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Developing and Testing Framework for Assessing Quality of Facility Readiness for Clinical Teaching and Learning in Tanzania - A Mixed Method Study.

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Abstract

Background

Clinical education and clinical learning are important parts of nursing education, providing students with the hands-on experience and practical skills necessary to provide appropriate patient care. Clinical readiness is an important factor in shaping the experiences and perspectives of faculty and nursing students in the context of clinical education and learning.

Developing and Testing Framework for Assessing Quality of Facility Readiness for Clinical Teaching and Learning in Tanzania - A Mixed Method Study.

1 ABSTRACT

Background

Clinical education and clinical learning are important parts of nursing education, providing students with the hands-on experience and practical skills necessary to provide appropriate patient care. Clinical readiness is an important factor in shaping the experiences and perspectives of faculty and nursing students in the context of clinical education and learning.

2 Objective

This proposed study, focus to assess the quality of an institution's preparation for clinical teaching and learning. The results of this study will contribute to the development of evidence-based frameworks and interventions to improve the quality of clinical education and improve the overall preparation of nursing students for future healthcare roles.

2.1 Methods

This is a convergent parallel mixed-method study. consists of **taking qualitative and quantitative data collection as separate and analysis and comparing or relating the two and then interpreting them.** a

descriptive cross-sectional design.

278 participant students will be involved in study for quantitative. The data will be collected using a structured questionnaire, checklist and documentary review. Descriptive and inferential statistics will be used to analyse the data.

Then, descriptive qualitative study involving academic staff and health care workers will participated in a qualitative study. The data will be collected via in-depth interviews, and thematic analysis will be used to analyse the data. The findings of quantitative and qualitative studies will be triangulated in the discussion.

2.2 Implication of the study

This study will help prepare qualified and trained professionals to meet the needs of global Nursing. it can serve as a reference for certification bodies and quality assurance organizations and help organizations demonstrate compliance with established standards. , this study has long-term implications for the healthcare system by influencing the quality of healthcare professionals entering the workforce. This, in turn, contributes to improved health care delivery and outcomes in Tanzania.

2.3 Introduction

United Nations (UN) 2030 Agenda for Sustainable Development Goals (SDGS), which are an urgent call for action (UN SDG 2017) SDG3, Good Health, and Wellbeing, strives to ensure healthy lives globally, emphasizes access to quality essential healthcare services, which is currently inequitable at the expenses of low and middle-income countries (LMICs). During the sixtieth World Health Assembly, WHO recognized the severe implications of the inappropriate provision of health technologies to support the quality of health in developing countries. The lack of appropriate technologies was recognized as a barrier to the achievement of the SDGs, specifically SDG3 with its specific target of Universal Health Courage (UHC) Which impacts the guarantee of human rights (Chapman A. R. 2016).

It's interesting to note that there is a growing need to educate nurses within the clinical practice environment worldwide. Clinical practice settings that provide opportunities for teaching and learning during care delivery can be incredibly effective in educating both current nursing professionals and nursing students Henderson et al (2021) The surge in nursing student enrollment worldwide has been a significant and promising trend in addressing the global healthcare workforce shortage and ensuring the provision of high-quality patient care (Nkowane & Ferguson, 2016). Earlier studies have shown that the shortage of nursing professionals is putting pressure on healthcare systems and endangering the quality of care (Wismar et al., 2018). Therefore, an effective clinical teaching and learning environment, with satisfactory readiness for student learning and a focus on student learning needs, is crucial for nursing education (Zhang et al., 2022). Clinical learning is conducted in a complex situation in a healthcare setting, and students' experiences within the clinical context are of great importance

to how and what they learn. The environment should motivate students and contribute to their feeling of security, including when asked questions to achieve learning outcomes (Ekstedt, 2019) Clinical teaching and learning is an essential components of nursing education, providing students with the necessary hands-on experience and practical skills required for competent patient care (Kiernan, 2018).

While educational institutions strive to provide comprehensive theoretical knowledge (Kim et al., 2019),

the efficacy of clinical education heavily depends on the readiness of the facilities where the training takes place (Burgess et al., 2020).

