and to influence change in society.[21–23] Academic institutions need to go beyond equipping students with discipline-specific theoretical knowledge and equip them with transferable skills essential to surviving in any work environment and the ever-evolving healthcare system.[24, 25]

Internationally, competency standards in PHC for nurses have been developed in numerous countries, such as Australia, Brazil, Canada, Thailand, South Africa and the UK.[20] According to Halcomb et al.,[20] the common themes in the PHC nursing competency standards included working together, clinical practice, communication, professionalism, education, health promotion, information technology, research and evaluation, infection control, cultural safety and management. In the context of South Africa, a study conducted by Strasser et al.[26] identified nine core competencies of primary healthcare nursing, namely: able to problem solve: consultation and health assessment skills; capable of managing common conditions such as tuberculosis, diarrhea, and acute respiratory infections and counselling skills; demonstrates effective communication and counselling skills; able to apply rational drug use; identifies when and where to refer; capable of using and accessing information; demonstrate a caring, confident approach; capable of providing general clinic management, and demonstrates a community orientation. Training around core PHC competencies would be a quicker way of producing competent nurses ready to work in PHC settings.[26]

Although there is a call to train competent nurses in PHC, Byfield et al.[27] argued that universities providing pre-registration nursing programmes have not yet refocused on providing PHC-oriented curricula due to the perception that

health care services require acute care nurses. The literature shows a growing concern that the education of nurses is not aligned with the health service delivery needs and that the graduates are not equipped with the competencies required to address the rapidly changing health profile of the population.[10, 14, 23, 28, 29] Lukewich et al.[30] reported that despite the increasing number of registered nurses employed in primary health care, there is a lack of consensus on their optimal roles, the implementation of their roles is not standardised, and education is not formalised.

Furthermore, there is a mismatch between graduate competencies and population health needs, and the curriculum has a narrow, technical focus, which does not take into consideration broader contextual understanding; it is fragmented, and subjects are less focused on an integrated and holistic approach but are instead hospital and disease-oriented with minimal attention paid to health promotion and illness prevention.[14, 29, 31] Training students in PHC has been hindered by a lack of paradigm shift from traditional teaching methods[28, 32] and negative preconceptions and attitudes held by nursing students towards nursing within PHC settings.[27]

WHO[31] warns that if graduates are not adequately prepared for the dynamic and complex healthcare system, many citizens will not receive services that are harmonious with their needs. Murray-Parahi et al.[10] reported that "limited PHC content and an emphasis on acute, episodic care in the curricula diminish the importance of PHC." Building a sustainable workforce requires support to prepare the next generation of nurses by providing authentic clinical practices in the community.[10] Training nursing students adequately in PHC requires the adoption of innovative teaching and learning approaches such as competency-based, problem-based and case-based approaches.[14, 18, 19, 29] The Lancet Commission Report by Frenk et al.[29] recommends transforming and scaling up health professionals' education by revising and updating curricula regularly, linking the disease burden to the training needs, adopting competency-based curricula, and equipping educators with the competencies required to produce the required graduates.

Byfield et al.[27] highlighted "the need for the healthcare industry and institutes providing pre-registration nursing education to work in partnership to provide education focused on primary health care for nurses to meet the healthcare challenges of the future." A contemporary curriculum needs to be balanced to produce a generalist nursing workforce who are able to work across diverse healthcare settings and address healthcare priorities.[27]

The study aimed to analyse the process of developing and implementing a competency-based and primary health care oriented undergraduate nursing curriculum in South Africa.

2. METHODS

2.1 Research design

A qualitative and grounded theory design guided this study—using a framework from Corbin and Strauss[33] A qualitative approach facilitated an in-depth study of the phenomenon.[34] The study was conducted at a selected university—offering a four-year undergraduate nursing programme—in South Africa.

2.2 Participants

The study participants included nurse educators, program coordinators, level coordinators, clinical mentors and preceptors—from school and clinical settings—and nursing students. Purposive sampling was used to select the study participants. Inclusion criteria for students were: being enrolled in the second, third and fourth years and willing to participate. At least one year of teaching experience or clinical supervision in the PHC setting and being willing to participate in the study were the inclusion criteria for nurse educators, program coordinators, level coordinators, clinical mentors and preceptors. Forty participants met the inclusion criteria and participated in the study: Eight nurse educators, one program coordinator, one level coordinator, four clinical mentors, two preceptors, and twenty-four nursing students. Nursing students were distributed as follows per academic year: Nine from second-year class, seven from third-year students and eight from fourth-year.

2.3 Data collection

The data were collected through focus group discussions (FGDs) and in-depth interviews—using a semi-structured interview guide, participant observation, and document analysis. FGD interviews allowed the researcher to hear multiple perspectives on developing a PHC-oriented curriculum. Participants were selected into homogenous groups to promote a comfortable group dynamic and freely share their thoughts about the phenomenon under investigation.[35] Four FGDs were conducted: FGD-1 had eight nurse educators, FGD-2 had nine (9) students from the second year, FGD-3 had seven students from the third year, and FGD-4 had eight students from the fourth year.

In-depth interviews (IDIs) were conducted using an unstructured interview to elicit relevant information from a curriculum expert (nurse educator), programme coordinator, level coordinators, clinical mentors, and preceptors. Observations were conducted in the classroom environment, a simulated clinical skills laboratory and clinical settings. During participant observations, the researcher watched for indications of

important concepts by sitting back and observing as events unfolded. According to Corbin and Strauss (2008), participant observations put the researcher where the action occurs in a natural setting. The researcher used an observation guide to ensure attention was paid to important concepts during fieldwork. During observations, the researcher posed questions to clarify what was emerging as important concepts from what was observed, audio-taped descriptions of concepts of interest by participants, and the natural conversations that took place. The documents analysed during the study included the undergraduate nursing curriculum. The curriculum included graduate competencies, learning contracts, schools' philosophy and mission statements, conceptual frameworks, reflective journals, and course outlines. The researcher also took field notes liberally and generated memos as additional sources of information.

