

Experience of Nurse Educators on the Implementation of the Competency-Based Curriculum for Nursing and Midwifery Programmes in Tanzania: A mixed method study.

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Abstract

Background: In Tanzania, the competency-based curriculum was introduced in 2008. Despite the government's efforts to ensure its effective implementation, there has been a public concern on graduate nurses' and midwives' competencies in providing quality nursing care in the country. This concern has influenced people to question the process of the implementation of competency-based curriculum for nursing and midwifery programmes. This study describes experiences of the nurse educators in implementing the competency-based curriculum for nursing and midwifery programmes in Tanzania.

Methods: Cross section study design using convergent parallel mixed methods approach was used to describe the experience of nurse educators implementing competency-based curriculum. To enhance the validity of the findings, 240 nurse educators, out of 264, answered a questionnaire while the remaining 24 were interviewed.

Results: The study found out that nurse educators had difficulties implementing the competency-based curriculum. Eighty-seven percent of participants used lecture discussions, 53% simulation and were not using participatory methods of teaching and learning because of time constraints (25%) and lack of special skills (13%). Qualitative findings revealed inability of the participants to understand concepts and interpret the competency based curriculum.

Conclusion: The Nursing and Midwifery CBET curriculum was not implemented as it was intended. Nurse educators lacked understanding of the competency-based curriculum. Further, they reported that they were unable to apply various participatory methods of teaching and learning because of lack of time, equipment and larger number of students. There is need to put in place sustainable strategies for continuous professional development, provision of adequate teaching and learning resources and mentorship.

Keywords: Competency-based curriculum, nurse educators' experience, nursing and midwifery training programmes.

Background

Competency-Based Education and Training (CBET) approach has received much attention worldwide due to its perceived potential in producing competent graduates required by the labour market (1). CBET can be traced back to the education of primary and vocational teachers in the USA in the 1970s (2).

Poor learning in vocational education programmes was the reason for applying new principles for teacher education (3). In South Africa, the competency-based curriculum was adopted for the first time in 1998, as a response to the acute shortage of competent professionals, including engineers, technicians and artists but also to cope with the challenging issues in the 21st century (4).

In 2005, Tanzania introduced CBET in primary and secondary schools. In 2008, the Ministry of Health Community Development, Gender, Elderly and Children (MoHCDGEC), introduced a CBET for health professionals.

The shift from the Knowledge-Based Education and Training (KBET) to CBET system was influenced by the Tanzania Vision 2025, the National Health Policy of 2007 and the Sustainable Development Goal

(SDG) no. 4, which emphasises the quality of education (5).

Vision 2025 advocates the production of a reasonable quantity and quality people, equipped sufficiently with knowledge, skills and attitudes required to meet the challenges of development at local and international levels (6).

The National Health Policy emphasises on quality, accessible, affordable and equitable health services (7). Furthermore, SDG no.4 advocates for an equitable quality education and promotes lifelong learning opportunity for all (6).

The adaptation of the CBET system was expected to improve the quality of nursing and midwifery services by enabling learners to develop the required competencies relevant to the health-related needs of the country and other countries with similar context.

According to standards laid down by the National Council for Technical Education (NACTE), Act (8) policy URT (9), the curriculum can be used for a maximum period of 5 years to accommodate changes and updates. The competency-based curriculum for nursing and midwifery was first developed in 2008 and revised in 2017 to align with the NACTE standards.

The government of Tanzania has carried out various interventions to ensure that the CBET curriculum for nursing and midwifery is implemented effectively, including training nurse educators in the CBET curriculum. Furthermore, the MoHCDGEC prepared standardised training materials to complement the implementation of the curriculum.

Skills laboratories were established to ensure students acquire the required nursing and midwifery competencies. Nurse educators were oriented on the CBET curriculum and training materials for effective implementation. Moreover, infrastructures were refurbished to provide a conducive learning and teaching environment. Despite these interventions, there has been no assessment to ascertain whether the CBET curriculum for nursing and midwifery was implemented as it was intended (10). In the nursing and midwifery curriculum, nurse educators are the main curriculum implementers, while learners and clinical instructors are directly or indirectly involved in the process.