Therefore,

it is the responsibility of educational institutions and teaching health facilities to produce skilled nurses who can meet the expectations of the healthcare sector (Suveksha et al., 2020). However, there is a growing demand for improving the situations in which nursing students learn clinical skills, as highlighted by Mselle et al. (2022). Clinical placements should provide students with opportunities to acquire nursing skills, develop clinical reasoning, and grow as professional nurses (Banneheke et al., 2017; Gisela, 2013; Jamshidi et al., 2016). Currently it is not well known how teaching institution select teaching hospital for sending nursing students and how hospitals are screened. This procedure of sending students is not guided by any framework. decision is made arbitrary without conduciveness resources, just by convenience of school and Memorandum of understanding (MOU.) If this practice continues without framework the effect may be negative (student client ratio). Lack of opportunity to learn and client disturbances.Compared to developed country where hospitals are screened for readiness for clinical teaching and learning using frameworks. This study aims to developing and testing a framework for assessing quality of health facility readiness in clinical teaching and learning in Tanzania.

Study done in seven countries in sub-Saharan Africa including Malawi, Zambia and Tanzania show there are several challenges to both students and their sending institution, similarly some hosting institutions suffer from readiness thus causing mixed feelings amongst nursing students (Nielsen et al 2020).

Institution based factors for training

institutions includes high rate of student enrollment, shortage of teaching staff, inadequate Lab skills, unsuitable and inconsistence administration communication between training institution and teaching hospital and mismatch of theory and practice while teaching hospitals records low number of patients/clients, shortage of medical equipment's supply, high hospital expenditures and emergency of infectious diseases

For students there is reduced opportunity to learn, inadequate practicing due to lack of medical equipment and supplies,

being at risk /prone to infection and student clinical absenteeism.

This

proposed research aims to bridge the gap in existing literature by Developing and testing framework for assessing the quality of facility readiness for clinical teaching and learning. The findings of this study will contribute to the development of evidence-based framework and interventions to improve the quality of clinical education and enhance the overall preparedness of nursing students for their future roles in healthcare setting in Tanzania

2.4 Objectives

The objectives of each phase are as follows:

General Objective

To develop and testing a framework for assessing the quality of facility readiness for clinical teaching and learning.

Specific Objectives

- i. To explore the perception of stakeholders (academic faculty health care provider and nursing students) on developing and testing a framework for facility readiness in clinical teaching and learning.
 - ii. To explore existing strategies that are used to evaluate facility readiness and preparedness for clinical teaching.
 - iii. To assess challenges faced by teaching health facilities when implementing clinical teaching and assessing nursing students.
 - iv. To assess the factors influencing facility readiness for clinical teaching and learning.
- v. To Develop and testing framework for assessing quality of clinical teaching and learning.

2.5 Materials and methods

A mixed method with a convergent parallel design and a deductive approach for data collection and analysis will be used. The aim of using a mixed method paradigm is based on the principles and logic of pragmatism. According to this paradigm, the mixed use of quantitative and qualitative approaches results in a better understanding of the problem. Both qualitative and quantitative data will be collected at one point time separately then analyzed separately and later triangulation of data will follow. The quantitative and qualitative findings will be mixed in the data interpretation stage.

2.6 Sample size and sampling methods.

To provide sufficient power to identify significant correlations and trends, a sample size calculation for the quantitative component will be made using the proper statistical methods. A random sample size must be sufficient in order to generalize from it while avoiding sampling error or bias. such as teaching hospitals, district hospitals, and Regional referral hospitals. quantitative approach, the following Cochran (1977) formula will be used.

n=

Where by:

n = Sample size N =Total population

e = Marginal /sampling error which from this study will be considered to be 5% =0.05

p = sample proportion of successes; (50%=0.5) q = 1 – p; (1-0.5) = 0.5

Z = standard variety at a given confidence level. (95% = 1.96)

n = 278

A total of 278 participants will be involved in the study.

2.7 Sampling technique

In this study, the technique for quantitative probability sampling will be stratified and systematic random sampling. The method of selecting the individuals on which information are to be made has been described in literature (Kish 1965, Gupta and Kapoor 1970).