2.4 Data analysis

The data were analysed using the grounded theory method of constant comparative data analysis through a systematic coding, categorisation and theory-building process. The constant comparison refers to an analysis process used in grounded theory to compare data from all sources, including analytic memos for coding and category development, as recommended by Silverman[36] and Tie et al.[37] Consistent with the principles of grounded theory, the data were analysed simultaneously with the data collection, which allowed the researcher to make adjustments along the way,[38] premised on the saturation of the theoretical concepts.[33] Data collection ceased when each category was sufficiently explained, and no new insights were gained, as Tie et al.[37] recommended. Three distinct stages of coding, namely open, axial and selective coding, were in line with Strauss and Corbin's grounded theory data analysis.[33]

(i) Opening coding is the first basic analytical step that pertains specifically to breaking down, examining, comparing, conceptualising and categorising data.[39] As noted by Strauss and Corbin,[39] during open coding, the data are broken down into discrete parts, closely examined, and compared for similarities and differences, and questions are asked about the phenomenon as reflected in the data, leading to discoveries.

(ii) Axial coding is the second stage of Strauss and Corbin's grounded theory data analysis.[39] It is a set of procedures whereby data are put back together in a new way by making connections between a category and its sub-categories from open coding.[39] The researcher manually managed the data by generating a list of similar categories through a sentence-by-sentence coding system.[39] Each category was examined as to how they are related to each other, such that all the

concepts within each category are fitted to the theoretical framework.

(iii) The final and last stage of Strauss and Corbin's grounded theory data analysis is selective coding, which involves the process of integrating categories to form a grounded theory. During the selective coding, core categories were worked out along the lines of their salient properties, dimensions and associated paradigmatic relationships, giving the categories richness and density.[39]

2.5 Ethical considerations

The data collection process commenced after the approval to conduct the study from the University of KwaZulu Natal (UKZN) Humanities and Social Sciences Research Ethics Committee (HSS/0064/016D). Participation was voluntary, and participants had to sign informed consent before participating in the study.

3. FINDINGS

In this study, three categories emerged from the process of implementing a competency-based and PHC-oriented undergraduate nursing programme (see Figure 1): Strategic partnership and collaborative approach, curriculum development, and curriculum implementation.

3.1 Strategic partnership and collaborative approach

Strategic partnership and collaborative approach emerged as guiding principles in implementing a competency-based and PHC-oriented curriculum. Strategic partnership and collaboration helped to ensure that the curriculum produced was relevant and responsive to the population's needs and the healthcare system, and stakeholders had that sense of ownership of the curriculum because they had input in its design and implementation. The stakeholders included nurse educators (from the NEI and surrounding NEIs), clinical preceptors, nurse managers and nurses in clinical settings who served as mentors, members of the health team with a vested interest, students and local community members (community leaders and community health workers). Data showed that the curriculum team members were purposively selected in line with the contribution they would make to the curriculum development process and its implementation.

". . . the process of developing this curriculum was extensive and highly consultative. . . involving stakeholders from the priority health programmes. . . " (FG1: P2)

". . . our participation in the development of the curriculum process influenced us to take ownership of the curriculum. . . at last our voice was heard in the curriculum development." (FG4: P1)