Nurse educators are instrumental in preparing competent nurses and midwives to meet the healthcare needs of the society. Their characteristics and experience in competency-based approach influences their practices in implementing CBET curriculum (11). The implementation needs a paradigm shift (12). Content/knowledge-based curriculum indicates the quantity of materials to cover in a course, while with the CBET curricula, educators must determine the behaviours which students will be able to demonstrate during and at the end of a course (13).

A key conclusion of the extensive literature on school success is that achieving better learning outcomes depends on enhancements in the implementation process of the curriculum (14). Nurse educators' experience plays a very crucial role in the success or a failure of the curriculum implementation with fidelity. Although there are many other factors which affect the learning outcomes, the implementation of

the curriculum is the main school-level determinant of the students' performance (11). Therefore, ways to explore nurse educators' experiences and opinions on the implementation of the competency-based curriculum for nursing and midwifery programmes are central to any systematic attempt to improve the teaching and learning outcomes (14).

While it now almost 12 years since the competency-based curriculum for nursing and midwifery programmes was adapted in Tanzania, available literature has no clear evidence of the implementation process of the curriculum. This lack of evidence on the implementation process greatly limits the interpretation of its effectiveness. A study conducted by Lewis (15) reveals significant gaps in the clinical performance among the new graduates, raising concerns about models of training.

Rutayuga (16) affirms that in Tanzania, more emphasis was put in designing and re-designing CBET curriculum than assessing the implementation fidelity. In its recommendation, Rutayuga asserts that there was a need to follow-up on the curriculum implementation and assessment to ascertain the CBET pedagogical engagement both in theory and clinical settings.

Asebiomo (17) argues that no matter how well the curriculum is designed and developed, assessing its implementation fidelity is very crucial. Therefore, the need for this study has emerged from the desire to explore the experience and opinions of the nurse educators on the implementation of the competency-based curriculum.

A Conceptual Framework of Implementation Fidelity

Figure 1 presents the key elements of the conceptual framework for this study. Carroll et al. (18) proposed implementation fidelity conceptual framework that includes five elements: adherence, dosage/exposure, quality of delivery, participant's responsiveness and programme differentiation.

We adapted the Carroll's conceptual framework of implementation fidelity because it supports the study objectives (18). However, as Azano and colleagues (19) have argued, although there are five elements in the implementation fidelity conceptual framework it is not necessary to assess all of them. Even a single element could be measured depending on the interest, scope of the study and can include various sources (10). The conceptual framework was modified to fit the context of the study, additionally nurse educators' characteristics were added as they play a key role in implementing the competency based curriculum (10,20). Therefore, this study adapted only three elements of the framework which are adherence, dosage and quality of delivery (21). These are described in detail below:

Adherence: Focuses on how nurse educators abide by the protocols and procedures of implementing competency-based curriculum for nursing and midwifery programmes. In this study protocols and procedure include; Curriculum Master (CUM) plan, classroom, skills laboratory and clinical teaching plans. Plans in this study refer to a systematic records about what will be covered during a session which help nurse educators to organize content, materials, timing, sequence and activities (22,23).

Dosage: Focuses on the amount, duration and frequency of the educator–learners contact for achieving what was intended.

Quality of delivery: Refers to the type and relevance of participatory teaching and learning methods used during the session delivery.

Nurse educators' characteristics and experience play a key role in adherence, dosage and quality of delivery of the competency-based curriculum for nursing and midwifery programmes (11). This study describes the experiences of the nurse educators in the implementation of the competency-based curriculum from both quantitative and qualitative data. It specifically focuses on the understanding of the concept of competency-based curriculum, preparation of a lessons plans and usage of participatory teaching methods in delivering competency-based sessions. The exploration of this experience will provide evidence-based information to MoHCDGEC, Tanzania Nurses and Midwifery Council (TNMC), NACTE, policymakers and implementers about whether the curriculum is being implemented effectively or not, thus helping the formulation of strategies to implement as was intended (11). Figure 1 illustrates the conceptual framework that summarises the three elements of this study.