Purposive Sampling In this method, sampling units are chosen based on the goal. A skewed estimate is produced by purposeful sampling, which is not statistically recognized. In Tanzania, this method was been used to choose the training facility and medical facility for certificate, diploma, degree, and master's students.

Stratified random sampling was used to identify training institution features that are representative of each sample (stratum), as well as the academic degree (diploma, degree, and master's) and year of study (second and third and second).

Systematic Sampling Each component of the sample in this portion of the sampling was having a predetermined likelihood of being included in the sample. Compared to purposive sampling, this sampling provides a good estimate of the study's parameters because every person in the sampling frame has a non-zero chance of being chosen for the sample. The concept of simple random sampling is present.

Lottery Method of Sampling Each person or thing in the population at hand is given a special number in this situation. The numbers are then thoroughly blended, just as if you had shaken or poured them into a bowl. The researcher then chooses numbers without stopping to examine. Following that, the population members or things given that number are included to the sample.

2.8 The eligibility criteria Inclusion criteria

I. The study will involve academic staff, health care providers and nursing students.

II. who have willingly consented to participate.

III. Eligible participants include those who are on duty on the day of data collection, particularly those in the clinical area and those who participate in teaching nursing students as well as nursing student.

Exclusion criteria

I. The study will exclude all health care providers and nursing students who

are assumed to have limited knowledge about the activities.

II. Those who are reported Sick or unwilling.

2.9 Scales and data collection

Quantitative data will be gathered by using four teaching hospital:

2.10 An interviewer-administered questionnaire

This method will be used to obtain information from students. The information that will be obtained by this method is the biographical characteristics and their perspectives about the quality of facility readiness for clinical teaching and learning.

Procedure:

Four research assistants will be trained for two days before data collection to ensure that they are familiar with the research procedure and will be monitored and guided by the principal researcher to maintain data quality control. Before data collection, the purpose of the study, benefits, and potential risks of the study will be explained to the subjects, and those who meet the inclusion criteria and are willing to participate will sign a consent form. The procedure will be performed in a private room to maintain confidentiality.

Documentary review

This method will be used to obtain information on facility readiness for clinical teaching and learning reviewing the existing guideline and framework for the betterment of developing and testing a highbred screening framework for nursing students clinical placement, teaching and learning.

Procedure:

This method will also involve four research assistants, and the data that will be extracted will be from frameworks (SARA,HHFR, School Establishment Guideline and National Guideline for health training institution and teaching hospital).

Observation method

This method will be used to gather data on the availability of equipment in health facilities for facilitating

clinical teaching and learning the equipment and medical supplies will cater from gloves, bp machine ,stethoscope, leaning corners, thermometers visual and audio teaching aid etc.

Procedure: The principal investigator and research

assistant will assess the availability of equipment/supplies for facilitating clinical teaching and learning using a checklist.

**Measurement
method**

Voice recorder an audio

interface is a device to which the microphones (usually XLR) are connected. The audio interface contains Analogue to Digital Converter (ADC) that will convert vibration signal from the microphone diaphragm to digital signal. The signal is then sent to a computer via USB cable. Sony ICD-PX470 Digital voice recorder with USB featuring record in linear PCM (WAV) & MP3 format, internal 4GB memory.

Note book and pen for documentation.

Detailed Field Work

The fieldwork will involve obtaining ethical clearance, contacting selected health facilities and educational institutions in Dodoma seeking informed consent from participants. The interviews will be conducted in a private and comfortable setting, ensuring confidentiality and creating a conducive environment for data collection. The data collection process will involve interview and audio-recorded, with the participants' permission for qualitative data.

2.11 **Data collection tool**

This study employs four data collection tools:

Paper-based structured questionnaire

A paper-based structured questionnaire was used to obtain data regarding social demographic characteristics. The tool will be adapted from and will be modified by the researcher to fit the study's local context. The tool has 22 items and will be organized into two sections: Section A will cover the socio-demographic characteristics of the participants, which will have 7 items, and Section B will be composed of 13 items regarding facility readiness for quality clinical teaching and learning.