3.2 Curriculum development

Curriculum development emerged as another category in the implementation of a competency-based and PHC-oriented curriculum. Figure 2 displays the phases for developing a PHC-oriented curriculum for an undergraduate nursing programme. The process of developing this curriculum was extensive and highly consultative, involving stakeholders from nursing schools, clinical settings, students, and community members. The curriculum development process considered educational, health and nursing contexts by aligning to policies and regulations around primary health care, the nursing scope of practice, and the educational goals in the undergraduate nursing programme.
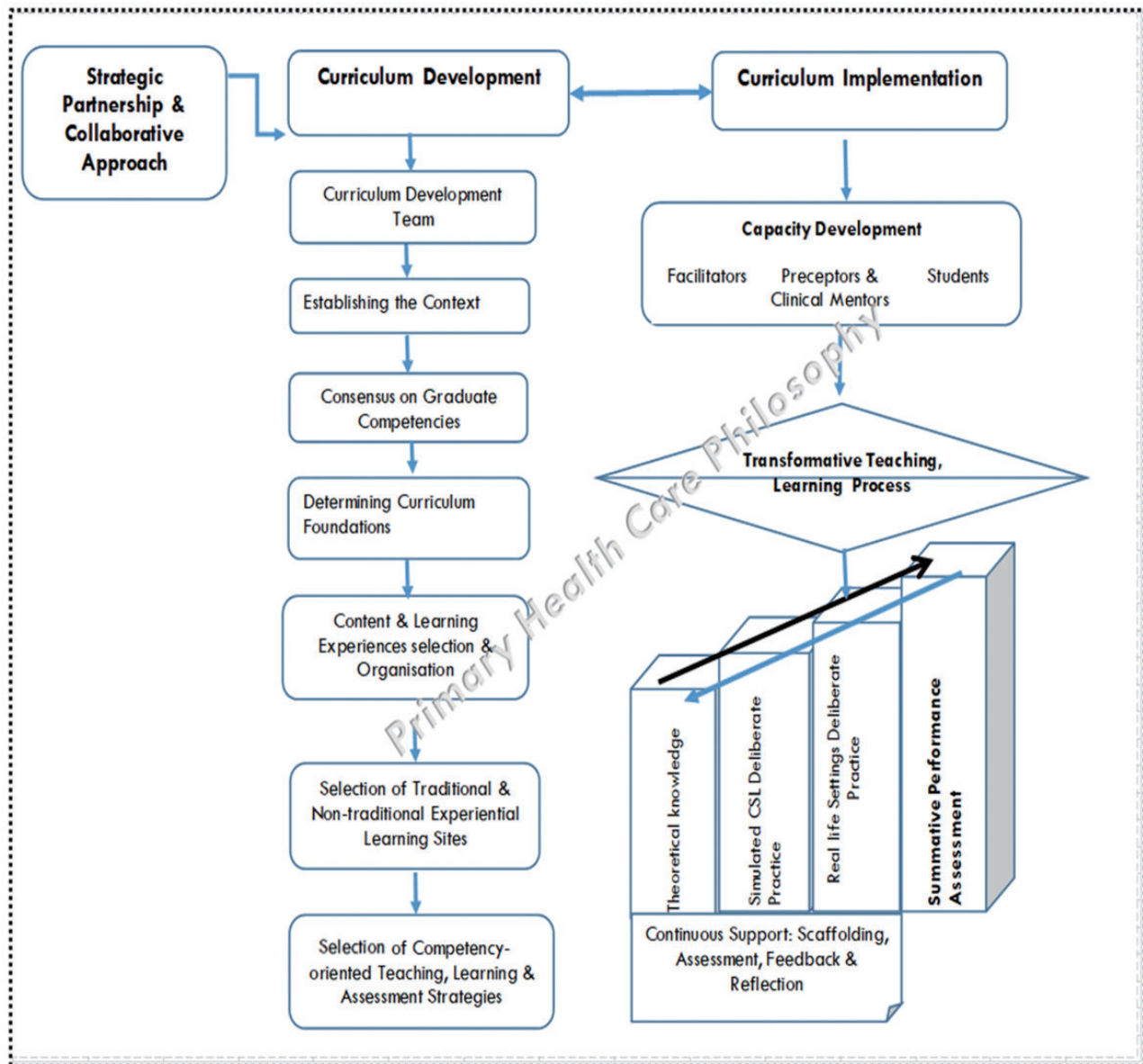
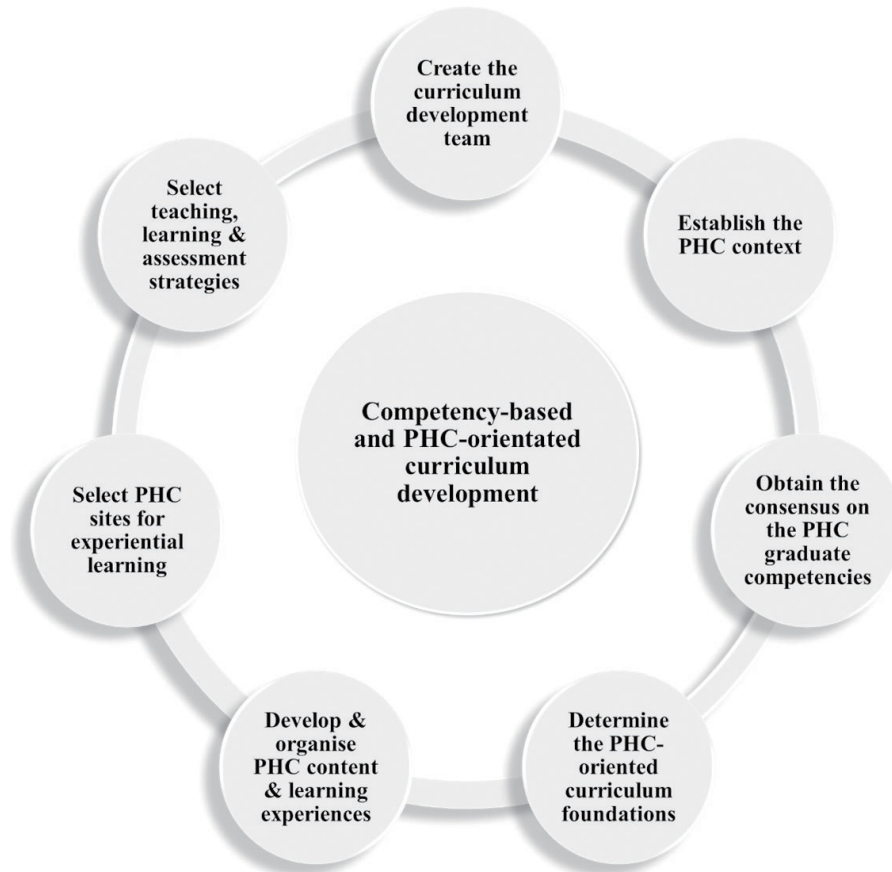**Figure 1.** Competency-based and PHC-oriented curriculum development and implementation

3.2.1 *Create the curriculum development team*

In this study, the curriculum development team members were purposively selected in line with the contribution they would make to the curriculum development process and its implementation. The collaborative approach among team members ensured that the curriculum produced was relevant and responsive to the population's needs and the healthcare system, and stakeholders had that sense of ownership of the curriculum because they had input in its design and implementation. The stakeholders included nurse educators, clinical preceptors, nurse managers and nurses in clinical settings who served as mentors, members of the health team

with a vested interest, students and local community members (community leaders and community health workers). Data showed that the curriculum team members' selection was in line with the contribution they would make to the curriculum development process and its implementation.

"... a curriculum development team was led by the undergraduate programme coordinator, working closely with level coordinators in consultation with nurses from practice, the students and community members from the communities which are used as clinical learning sites." (FG1: P2)

Figure 2. Phases for developing a competency-based and PHC-oriented curriculum for an undergraduate nursing programme

The findings revealed that the success of a PHC-oriented curriculum depended on the availability of dedicated preceptors and clinical mentors to support the students in developing the required competencies. Preceptors and clinical mentors were involved in the curriculum development and received continuous development to ensure that they were well prepared to teach in a PHC programme and remain abreast of the new development in clinical teaching.

3.2.2 Establish the PHC context

The PHC context informed the development of the PHC-oriented curriculum. Special attention was given to contextual conditions to be considered in designing the curriculum. Participants indicated that the national and international PHC contexts were considered to ensure that the curriculum was relevant and responsive to local and global demands to produce competent nurses and midwives who are able to serve in primary health care settings. WHO in the African region published prototype competency-based curricula for different nursing and midwifery programmes to be used as a guide by countries in the region, and one of these was used as reference resource.[40] The Department of Health's agenda and priorities, both at the national and provincial levels, were also considered. These included the universal health coverage and PHC re-engineering agenda, the quadruple burden of disease, and the four strategic outputs of the Minister of Health's Negotiated Service Delivery Agreement (NSDA).