Methods

Study design and approach

As explained by Creswell (24), there is no single study design that suffices the collection of reliable and validity data. Therefore, this study adapted cross-sectional design using concurrent mixed methods. Both qualitative and quantitative data collection was done at approximately the same time, from different samples and the integration occurred during the interpretation phase (25,26).

The mixed data was important to understand and describe the experiences of the nurse educators on the implementation of the competency-based curriculum. Thus, it increased the validity and reliability of the findings (24,25). Findings from the qualitative data were triangulated with those from the quantitative data hence broadening the understanding of the nurse educators' experience on the implementation of competency-based curriculum for nursing and midwifery programmes.

Study setting

This study was carried out in nursing and midwifery training schools across Tanzania. There are 94 such schools, out of them, 40 schools were involved in the study. Among them 14 Government schools, 8 Private school and 18 Faith based owned schools. All schools implement the nursing and midwifery competency-based curriculum approved by TNMC and NACTE.

Study participants

The participants in this study included nurse educators from the selected nursing and midwifery schools. According to World Health Organization (WHO), a person qualifies to be a nurse educator after

completing a nursing training programme and attaining a license to practise nursing, with a minimum of two years' full-time clinical experience and a formal teaching preparation either before or soon after employment as an educator (27). While the inclusion criteria for the quantitative study were nurse educators with working experience of 3 years or more of implementing nursing and midwifery competency-based curriculum, nurse-educators recruited in the qualitative study had to have a teaching experience of 5 years or more (28). It was expected that nurse-educators with a longer teaching experience would provide in-depth information about implementation fidelity of Nursing and Midwifery CBET curriculum (28).

Sample size and sampling procedure

Quantitative study

Sample size was calculated using a formula documented in a descriptive study by Fox & Hunn, (29). Nurse educators at the school level were obtained by using proportionate formula (30). This is because the number of nurse educators are not equal in all nursing schools. Sampling was done using a three stage sampling approach. The first step was the selection of the regions from the eight training zones of Tanzania. Second step was to select nursing schools. The schools involved in the study were purposefully selected to ensure equal representation of private, faith based and government owned schools (31). The third stage was the selection of nurse educators implementing competency based curriculum.

A list of nurse educators was obtained from the Heads schools of nursing and midwifery. A simple random sampling strategy (32,33) was used to select 240 nurse educators, a random number generator software was used to assign participants with numbers for identification. Then, the nurse educators were followed up at their schools, where they taught for the completion of the questionnaire. The school heads assisted the research assistants' team in identifying nurse educators who were randomly selected to answer the questionnaire.

Qualitative study

To ensure that participants with rich experience were included (34), a purposeful non-probability sampling technique was used to recruit 24 nurse educators for the qualitative study (35,36). Specifically, these were nurse educators who had nursing education background and a teaching experience of five years and more. However, the principle of saturation guided the sampling process (24). The school heads were asked to identify nurse educators who had an experience of 5 years or more in implementing the CBET curriculum.

Thereafter, the researcher met the identified nurse educators, explained the aim, objectives and the study procedures to them and those who agreed to take part in the study were requested to provide written consent. This was followed by scheduling of interviews.

Research instruments and data collection

Self-administered questionnaire

A modified questionnaire from the US, which was used to assess the proficiencies of learners in the field of Science, Technology, Engineering and Mathematics (STEM), was used in the study (37). The questions were modified to suit the nursing and midwifery programmes in the context of Tanzania and were based on educators' characteristics, understanding of the concept of competency-based curriculum, preparation and usage of a lesson plan. It was composed of open and closed questions with 28 items. The questionnaire was used because all participants were asked the same set of questions in the same sequence and this increased the objectivity of the collected data even though the data were triangulated with information from the interviewers (38).