Reliability and validity

Reliability

To ensure the reliability of the tool, a test-retest will be employed in which the tool will be tested and retested into different occasion with similar population to see the consistency of the results and also for internal consistency of the tool, Cronbach's alpha coefficient will be calculated after data collection using 10% of the sample required. In this study, a Cronbach's alpha coefficient of 0.70 and above will be considered acceptable, and scale analysis will be carried out specifically principal component analysis (PCA) will be done if the Cronbach's alpha coefficient does not reach the criterion level of alpha = 0.7.

Validity

Both the face and content validity will be ensured. For face validity, the tool will be piloted using 10% (n=33) of the required sample of different study subjects with the same characteristics but of different geographical locations to check if the tool is clear, understandable, answerable, language clarity, duration, and cultural acceptability. Also, the tool will be translated from English into Swahili to blend in with the study subjects understanding level. Furthermore, for content validity, the tool will be subjected to supervisors, statisticians and experts on the topic under study to check whether it

adequately covers all domains related to the variables and if it answers research questions. These individuals will provide feedback on items such as organization, language, structure of the sentence and adequate of the items to answer research questions. Thereafter the tool will be returned to them for their final verification until there are no more inputs that need to be added.

2.12 Variable measurement

Independent Variable

Independent variables in this study are the social demographic data (Age, Sex, Educational Level, Entrance qualifications, perspective of academic faculty, health care providers and nursing students on Physical and organizational characteristics where healthcare occurs. (Buildings, staff quality availability, and availability of equipment) this will be evaluated using a standard questionnaire.

3.7.2 Dependent Variable

Dependent variables in this study are Effect of health care on the status of the patients and populations. (effects of quality in knowledge acquisition in provision of care) quality of facility readiness for effective clinical teaching and learning.

2.13 Data analysis

Quantitative data will be analyzed with the IBM SPSS-25 package. This will occur after data cleaning through the running frequency to ensure that all the data are captured. The socio-demographic characteristics of Participants characteristics will be determined by frequency and percentage through descriptive statistics. Moreover, the availability of equipment for facilitating clinical teaching and learning will be determined by frequency and percentage. Finally, the relationships between independent variables were determined by the chi-square test through inferential statistics. The associations between independent variable characteristics will be determined by binary logistic regression.

Qualitative study

The qualitative study that used a descriptive qualitative design to explore... The study will opt for this design because it provides a direct description of participants' experiences without a deep theoretical context of a particular topic under investigation, and the design is flexible and has sufficient procedures to provide a thorough understanding of the phenomenon. This qualitative approach will be interviewed based on saturation points and aims to provide a deeper understanding. Thematic analysis will be employed to analyze the qualitative data that will be collected.

Researcher characteristics and reflexivity

The principal investigator is a nurse midwives student with 22 years of experience in clinical practices and training institutions and has managed to work in the labour ward, postnatal ward, reproductive unit, paediatric ward, neonatal ward and training institution. Through this experience, the researcher is expecting to perform an extensive exploration of facility readiness for quality clinical teaching and learning. Moreover, the principles of conducting

interviews in a qualitative study, such as bracketing, use of reflexive journals and taking field notes, will be ensured to prevent researchers from influencing the interviews.

2.14 Sampling method

Criterion purposive sampling will be used to recruit and select participants. Participants will be selected based on their ability and experience to express themselves. The principal investigator will ensure maximum diversity in background characteristics such as age, level of education, culture, during selection and recruitment to gain a comprehensive understanding of facility readiness for quality clinical teaching and learning. In the qualitative study there is no fixed sample size, the estimation of sample size is guided by the principle of saturation point or information power, and in this study, and data saturation point will be reached when there are no more new points with emerging concepts or insights from further interviews. However, for planning purposes, 15 Academic and health care workers will be interviewed and the replacement of the participants will be used to maintain the sample size in case of withdrawal. In addition, before the discussion, all participants will be given written informed consent for their participation.