"... we ensure that the curriculum is responsive by appropriately integrating guiding frameworks such as National Health Priorities, PHC Re-engineering and PEPFAR Goal of an AIDS-free generation." (FG1: P1)

"We considered national priorities, the NSDA four strategic outputs, the burden of disease, new nurses' scopes of practice by SANC, the role of nurses in PHC re-engineering in the country and life skills expected from all graduates in the country." (FG1: P1)

3.2.3 Determine PHC-oriented curriculum foundations

The philosophy underpinning the PHC-oriented curriculum was a mix of different educational theories and philosophies and the health-to-illness continuum model. The educational theories and philosophies included adult learning principles, learner-centred progressive philosophies, and elements of critical theory and social constructivism, with the students expected to be responsible citizens and influence change in society.

"... our programme embraces adult learning principles and progressive philosophies that promote student-centred learning, active participation and personal development." (FG1: P2)

"... our curriculum is underpinned by progressive educational philosophy as it is in line with the school's beliefs towards education, values embraced in teaching and learning and our belief about the purpose of education in the society we serve." (FG1: P6)

The PHC-oriented curriculum adopted a competency-based, problem-based and community-based approach. Those approaches aligned with the goal of producing a balanced graduate with discipline-specific competencies, transferable life skills and competence to meet the population's health needs and the demands of a dynamic healthcare system. The selected curriculum approach played a crucial role in determining the curriculum structure, the learning content and learning opportunities, and how to organise the curriculum elements.

"The department decided on a competency-based approach with strong problem-based and community-based approaches." (FG1: P2)

A PHC philosophy was an underpinning philosophy in curriculum development. A health-to-illness continuum model was used to organise and sequence the concepts, content and learning experiences in the PHC-related curriculum. The students were exposed to healthy individuals first, followed by the communities with social issues affecting their health, followed by exposure to sick and hospitalised individuals and later patients or clients with specialised needs, such as pregnant women and mentally ill patients, and later the students were exposed to rehabilitation and recovery, which takes place at the community level.

"The primary health care philosophy is also used as a guiding

framework in our programme, as the programme has a very strong health promotion..." (FG1: P3)

3.2.4 Identify PHC competencies for undergraduate nursing students

The nursing education institution strategically collaborated with the Department of Health (DOH) and surrounding nursing education institutions and selected nurse managers and nurses from clinical practice to determine and develop graduate competencies, which served as a guiding framework in designing and implementing the curriculum. Table 1 presents the PHC competency area.

Table 1. PHC competency area

Number	PHC competency area
Competency 1	Care provision
Competency 2	Professionalism
Competency 3	Communication
Competency 4	Collaboration
Competency 5	Health advocacy
Competency 6	Leadership and management
Competency 7	Research

Identifying PHC competencies for undergraduate nursing students took into consideration the primary healthcare system in the country, SANC, and DHE recommendations. As displayed in Table 1, the core competencies included care provision in the PHC context, professionalism, communication, collaboration, health advocacy, leadership and management and research. Those competencies were integrated across the four-year undergraduate programme.

The findings showed that graduate attributes prescribed by the SANC for Bachelor of Nursing graduates, the DHE's critical cross-field outcomes and the College of Health Sciences competency framework requirements informed the context that was considered in developing the curriculum. Participants reported that the SANC stipulated the graduate attributes be developed in Bachelor of Nursing programmes, the DHET specifies the critical cross-field outcomes or generic competencies to be acquired by all graduates from higher education programmes, and the College of Health Sciences had a competency framework that informed all health sciences programmes in the college, under which the undergraduate nursing programme was offered.

"... our graduates play a vital role in leading PHC Outreach Teams and in School Health by ensuring that programs offered within communities are targeted and linked to service delivery in line with the PHC Agenda." (FG1: P3)

"We considered graduate attributes by the SANC as well as the critical cross-field outcomes by DHET such as problem-

solving, critical thinking, working in teams, and communication, to mention a few, which DHET refer to as critical cross-field outcomes to be acquired by all graduating students to cope with the workplace demand." (FG1: P3)

3.2.5 *Select and organise the PHC content and learning experiences*

To ensure that the PHC content selected was relevant, the curriculum team followed a rigorous process. The process was engaging and compelled the curriculum developers to deliberate extensively on the content to be included in the curriculum. They had to come up with criteria to use when making a decision on the curriculum content. Participants indicated that this process was guided by three critical questions: (a) which content is regarded as 'good to know'; (b) which content is regarded as 'important content to be assessed at the end of the learning process' and (c) which content is regarded as 'must include' content, content to be mastered 'so as to produce competent graduates who will add value to the healthcare system and contribute to improving the population's health. These questions helped ensure that the curriculum was not overloaded with content that would reduce the time for meaningful and effective learning.

"... so, to determine what content to include, the curriculum expert kept on asking if that is good-to-know information, important information to learn, or a must-know content that will contribute to developing the expected competencies and ensure that graduates are competent to effectively practice in the health care system and meet the population's health needs." (FG1: P6)

"...our curriculum content was selected on the basis of expected graduate competencies, meaningfulness and relevance of the content to the society or surrounding communities and health care system." (FG1: P3)

The PHC competencies were integrated into undergraduate modules throughout the four year-programme, and progressive acquisition of competencies was considered. The programme had a strong PHC orientation, and at the fourth-year level, there was a module that consolidated all PHC-related learning and competencies developed at different levels in the programme. Table 2 shows the PHC competency area, modules and academic level where they were introduced.

Table 2. PHC competency areas, modules and year of the study

Number	PHC competency area	Modules	Academic level
Competency 1	Care provision	Fundamental nursing	Year 1
		Health promotion	Year 2
		General nursing	Year 3
		Midwifery	Year 4
		Mental health nursing	Year 4
Competency 2	Professionalism	Fundamental nursing	Year 1
Competency 3	Communication	Communication	Year 1
		Fundamental nursing	Year 1
Competency 4	Collaboration	Health promotion	Year 2
Competency 5	Health advocacy	Health promotion	Year 2
		Social science	Year 2
Competency 6	Leadership and management	Unit management and leadership	Year 3
Competency 7	Research	Research methods and project	Year 3

An example of how PHC competencies were organised was competency one—care provision—introduced in the first year and focused on fundamental nursing or care provision to healthy individuals; in the second year, care provision focused on families and groups at the community level, with a special focus on health promotion. In the third year, care provision focused on sick hospitalised individuals (general nursing) and midwifery care and mental health care in the final year.