The questionnaire was tested for reliability using Cronbach's alpha test and scored $r=0.712$. Furthermore, component and factor analysis was done and four out of 28 items were removed due to its complexity and remained with 24. Thereafter the pilot study was conducted for consistency and time estimate. The pilot study was conducted on 5% of the study sample consisted 12 nurse educator in one private school in Dodoma (39). The findings from the pilot study was not included in the major study, rather helped to modify questions narrated in the questionnaire and time estimated which varied from 20-30 minutes. After this, the questionnaire was found to be acceptable for the study.

Four research assistants experienced in education and health research were trained to collect data. Soon after receiving the ethical clearance (Ref: UDOM/GR/209/Vol II/59) and the permission letter (Ref: MP 70933/78),

Semi-structured interview guide

A semi-structured interview guide was used to collect data from the nurse educators (40). The questions were based on a pre-decided topic, guided the data collection process (35). The interview guide was prepared in English language and later on translated into Kiswahili, the national language spoken fluently by participants and researchers. The interview guide included questions focusing on participants' demographic information, preparation of lesson plan, the use of the scheme of study, and experience in employing participatory teaching and learning methods during implementation of the nursing and midwifery competency-based curriculum.

Conducting interviews

Twenty-four (24) interviews with nurse educators were conducted in a quiet room in the school premises out of reach from other educators and students. All interviews were conducted by the researcher using the interview guide and all were audio recorded. Following each interview, the researcher listened to the recorded interviews and read the field notes to understand the material and determine if there emerged issues that needed follow up with subsequent interviews. This exercises facilitated realisation of reaching saturation of data at 21 interviews where there was no newer information generated. However, the

researcher decided to continue with 3 more interviews to be sure that there were no more emerging information (26). The length of interview sessions varied from 60 to 120 minutes

Data Analysis

Quantitative and qualitative data were analysed separately and integration was made during the interpretation.

Quantitative study Data Analysis

The data from the questionnaire were analysed using IBM SPSS Statistics, version 24 for Microsoft Windows. Descriptive analysis, frequency, proportion and mode were used to summarise the data. The Chi-square statistic was used to test the associations between variables (39). The quantitative data were triangulated with the semi-structured interview to complement the data (41).

Qualitative study Data Analysis

The thematic analysis method, as described by Braun and Clark (42), was used for qualitative data analysis and the NVivo 10 software was used to generate a coding system. Prior to starting the analysis, the audio-recorded interviews were transcribed verbatim, where non-verbal cues were also captured. The interviews were read and re-read to get an understanding of the data (43,44). The data were organised in a meaningful way and were coded to reduce the data volume. The codes were developed and reviewed throughout the coding process and were then organised under descriptive themes. Finally, five themes were generated (43).

Confirmability refers to the degree to which the results could be confirmed or corroborated by others (45). Since the experiences of the researchers could have influenced the interpretation of the results, this was avoided by ensuring that the research team belonged to a mix of various professional backgrounds, including nursing and midwifery, nurse education, curriculum developer and a professor of education. The mixed professional background of the team promoted the interpretation and understanding of results that required an analytical reflection on each researcher's own preconceptions. This also strengthened the results through constructive deliberations and broadened the understanding of the implementation fidelity of the competency-based curriculum for nursing and midwifery programmes in Tanzania.

Ethical Considerations

Ethical approval to carry out this study was obtained from the Research and Publication Committee of the University of Dodoma (UDOM) (Ref: UDOM/GR/209/Vol II/59). The MoHCDGEC granted permission to conduct the study in nursing and midwifery schools (Ref: MP 70933/78). Further, written informed consent was obtained from the participants for them to be included in the study and for using audio-recorded to record conversations during the interview. Participants were briefed about the objectives and procedures of the study and were informed about their right to agree or disagree to participate or withdraw from the study at any point in time.

Participants were made clear that the information they provided, whether orally or in writing, would be treated with strict confidentiality and they were assured that the data analysis and report findings will not identify them in any way. Participants' names were not used and the designated numbers as well as the material collected (including hand written notes, transcripts, checklist and tapes) were locked in a cabinet that only the research team could access. A permission to adapt the tools was granted by the authors.