2.15 Data collection method

In-depth interview A face-to-face in-depth interview will used to collect qualitative data on facility readiness for quality clinical teaching and learning. The researcher has opted for this method because the study intends to explore the individualised and not shared among stakeholders.

Procedure: The in-depth interview will be conducted in a private, conducive and friendly room where the participants will be comfortable to express themselves. The interviews will commence after the researcher to explain the purpose, benefits, risks, voluntary participation, privacy and

confidentiality, informed consent will be obtained from the participants and the participants will be given codes to protect their identities. Each interview will start with a general question to understand the general experiences of participants and will be followed by several probing questions to gain a breadth and deeper understanding of the facility readiness for quality clinical

teaching and learning. The interviews will be recorded using an audio-recorder and field notes will be used to record verbal cues, the interview duration will depend on the participant's tolerance and patience to describe their experiences under the topic interviewed. However, the interview will range from 45- 90 minutes and the key issues will be summarized immediately after every interview to be conducted.

Data collection tool

A

qualitative interview guide will be used to collect data on developing and testing a framework for assessing facility readiness for quality clinical teaching and learning. The tool was designed by the principal investigator based on the research question. The semi-structured interview guide consisted of 4 main interview topics, were constructed to explore into details of this phenomenon, allowing the participants to express their experiences that might be overlooked when closed-ended questions were used. Additionally, an audio recorder will be used to capture and preserve audio from the interview. It is chosen because it ensure the accuracy of the data in the participants' responses, accuracy in recording sounds, long lasting battery life, large storage, easy operating, simple to carry and user friendly to fieldwork. In addition, the recorder include backup functions to

protect against data loss in the event of unanticipated occurrences or technical issues. The confidentiality and integrity of the data will be guaranteed by the implementation of security measures, such as encoding and password protection. Furthermore, the audio recorder will be pre-tested before actual data collection to check for functionality, ability to transfer data, and capturing of sounds, in terms of, audibility which all of these will ensure the credibility of the tool to be used in this study.

2.16 Data analysis

Thematic analysis will be used to analyze the data on developing and testing a framework for assessing quality of clinical teaching and learning. Thematic analysis is chosen because it provides a purely qualitative account of richer and more detailed data. Data will be collected using audio recorders and field notes whereby audio recordings will be transcribed verbatim and translated to English using a forward and backward translation approach then data will be examined to identify the recurring themes and patterns of meaning about the phenomenon under study to identify recurrent themes, topic ideas, and patterns of meaning, the data will be carefully examined. The researcher first will group sentences with similar ideas together before identifying text units and categorizing them to create sub-themes. The general themes will be created by combining several sub-themes. The principal investigator will verify that themes if are accurate and relevant for presenting and reporting to the final research report. The thematic analysis will follow the following steps according to Braun and Clarke (2006).

Familiarization;

This is the first stage at manifest level of thematic analysis that involves transcribing the data from audio to text, reading and re- reading the data, identifying the initial ideas about

the interviewed topics with the aim to familiarize with the collected data. At this step the researcher immerses into the data to identify the key concept within the data set.

Generating initial codes:

This will be the second stage after familiarization which will involve coding of the interested and peculiar characteristics of the data in systematic way across the entire data set, assembling data relevant to each code. The researcher will identify the meaningful units of text, in the form of phrases and will be highlighted with different colour.

Searching for themes:

The stage will involve organizing codes from different discussant into potential themes by mixing many codes to generate a single themes. The researcher will identify patterns among the concepts and began to develop themes according to the coded patterns.

Reviewing themes:

The researcher will review and refine the themes to ensure if are accurate and relevancy to the data. Themes will be compared to the data to ensure truly presentation of the data from the Discussant.

Defining and naming of themes: After identifying the final themes, the researcher will define and name the themes in the way that it present the real meaning of the phenomenon. The themes' names will be examined to make sure they are sufficiently descriptive and brief to be included in the report.

Producing report and writing up: This will be the final stage of thematic analysis that will involve writing of the report using the analyzed data. The report will comprise a narrative description and quotations from participants.