"... The order that is followed is that of the health-to-illness continuum sequencing of learning with students moving from healthy individuals in the first year, to family groups, community and home-based care in the second year, sick hospitalised patients in the third year, and then there is specialised care which is midwifery and mental health, with students also involved in rehabilitation and recovery." (FG1: P2)

"...our curriculum includes PHC concepts such as health promotion or health advocacy, professional, ethical and legal practice." (FG1: P3)

"...care provision is central to the nursing profession... like fundamental nursing care at first year." (FG1: P2)

3.2.6 Select PHC sites for experiential learning

Participants highlighted that students were placed in various communities for experiential learning. The selection of the PHC settings was strategic, with priorities being on under-resourced communities in informal settlements, semi-urban and urban areas and PHC clinics. These communities were located in both urban and semi-rural areas. Participants reported that such experiential learning allowed students to work with communities, conducting health promotion activities and assisting community members to take responsibility for their health. In PHC settings, community health workers (CHWs) contribute to training students during the placement. The CHWs have a wealth of knowledge in health promotion, illness prevention and first-level care at a community level, and students learn from expertise. In collaboration with CHWs, students can make changes by developing small-scale projects within these communities.

"The students are strategically placed in under-resourced communities in semi-urban, urban areas and the informal settlement...to teach them that the health of individuals cannot be separated from the environment in which they live; the social determinants of health." (FG1: P1)
"... Students become involved in several health promotion activities in community settings, providing services to the disadvantaged population." (FG1: P1)
"... at the fourth-year level, we are competent in identifying social ills of the communities we live in, and we become change agents in order to address these social injustices." (FG4: P3)

In the PHC settings, special attention was given to diagnoses, treatment and care for patients. The students practice for a block period in PHC settings under the direct supervision of preceptors and clinical mentors to ensure mastery of PHC-related competencies. In addition, the fourth-year students were also exposed to a Phelophepa train—a mobile PHC clinic that moves from one destination to another, providing healthcare to communities with limited access to healthcare. They spend about two weeks on the train working with multi-disciplinary team members.

"...the Phelophepa train in the fourth year that is used as a learning environment ...helped me to learn to work with members of the multi-disciplinary team because there are medical students, students from dentistry, pharmacy, physiotherapy, speech and audiology, optometry in that train." (FG4: P5)
"...the fourth year PHC module and the two weeks we spend in PHC clinics working as PHC nurses, conducting an as-

sessment of patients with minor illnesses, diagnosing and prescribing treatment guided by the EDL booklet cemented the learning from previous years in the programme." (FG4: P1)

3.2.7 Select teaching, learning and assessment strategies

In the development of a PHC-oriented curriculum, the teaching and learning methods that encourage the active participation of students were selected. In active teaching and learning, the teacher was viewed as a facilitator of learning rather than the giver of information and learners were actively involved in knowledge construction and acquisition. The selected teaching and learning strategies included student-centred learning, active participation, discovery learning, experiential learning, group learning, reflective learning, and evidence-based practice. Participants indicated that teaching strategies such as group and individual projects promote the development of leadership behaviours and lifelong learning skills. Furthermore, class presentations were reported to facilitate public speaking and other communication skills —essential skills in primary health care.

"...Teaching strategies include group discussions to facilitate the development of communication skills and the ability to work in teams." (FG1: P1)
"...experiential learning in the form of work-based learning and service-learning to facilitate engagement with peers and experts in clinical settings to develop communication skills, networking skills, systems thinking and reflective practice..." (FG1: P1)

3.3 Curriculum implementation
3.3.1 Capacity building and support

Facilitators: Participants indicated that capacity development and support for facilitators were important in the implementation of a competency-based curriculum. The university had a mandatory induction programme as part of introducing new staff members to innovative teaching and assessment strategies, curriculum development, evaluation, and research supervision, which included the competency-based approach. Some participants highlighted that new recruits identified mentors among the seniors who were familiar with the competency-based curriculum and entered into an informal agreement to mentorship. Data sources further reflected that peer evaluations were vital components of staff support. Peers sat in the classroom to observe how learning was facilitated and provided appropriate feedback to improve teaching practice. Participants reported that Ad Hoc capacity development focusing on areas identified by educators was important, as illustrated in the extracts below:

"...as for the lecturers, the university has got a mandatory

induction programme for them when they come in for the first time, they have to take four modules that prepare them to teach in higher education, and there is one module on teaching and learning which covers innovative ways of teaching including competency-based, problem-based, case-based and other methodologies." (FG1: P1)

". . . in addition to this, we have to identify mentors. . . to come and observe the classroom teaching using the competency-based approach. . . this has helped us to familiarise ourselves with this innovative teaching methodology, and we are slowly gaining confidence. . . we have continuous peer evaluations which give us feedback on areas where we are doing well and also where we still need improvement until we reach the level of competency." (FG1: P8)

". . . the department also runs workshops for the new staff. . . they attend ad hoc conferences that are focusing on teaching and learning." (FG1: P3)

Nursing students: Data sources in the study reported that student capacity development and support were imperative in the effective implementation of a competency-based curriculum (CBC). Participants reported that a week-long orientation programme prepares students for learning in a CBC and includes the teaching and learning strategies and the roles of different role players during the learning process. During the orientation week, the students were provided with a list of competencies to be mastered in that particular year. In addition, the students were introduced to online learning and taken through the process of using the tablets, which had learning resources as illustrated in the following extracts:

". . . for the students, at the beginning of each year, we have a week or longer orientation programme for students where we introduce them to the concepts of CBC, PBL and other related strategies. . . students are provided with a list of competencies which they are required to master at the end of the module." (FG1: P2)

"We also have online learning platforms, and we take our students through this system during the week-long orientation; we also teach them how to use Tablets which have online learning resources which they may access anywhere where they have access to an internet connection. This forms part of capacity building for the students. We also give them an orientation to the simulated clinical skills laboratory as we use a self-directed learning approach." (FG1: P2)

Preceptors and clinical mentors: The success of a competency-based curriculum depends on the availability of dedicated preceptors and clinical mentors to support the students in the process of developing the required competencies. Participants indicated that preceptors and clinical mentors were involved in continuous development, especially in the area

of competency-based education. Continuous development was to ensure that preceptors and clinical mentors were well prepared to teach in a competency-based programme, and they remained abreast of the new development in clinical teaching.