Limitation of the study

There was a limited literature on the implementation fidelity of the competency based curriculum for nursing and midwifery programme. However, studies of the same from other fields including of education provided some light for this study to make references. The interviews were translated from Kiswahili to English language, it is likely that during the translation the meaning may be altered. To ensure that the meaning of participants accounts was not derailed, the translated transcripts were cross checked with original Kiswahili transcripts for accuracy translation. Further, two transcripts were back translated by another person and there was no significant difference in meaning.

Results

A majority of the participants (45%) had experience of 6 to 10 years, (105; in teaching using nursing and midwifery CBET curriculum, (44%) had ≤ 5 years, whereas (11%) had 11 years and above. Mean years for the same was 6 years.

Understanding of the concept of competency-based approach

Seventy-eight percent of the participants reported to understand the concept of competency based approach in curriculum implementation. while (22%) responded NO. Table 1 display the results:

Table 1: Understanding the concept of CBET approach

Variable	Frequency	Percentage
Understanding the concept of CBET approach		
Yes	188	78.33
No	52	21.67

However, this finding was not evident from the nurse educators who participated in the qualitative study, where participants were unable to identify various concepts of the CBET curriculum as shown below. Through the interview participants reported to have difficult in understanding part of the competency based curriculum, as illustrated in the quotes below:

"... I don't understand the meaning of principal learning outcomes, sub- enabling, the meaning of enabling. (...)" (Participant No 15 and Teaching Experience of 5 years).

"...I need more time to understand competency based curriculum. I'm still not conversant with competency curriculum". (Participant No. 3 and teaching experience of 37 years).

Participants further, demonstrated inability to interpret credits and notional hours stipulated in the CBET curriculum:

"... And for that, one notion hour, ten notion hours is equivalent to one hour". (Participant No 3, Teaching experience 37 years).

"... because one notion hour is equal to the ten notion hours is equal to one to one". (Participant No 2, Teaching experience 15).

Using the scheme of the study in preparing sessions

The scheme is the central part of the study in competency-based curriculum for nursing and midwifery which determines the number of sessions to be delivered in a classroom, skills laboratory and duration of assignment and clinical teaching session. It is also key to the preparation of CUM master plan and lesson plans. During the interviews, participants were unable to explain how they used the scheme of study when preparing a lesson plan and others were not aware of the existence of the scheme of study in the curriculum. Below are some of the participants' illustrative quotes:

".... Scheme of study in the curriculum? Am not sure if I know it" Any other name? (Participant no. 19, with 16 years of teaching experience)

".... Scheme...? Scheme of study is like ... We don't have scheme of study". (Participant no. 20, with 42 years of teaching experience)

".... Inside curriculum ... When you look ... I only know in general. When you look at all the curriculum, there is a place indicating how many hours am supposed to teach". (Participant no. 23, with 13 years teaching experience)

Preparing and using lesson plan for teaching

Majority (87%) of the participants reported to have a lesson plan and that they are using it. During interviews it was learned that nurse educators had difficulty explaining how they prepared a lesson plan when implementing the nursing and midwifery competency-based curriculum:

"I prepare my session using the curriculum which identifies the principal outcome, sub enabling outcome (...). Through the related tasks it is what helps me prepare the teaching contents" (Participant No.1 and 5 years teaching experience).

Another nurse educator who had teaching experience of more than 20 years, reported using the facilitator guide to get the amount of credits for the module:

"... I first consult facilitator's guide which is special prepared for us educators for teaching purpose but also there is a student's manual which is for students. I read the facilitator's guide though roughly (...) It has been stated there together with corresponding amount of credits. (Participant 11, Teaching Experience of 23 years).

These findings further indicate the inability of the nurse educators to translate the competency-based curriculum into action, especially to prepare a lesson plan from the nursing and midwifery competency-based curriculum.

The implementation of the competency based curriculum requires effective lesson plans. Documented literature indicates that few teachers/educators do make their lesson plans. Moreover, they find it difficult to prepare and use it. (22). This is attributed by inability to interpret and understand the competency based curriculum as indicated in this study where some participants were not able to explain how they prepared lesson planning from the CBET curriculum.