2.17

Trustworthiness

Trustworthiness and authenticity are taken into consideration through the following elements:

Credibility will be ensured through member checks, persistent observation, and prolonged engagement. Additionally, the interviews will be audio recorded and then transcribed verbatim to ensure that each detailed piece of information provided by the participants is captured and analyzed. **Dependability** will be guaranteed by purposively selecting participants, employing triangulation and using an interview guide, two methods of data collection and field notes.

Confirmability will be ensured by participants' validation of transcripts (member checking) and the use of participants' verbatim quotes to present the results and by practising researcher bracketing. Moreover, participants' nonverbal cues will be captured in field notes.

Transferability will be ensured through writing a study setting, participant characteristics that will represent a general population, and themes and sub themes that will allow the applicability of these findings to another similar setting.

Discussion

Employers and professional organizations demand that higher education institutions produce graduates with relevant competencies and skills in the current competitive and globalized economy. Health professions universities in Tanzania are responding to this need by implementing Competency-Based Curriculum (CBC) training, which emphasizes student-centered rather than the traditional teacher-centered approaches. The information, skills, attitudes, beliefs, and abilities that support successful performance in the workplace are all part of competence. (de las NievesPereiraVallejos et al 2017) The CBC places a strong focus on clinical teaching as a crucial tool for helping students develop their clinical competence. In order for students to obtain the necessary clinical competencies, the training setting needs to be real, fully furnished, and provide sufficient assistance from instructors, supervisors, and the clinical team. In order to guarantee the successful implementation of CBC, medical

Research from Tanzania and other countries have revealed that medical and nursing graduates' abilities to carry out clinical procedures, make clinical interpretations, communicate clearly, and conduct physical examinations (PE) were restricted.(Kaaya EE et al 2012, Mwakigonja AR, 2019) According to reports, unfavorable patient events are highly influenced by inadequate PE, hence improving PE skills training should be viewed as a crucial and practical strategy for reducing medical errors. This mixed-method study will provide a wide understanding of this problem, which will lead to the recommendation of different interventions for improving clinical teaching.(Mselle et al 2022)

Duration of the study

The study is expected to be conducted from April 2024 to December 2024 in Dodoma region, Tanzania in the selected health facilities

2.18 Ethical consideration

Ethical approval was obtained from the institutional research review ethics committee (IRREC) of the University of Dodoma with reference number MA.84/261/75/37. Permission to conduct this study at the selected health facilities will be obtained from the permanent secretary president's Office, the Regional Administration and Local Government (PO-RALG) and the Regional Administration Secretary (RAS) of the Dodoma region. Informed consent will be obtained after the participants are informed about the purpose of the study, benefits, risks, voluntary participation and ability to withdraw at any time during the study. Privacy and confidentiality will be ensured by assigning numbers to participants for anonymity, and information that will be obtained will be kept safe.

Strength and limitation of the study

This proposed study is going to provide insight into facility readiness for quality clinical teaching and learning in the region by providing the magnitude, factors associated with it, equipment and supplies available in the selected health facilities, and real practices of clinical teaching and learning, which will provide baseline information for proposing effective, costless, and friendly interventions to improve quality of clinical teaching. Moreover, by utilizing a mixed-method convergent parallel design, the study will be able to quantify and be supplemented with qualitative data to gain an in-depth understanding of the phenomenon, which most of the previous studies didn't do. Despite the stated strengths, the proposed study has some limitations. The first limitation may be that the study will not be able to follow the other teaching hospital to determine their outcomes. Last but not least, the study population will be limited to the Dodoma region, which is not generalizable to the entire Tanzania mainland, with 26 regions raising concerns about its external validity.

2.19 Supporting information

S1 File. In-depth interview guide for stakeholder (Academic staff and healthcare workers.)

(PDF)

Availability of the materials

The materials for this study will be available upon completion and at the request of the corresponding author and the University of Dodoma's institutional research review ethics committee (IRREC).

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Author contributions

Conceptualization: Maira Jackson

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Supervision: Stephen Kibusi & Walter C. Millanzi

Writing – original draft: Maira Jackson, Stephen Kibusi and Walter C. Millanzi.

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2.20

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