". . . our clinical mentors and preceptors are engaged in formal and informal continuous learning education, especially in competency-based education. . . this is to ensure that they have current knowledge in clinical teaching so that they are able to supervise and provide well-informed clinical teaching and practice." (FG1: P4)

3.3.2 Transformative teaching and learning process

A number of participants found that transformative teaching, learning and assessment were crucial to the success of a PHC-oriented curriculum. Participants indicated that theoretical knowledge was constructed during classroom sessions, which were more competency-oriented and problem-based. Participants reported that, after the classroom session, students were placed in the CSL for deliberate practice. Students learn to practice the competency presented in class and connect the theory to practice. Practising in CSL was a safe way of protecting patients against novice nurses. Participants revealed that when students were found competent in practising in the CSL, they were then placed in PHC settings for real-life practice with real patients under the guidance and support of clinical mentors and preceptors. Participants indicated that clinical facilitators demonstrated the skill to the students, after which they independently practised until they gained confidence. The PHC-oriented curriculum emphasised formative and summative in various educational contexts—classroom, CSL, and placements in PHC settings.

"They are placed in the CSL for deliberate practice, which is vital in bridging the gap between theory and practice. Students find it safe to practice in the simulated patient since they are able to make mistakes without endangering patients. . . " (FG1: P1)

" . . . when students have reached some level of competency. . . they are then placed in real life setting, where they are guided and supported by clinical mentors through skill demonstration. . . students are supported as they practice on their own until they are competent to practice in real life settings." (FG1: P3)

". . . our students, when placed in the communities, are mentored by community health workers in some areas because we regard them as rich resources in terms of community development, health promotion and illness prevention." (FG1: P1)

Participants noted that facilitators and clinical mentors provided continuous support, scaffolding, assessment and feed-

back. It appeared that students were encouraged to reflect on their learning experiences. This helped them to improve performance, as illustrated in the following extracts:

"Summative assessment is used in this programme and has a specific goal to achieve. Feedback from formative assessment is used to facilitate learning and assist the student in improving own performance. Each assessment strategy or approach we use serves a specific purpose." (FG1: P7)

"...we provided some form of support and guidance throughout the teaching and learning process...scaffolding was necessary to guide students until they were able to work autonomously." (FG1: P1)

4. Discussion

This article seeks to shed some insight into the development and implementation of a competency-based and PHC-oriented undergraduate nursing programme. The competency-based curriculum offers a different approach to the process of curriculum development that is collaborative in nature and informed by contextual conditions, with learning directed at acquiring the determined competencies.[41–43] Furthermore, when contextual conditions are considered in the process of designing the curriculum, the graduates produced will be competent, relevant and responsive to the healthcare system of the country. Strategic partnership and collaborative principles guided the creation of a curriculum development team, which was crucial to the success of a PHC-oriented curriculum. Similarly, Murray-Parahi et al.[10] argue that addressing the gaps in the PHC curriculum requires actions on multiple fronts and through the involvement of stakeholders. The findings of this study further indicated that when contextual conditions are considered in designing the curriculum, the graduates produced would be competent, relevant and responsive to the country's healthcare system. Concurrently, Muraraneza et al.[28] argued that one of the aims of considering the context when developing the curriculum is the ability to produce competent graduates who will be able to introduce changes in the healthcare system and influence policies in this era of evidence-based practice.

Primary health care nurse practitioners play an essential role in primary health care settings.[44, 45] In this study, the PHC competencies for undergraduate nursing students included care provision in the PHC context, professionalism, communication, collaboration, health advocacy, leadership and management and research. Similarly, Lukewich et al.[30] found that the primary care competencies included professionalism, clinical practice, communication, collaboration and partnership, quality assurance evaluation, research, and leadership. Grant et al.[45] reported that nurses use a broad range of skills to promote the health and well-being of clients in their care. Those skills included coordination, collaboration, education, counselling, connecting clients with services and advocacy. According to Duran-Niño et al.,[44] PHC requires interprofessional collaboration and communication to respond to the health needs of the population.

Developing PHC competencies and adopting effective teaching strategies—in the classroom, clinical skills labs and clinical settings—is a cornerstone to preparing the next generation of nurses capable of responding to the patients in PHC settings. Murray-Parahi et al.[10] argue that building a sustainable workforce requires more significant support to prepare the next generation of nurses, particularly in PHC roles. Furthermore, Murray-Parahi et al.[10] highlighted the need to provide authentic clinical practice in community settings, make PHC content accessible, and monitor the quality and quantity of PHC content in undergraduate nursing curricula. Community nursing tends to use an individual supervision model, and the opportunity for undergraduate nurses to experience authentic community roles is limited.[10, 27] Byfield et al.,[27] the student's attitude towards primary health care placement is associated with the perceived usefulness of primary health care practices within nursing.

In this study, PHC placements of students were accompanied by immediate and informative feedback from the facilitator or peers to improve their performance. The students also had an opportunity to think aloud and reflect on their performance. From the feedback and reflection sessions, students identified gaps in their performance and the mediating mechanism that may produce superior skills performance, retention and active engagement in practice.[46, 47] Edwards et al.[48] agreed that the more the students engage in direct practice, the better they become because there is a relationship between the accumulated amounts of deliberate practice and the development of competency. Spending more extended periods in PHC clinical settings under the supervision of mentors and preceptors enhanced the opportunity to develop the required competencies.