Using participatory teaching and learning methods

Majority of the participants used lecture discussions (97%) whereas simulation was the lesser used method (53%). Challenges associated with employing the participatory teaching methods reported by most of the participants included shortage of teaching equipment in the class/clinic (30%), time constraints (25%), some teaching methods needed special skills 13%), large numbers of students (10%), some participatory teaching methods needed more time (9%), Consistent with these results, participants in qualitative study reported challenges using participatory teaching and learning methods:

".... To say the truth, the demonstration method becomes problematic once you have a large class; meaning a large number of students. In terms of simulation, majority of us do not clearly understand how to use it as a method of teaching." (Participant no. 1 with 24 years of teaching experience)

".... the number of students is so big, it becomes difficult to get that ratio of 1 teacher to 5 students, in order for them to have a chance to do a return demonstration and achieve the required competencies. We have a large number of students that leads to a situation which I only prepare two demonstration activities in order to fit for the available time (Participant no. 6 with 22 year of teaching experience)

Other participants could not use participatory teaching and learning methods because of shortage of the equipment:

".... shortage of equipment, or even if they were present, but there was no similar situation with a real patient." (Participant no.5 with 23 years of teaching experience)

From the above findings, it is clear that demonstration and simulation were not being applied in teaching and learning as it is required by competency based teaching. This limited the interaction between the nurse educators and students and the acquisition of the competencies as required in the implementation of competency-based curriculum.

Discussion

The aim of this study was to explore the experience of the nurse educators on the implementation of the competency-based curriculum in Tanzania. The results of interviews and self-reporting were triangulated to mitigate self-reporting bias (46).

Understanding the concept of competency-based curriculum

For the effective implementation of competency-based curriculum, nurse educators need to understand its concept. In this study, the question regarding the same was included. The results of the same show that majority self-reported to understand the concept while few of them reported not understanding the concept of competency-based approach. This is contributed by their limitation in translating the competency based curriculum as it was evident through the interview were not able to differentiate credit and notional hours as well as understanding part of the competency based curriculum.

This is a major issue in the nursing and midwifery training and education field where nurse educators are the bedrock of implementing the competency-based curriculum. Our findings are similar to a research conducted by Komba (12) on the reflection of the implementation of the competency-based curriculum. Komba found out that 86% participants did not have a proper understanding of the same concept. Another study, conducted by Kafyulilo (47), done on the implementation of competency-based approach on pre-service teachers in Morogoro. The results indicated that only a few participants could define competency-based approach while the majority failed at it.

Previous research suggest that implementation of the competency based curriculum requires somebody to properly understand how to interpret and put it into practice (10,48). Interpretation of the curriculum is very important for nurse educators for them be able to implement effectively.

Similar findings were presented by Okrah (49) identified factors contributed to teachers' that could not facilitate the delivery and learning of competency based curriculum were; lack of understanding about certain aspects of the competency based curriculum and in availability of teacher's manual that could help implement the competency based curriculum.

Preparation of the lesson plan

A lesson plan is a written description of how learners will move towards attaining specific learning objectives (47). A lesson plans for competency-based curriculum for nursing and midwifery indicates a list of competencies to be achieved in the classroom and skills laboratory. For an effective teaching and learning experience, nurse educators need to focus on the lesson plan (50).

The findings from the interview reveal that participants had difficult in explaining how to prepare lesson plan. This implies that, participants have difficult to interpret competency based curriculum of which is very import in implementing it. Failure to interpret the curriculum may result into non adherence and implementation with no fidelity. Results of this study are similar to the findings of Komba's (12) study on

the reflection of the implementation of competency-based curriculum; it was found that a majority of the reviewed lesson plans did not have the quality of competency-based lesson plan. Further, in the study conducted by Kafyulilo (47) on the implementation of the competency-based teaching approach in Tanzania, participants were asked to prepare a lesson plan for any subject of their interest and 19% of them were not able to write a lesson plan despite ample time being given.

When the competency-based curriculum was introduced in Tanzania, nurse educators were trained in its usage and in lesson planning. This study suggests that nurse educators had a limited knowledge of competency-based approach thus have been unable to translate it into practice.