Competency-based and PHC-oriented curriculum developed in this study was to ensure consistent and standardised training of undergraduate nursing students. The identified PHC competencies will ensure that nursing graduates have the same knowledge and skills to work effectively in diverse community settings, address the social determinants of health, and contribute to population-based PHC initiatives.

5. Conclusion

A competency-based and PHC-oriented curriculum is a vital tool in producing nursing graduates who are competent and responsive to the healthcare system. The involvement of

stakeholders in competency-based and PHC-oriented curriculum development is paramount to ensure relevance to the health system and the population's health needs. Embedding adequate PHC competencies into the curricula and selecting innovative educational approaches and authentic clinical settings would facilitate the training of competent students. Developing nursing workforce capacity in primary health care and health promotion is a priority for the UHC and the health-related SDGs. Based on the dynamic and changing health environment, this study recommends revising and updating curricula regularly, linking disease burden, PHC goals and principles to nursing training needs.

AUTHORS CONTRIBUTIONS
BD and NM were responsible for the conception and design of the study. BD was responsible for data collection. BD, NM, and AH drafted the manuscript, and NM and AH critically revised it for important intellectual content. All authors read and approved the final manuscript.

CONFLICTS OF INTEREST DISCLOSURE
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.

INFORMED CONSENT
Obtained.

ETHICS APPROVAL
The Publication Ethics Committee of the Sciedu Press. The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

PROVENANCE AND PEER REVIEW
Not commissioned; externally double-blind peer reviewed.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

DATA SHARING STATEMENT
No additional data are available.

REFERENCES

[1] Rispel L. Analysing the progress and fault lines of health sector transformation in South Africa. South African health review. 2016; 2016(1): 17-23.

[2] Abadía-Barrero CE, Bugbee M. Primary health care for universal health coverage? Contributions for a Critical Anthropological Agenda. 2019; 38(5): 427-35. PMid:31194592 https://doi.org/10.1080/01459740.2019.1620744

[3] Sanders D, Nandi S, Labonté R, et al. From primary health care to universal health coverage—one step forward and two steps back. The Lancet. 2019; 394(10199): 619-21. PMid:31448726 https://doi.org/10.1016/S0140-6736(19)31831-8

[4] Yanful B, Kirubarajan A, Bhatia D, et al. Quality of care in the context of universal health coverage: a scoping review. Health Research Policy and Systems. 2023; 21(1): 1-29. PMid:36959608 https://doi.org/10.1186/s12961-022-00957-5

[5] WHO. Declaration on Primary Health Care: Astana, 2018: World Health Organisation; 2018.

[6] Bresick G, Von Pressentin KB, Mash R. Evaluating the performance of South African primary care: a cross-sectional descriptive survey. South African Family Practice. 2019; 61(3): 109-16. https://doi.org/10.1080/20786190.2019.1596666

[7] WHO. A vision for primary health care in the 21st century: Towards universal health coverage and the Sustainable Development Goals: World Health Organisations; 2018.

[8] Hanson K, Brikci N, Erlangga D, et al. The Lancet Global Health Commission on financing primary health care: putting people at the centre. The Lancet Global Health. 2022; 10(5): e715-e72. PMid:35390342 https://doi.org/10.1016/S2214-109X(22)00005-5

[9] Behera B, Prasad R, Behera S. Primary healthcare goal and principles. In: Behera B, Prasad R, Behera S, editors. Healthcare Strategies and Planning for Social Inclusion and Development: Elsevier; 2022.

[10] Murray-Parahi P, DiGiacomo M, Jackson D, et al. Primary health care content in Australian undergraduate nursing curricula. Collegian. 2020; 27(3): 271-80. `https://doi.org/10.1016/j.colegn.2019.08.008`

[11] Bvumbwe T, Mtshali NG. Transforming Nursing Education to Strengthen Health System in Malawi: An Exploratory Study. The Open Nursing Journal. 2018; 12: 93-105. PMid:29997712 `https://doi.org/10.2174/1874434601812010093`

[12] WHO. Digital education for building health workforce capacity: World Health Organisation; 2020.

[13] WHO. Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations–2016 update: World Health Organization; 2016.

[14] WHO. Plan of action for scaling up quality nursing and Midwifery Education and Practice for the African Region. Brazzaville: World Health Organization; 2014.

[15] WHO. The nursing and midwifery workforce in the African Region: optimizing and accelerating investments for resilient health systems: a regional technical report. Brazzaville: World Health Organization; 2022.

[16] Quintero GA, Vergel J, Laverde Á, et al. Educational Strategies to Develop and Implement a Comprehensive Health Care Model Focused on Primary Care in Colombia. Journal of Medical Education and Curricular Development. 2020; 7: 1-7. PMid:32637638 `https://doi.org/10.1177/2382120520930260`

[17] Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010; 376(9756): 1923–58. PMid:21112623 `https://doi.org/10.1016/s0140-6736(10)61854-5`

[18] Olopade F, Adaramoye O, Raji Y, et al. Developing a competency-based medical education curriculum for the core basic medical sciences in an African Medical School. Advances in Medical Education and Practice. 2018; 7(389–398). PMid:27486351 `https://doi.org/10.2147/AMEP.S100660`

[19] Muraraneza C, Mtshali GN. Conceptualization of competency based curricula in pre-service nursing and midwifery education: A grounded theory approach. Nurse Educ Pract. 2018; 28: 175-81. PMid:29102853 `https://doi.org/10.1016/j.nepr.2017.09.018`

[20] Halcomb E, Stephens M, Bryce J, et al. Nursing competency standards in primary health care: an integrative review. Journal of Clinical Nursing. 2016; 25(9-10): 1193-205. PMid:26990487 `https://doi.org/10.1111/jocn.13224`

[21] Stewart MW, Nugent KE, Elliott RW, et al. Social context of professional nursing. Jones & Bartlett Learning. 2010: 137-72. `http://samples.jbpub.com/9781284078329/9781284083231_CH05_Pass04.pdf`

[22] Rispel LC. Transforming nursing policy, practice and management in South Africa. Journal of Global Action. 2015; 4: 4-9. PMid:25971403 https://doi.org/10.3402/gha.v8.28005

[23] Miller E, Reddy M, Banerjee P, et al. Strengthening institutions for public health education: results of an SWOT analysis from India to inform global best practices. Human Resources for Health. 2022; 20(1): 1-11. PMid:35183208 `https://doi.org/10.1186/s12960-022-00714-3`

[24] Mtshali NG. Developing an Outcome-Based Curriculum. In Uys, L. R., Gwele, N.S. (editions). Curriculum Developemnt in Nursing: Process and Innovation. London: Routledge; 2005.

[25] Günay U, Kılınç G. The transfer of theoretical knowledge to clinical practice by nursing students and the difficulties they experience: A qualitative study. Nurse Education Today. 2018; 65: 81-6. PMid:29547811 `https://doi.org/10.1016/j.nedt.2018.02.031`

[26] Strasser S, London L, Kortenbout E. Developing a competence framework and evaluation tool for primary care nursing in South Africa. Education for Health: Change in Learning & Practice. 2005; 18(2): 133-44. PMid:16009609 `https://doi.org/10.1080/13576280500145615`

[27] Byfield Z, East L, Conway J. An integrative literature review of pre-registration nursing students' attitudes and perceptions towards primary healthcare. Collegian. 2019; 26(5): 583-93. `https://doi.org/10.1016/j.colegn.2019.01.004`

[28] Muraraneza C, Mtshali NG, Mukamana D. Issues and challenges of curriculum reform to competency-based curricula in Africa: A meta-synthesis. Nursing and Health Sciences. 2017; 10(19): 5-12. PMid:27805792 `https://doi.org/10.1111/nhs.12316`

[29] Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010; 376(9756): 1923–58. PMid:21112623 `https://doi.org/10.1016/s0140-6736(10)61854-5`

[30] Lukewich J, Allard M, Ashley L, et al. National competencies for registered nurses in primary care: a Delphi study. Western Journal of Nursing Research. 2020; 42(12): 1078-87. PMid:32615873 `https://doi.org/10.1177/0193945920935590`

[31] WHO. Transforming and scaling up health professionals' education and training. Geneva: World Health Organization; 2013.

[32] Dehkordi A, Solati K. The Efficacy of Three Learning Methods Collaborative, Context-Based Learning and Traditional, on Learning, Attitude and Behaviour of Undergraduate Nursing Students: Integrating Theory and Practice. Journal of Clinical & Diagnostic Research. 2016; 10(4): VC01-VC4. `https://doi.org/10.7860%2FJCDR%2F2016%2F18091.7578`

[33] Corbin J, Strauss A. Basics of qualitative research: Techniques and procedures for developing grounded theory: Sage; 2008.

[34] Creswell JW. Qualitative inquiry and research design: Choosing among five approaches. Thousand Oaks, CA: Sage Publications; 2007.

[35] Polit DF, Beck CT. Essentials of Nursing Research Appraising Evidence for Nursing Practice. Philadelphia: Lippincott Williams & Wilkins; 2016.

[36] Silverman D. Interpreting qualitative data: A guide to the principles of qualitative research: Sage; 2011.

[37] Tie YC, Birks M, Francis K. Playing the game: A grounded theory of the integration of international nurses. Collegian. 2019; 26(4): 470-6. `https://doi.org/10.1016/j.colegn.2018.12.006`

[38] Maree JK. Mid-career construction counselling to instill spiritual awareness and allay fear. South African Journal of Education. 2016; 37(4): 1-10. `https://doi.org/10.15700/saje.v37n4a1443`

[39] Strauss A, Corbin J. Basics of qualitative research: Grounded theory and techniques. Califonia: Sage; 1990.

[40] WHO. Four-year integrated nursing and midwifery competency-based prototype curriculum for the African region. Brazzaville: World Health Organization Regional Office for Africa; 2016.

[41] Muraraneza C, Mtshali GN. Implementation of competency based curriculum in pre-service nursing education: Middle range theory. International Journal of Africa Nursing Sciences. 2018; 8: 53-8. `https://doi.org/10.1016/j.ijans.2018.02.006`

[42] Caccia N, Nakajima A, Kent N. Competency-Based Medical Education: The Wave of the Future. Journal of Obstetrics and Gynaecology Canada. 2015; 37(4): 349-53. PMid:26001689 `https://doi.org/10.1016/S1701-2163(15)30286-3`

[43] Kiguli S, Baingana R, Paina L, et al. Situational analysis of teaching and learning of medicine and nursing students at Makerere University College of Health Sciences. BMC International Health and Human Rights. 2011; 11(1): 1-9. PMid:21411003 https://doi.org/10.1186/1472-698X-11-S1-S3

[44] Duran-Niño EY, Campos de Aldana MS, Arboleda de Pérez LB. Primary health care challenge for nursing professionals: a narrative review. Revista de Saúde Pública. 2021; 55(100): 1-9. PMid:34932693 https://doi.org/10.11606/s1518-8787.2021055002719

[45] Grant J, Lines L, Darbyshire P, et al. How do nurse practitioners work in primary health care settings? A scoping review. International Journal of Nursing Studies. 2017; 75: 51-7. PMid:28727993 https://doi.org/10.1016/j.ijnurstu.2017.06.011

[46] Caccia N, Nakajima A, Scheele F, et al. Competency-Based Medical Education: Developing a Framework, Canada. 2015; 37(12): 1104-12. PMid:26637083 https://doi.org/10.1016/S1701-2163(16)30076-7

[47] Gonzalez L, Kardong-Edgren S. Deliberate practice for mastery learning in nursing. Clinical Simulation in Nursing. 2017; 13: 10-4. https://doi.org/10.1016/j.ecns.2016.10.005

[48] Edwards C, Chamunyonga C, Clarke J. The role of deliberate practice in development of essential sonography skills. Sonography. 2018; 5(2): 76-81. https://doi.org/10.1002/sono.12146