Notably, the limitation on the understanding of the concept of competency-based approach may have hindered their ability to prepare a lesson plan from the competency-based curriculum for nursing and midwifery programme.

Use of the scheme of study

This study's findings indicate that the mean years for the teaching experience using a competency-based curriculum for nursing and midwifery programmes among nurse educators was 6 years. According to Benner's theory (51) 'From Novice to Expert,' six years' experience can be considered under expert category. An expert nurse educator would be expected to operate from a deep understanding of the competency-based curriculum in its entirety.

The nurse educator's performance with 6 years of experience is expected to become fluid, flexible and highly skilful (10). In contrast, from the interview it was clear that they did not demonstrate the understanding to interpret the scheme of the study in the competency based curriculum.

This further suggests that nurse educator have insignificant understanding of the competency-based curriculum thus being unable to use the scheme of study for the preparation of lesson plans. Thus, questioning the realisation of SDG no. 4, according to which nurse educators must ensure all learners acquire the knowledge and skills needed to promote sustainable development. Although policymakers, implementers and other stakeholders believe that nursing and midwifery education in Tanzania is implementing the competency-based approach, findings of this study are not convincing of the same.

Usage of participatory teaching and learning methods

Facilitation in nursing and midwifery education is an important initiative that aims to encourage learning and teaching. For the effective implementation of the competency-based curriculum for nursing and midwifery programmes, the usage of participatory teaching and learning methods is highly emphasised because these methods give an opportunity to the learner to improve their confidence and skills.

This study confirms that in order to ensure learner's acquisition of competencies, participatory teaching and learning methods such as demonstration and simulation must be applied (50). The findings,

however, reveal that a majority of the participants were found to use more lecture and discussions (97%) than the simulation method (53%).

The experiential learning model of Kolb (52), is the theory that fits the competency-based training well. The demonstration and simulation teaching methods provide learners an opportunity to cultivate the clinical competencies prior to their placement in a real clinical setting. For learners to acquire clinical competencies, skills laboratories should mimic the clinical setting.

According to Kolb, the experiential learning model says learners must be exposed to the reality and that throughout the learning cycle/process, they must be given an appropriate comment for improvement (52). When demonstration and simulation methods are effectively applied, they enable the learner to gain the required competencies and become confident in real-time practice.

Implications of the findings

The findings from this study indicates that with limited understanding of the competency based curriculum among nurse educators it is difficult to achieve optimal fidelity of the curriculum implementation. This study clearly identified that implementation of the competency based curriculum for nursing and midwifery programme is hampered by lack of teaching and learning resource and large number of students in class.

The study therefore, provides opportunity for further research including the assessment of the competencies of nurse educators to implement competency based curriculum, Infrastructure and available resources required to implement the curriculum effectively.

Conclusions

For the effective implementation of the intended/achieved competency-based curriculum for the nursing and midwifery policymakers and educational stakeholders need to be able to understand whether nurse educators are implementing the competency-based curriculum for the nursing and midwifery programmes as it was intended.

Despite the fact that the competency-based curriculum for nursing and midwifery programmes is being implemented for more than ten years, nurse educators in this study are still struggling to translate and implement it. Larger number of students, time and inadequate equipment restrict nurse educators in implementing the CBE curriculum effectively. Training on CBET curriculum implementation, continuous supportive supervision and mentorship may facilitate and ensure that the CBET curriculum is implemented with fidelity.

Recommendations

Policymakers and Educational Stakeholders

- Develop nurse educators' competencies which are necessary in implementing the competency-based curriculum for nursing and midwifery curriculum effectively.
- Directorate of Human resource and Training in collaboration with TNMC and NACTE can jointly develop a mentorship programme to build capacity for nurse educators.
- Directorate of Human Resource and Training should closely monitor implementation of the Nursing and Midwifery curriculum to ensure that curriculum is implemented as expected,
- With the understanding of resource intense in implementing CBET curriculum, the MoHCDGEC should ensure adequate teaching and learning materials, competent and adequate number of nurse educators.

Declarations

Ethics approval and consent to Participate–Not applicable

Consent for publication – Not applicable

Availability of data and materials – Not applicable

Competing interest – The authors declare that they have no competing interests

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Authors' Contribution

Vumilia initiated the idea of the study and had a major role in preparing the first draft of the manuscript. Lilian, Kibusi and Kalafunja participated in study design, data collection, analysis and writing throughout the study. All authors read and approved the final version of the manuscript.

Declaration

This work is based on a thesis that will be submitted to a degree of the University of Dodoma, Tanzania.

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Figures

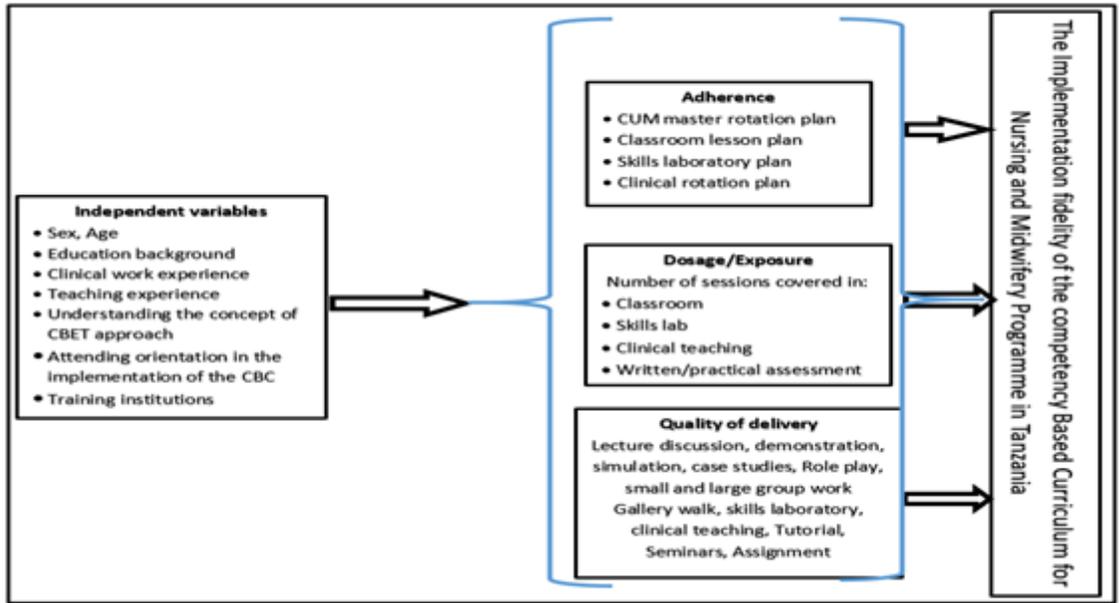


Figure 1

Conceptual framework for implementation fidelity of competency-based curriculum for nursing and midwifery programmes in Tanzania (21).

Variable	Frequency	Percent
Age group (mean)	45.7	
<40	65	33.68
40-50	67	34.72
51+	61	31.61
Sex		
Male	91	39.06
Female	142	60.94
Institution		
Private	43	17.99
Government	90	37.66
FBO	106	44.35
Highest Education level		
Diploma in nursing and midwifery	99	41.25
BSc N	75	31.25
MSc NE	66	27.50
Understanding the concept of CBET approach		
Yes	188	78.33
No	52	21.67
Attending Training related to nursing Education		
Masters of Science in Nursing Education (MSc NE)	16	5.76
Bachelors of Science in Nursing Education (BSc NE)	28	10.07
Advanced Diploma in Nursing Education (ADNE)	64	23.02
Centre for Educational of Development in Health	75	26.98
Teaching methodology Course	80	28.78
Any other	15	5.40
Teaching experience using CBC for nursing and midwifery		
≤5	106	44.17
6-10	107	44.58
11+	27	11.25
Attend orientation on the implementation of nursing and midwifery		
Yes	128	56.64
No	98	43.36

Figure 2

Characteristics of the Participants

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [InterviewGuideQuestionnaire.docx.pdf](#)