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Clinical Simulation Practice and Associated factors among Nurse and Midwife Educator Working at Teaching Institutions in Bahir Dar, Ethiopia: A Mixed Methods Study

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BAHIR DAR UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES
DEPARTMENT OF ADULT HEALTH NURSING

CLINICAL SIMULATION PRACTICE AND ASSOCIATED
FACTORS AMONG NURSE AND MIDWIFE EDUCATOR
WORKING AT TEACHING INSTITUTIONS IN BAHIR DAR,
ETHIOPIA: A MIXED METHODS STUDY

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COLLEGE OF MEDICINE AND HEALTH SCIENCES,
SCHOOL HEALTH SCIENCE
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ABSTRACT

Background: Simulation is defined as "the processes by which we are trying to achieve results approximating clinical practice as closely as possible". It is a technique for replacing or completing real-life experiences with guided experiences,

Objective: To assess and explore clinical simulation practice and associated factors among nurse and midwife educators working at teaching institutions in Bahir Dar, Ethiopia.

Method: An institutional mixed-method study was conducted from May 9 to June 7, 2022 at six teaching institutions in Bahir Dar City. A sample size of 220 was taken into account for the qualitative study, and a self-administered questionnaire was used to gather data. In-depth interviews were used to acquire data for the qualitative study, which involved eight people. The data was entered into EpiData and exported to SPSS version 26 for additional analysis after being reviewed for consistency and completeness. To evaluate the relationship between the dependent and independent variables, binary logistic regression analyses with both (bi-variant) and (multivariable) inputs were carried out.

Result: Among 212 respondents, 104 (49.1%) were government employees. Most of the respondents in this study were male (65.6%). Statistically significant associations between simulation practice experience (AOR= 0.21; 95% CI: 0.07-64), training (AOR =0.52; (95% CI) = (0.27-.98), educational qualification (AOR=0.37; (95% CI) = 0.15-0.93) and cost (AOR = 0.37 ; (95% CI) = (0.18-0.74) The study showed that only 121(57%) of the respondents' practices were classified as "good practice," while 91 (42.9%) were classified as "poor practice." Qualitative findings revealed that a lack of classroom space, inadequate training in the institution, and a consistent checklist hampered the implementation of clinical simulation practice.

Conclusion and recommendation: We determined that a shortage of classroom space, inadequate resources, high costs, and an absence of ongoing training were the key obstacles to the successful implementation of clinical simulation practice. Responsible governmental bodies should give attention for clinical simulation education,

Keywords: Practice, Competency, Associated factor, Bahir Dar, Ethiopia.

ACRONYMS AND ABBREVIATIONS

AAU	Addis Ababa University
AAUSOM	At Addis Ababa University School of Medicine
AHSC	ALKAN Health Science College
BDU	Bahir Dar University
BHSC	Bahir Dar Health Science College
GHSC	GAMBY Health Science College
HFS	High-fidelity simulation
KHSC	Kiamied Health Science College
LFS	low fidelity simulation
SBCE	Simulation Based Clinical Education
SBL	Simulation Based Learning
WHO	World Health Organization

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1. Introduction

1.1 Background

Simulation is defined as "the processes by which we are trying to achieve results approximating clinical practice as closely as possible". It is a technique for replacing or completing real-life experiences with guided experiences, which are faithful imitations of the real world in a fully interactive way (1). Simulation is a novel method of teaching psychomotor abilities because it allows students to integrate knowledge from all three learning domains while practicing the skill (2). Simulation is a teaching and learning strategy that is increasingly used in nursing education to prepare students for the clinical workplace. It has existed in nursing education in many forms, and the first healthcare simulation manikins were introduced in the early 1960s (3). Simulation is a technique or device that attempts to create the characteristics of a real-world situation. Simulation allows the educator to control the learning environment through the scheduling of practice and providing feedback (4).

Simulation is a technique or device that attempts to create characteristics of the real world. Simulation and debriefing methods were utilized to increase the participant's awareness of their own knowledge and skills in ethics and provide an opportunity for reflection on useful teaching strategies in applied ethics during clinical instruction (5).

Simulation learning is an integral component of many undergraduate nursing programs throughout the United States of America. Similar practices in simulation learning are being implemented in Ethiopia. Experiential learning through simulation allows students to improve their cognitive, affective, and psychomotor skills (6).

Schools of nursing are required to provide students with both theory and clinical opportunities relative to the scope of nursing. Nurse educators who teach in baccalaureate programs foster critical thinking and communication skills through didactic and clinical instruction, as well as learner activities such as simulation (7). Simulations vary in type and the technology utilized. Simulations range in technological complexity from low-fidelity, consisting of case studies or written patient scenarios where students engage in problem-based learning, to high-fidelity, where high-tech mannequins are utilized to generate highly realistic scenarios (8). Competent

nurses are able to consistently transfer knowledge into appropriate action. To do this, nurses must be able to obtain patient data, make accurate decisions based upon their interpretation of the data, and take appropriate action based upon the information and the situation (9). The use of clinical simulation as a teaching technique has become widely encouraged due to its ability to provide active learning mechanisms, construction of knowledge, critical understanding of reality and favor the acquisition of technical and non-technical skills, such as crisis management, teamwork, leadership, clinical reasoning, and decision-making (10).

AAU has embraced simulation-based medical education (SBME) as part of the solution to fill the gap. Simulation in medical education is an educational modality that replicates or imitates a real clinical environment. It provides healthcare professionals the opportunity to acquire and master key skills and behaviors in a risk-free environment. Simulation-based medical education is widely used in the developed world as a result of the demand for patient safety, the rapid development of new medical technology and management modalities, the need for training in specific presentations and diagnoses to fulfill educational objectives, and insufficient clinical training opportunities with actual patients (11). Clinical simulation may be used for assessment and evaluation of students' skills, as a teaching strategy in clinical nursing courses, and an opportunity for students to practice clinical skills. Clinical simulations, most educators believe, foster and enhance critical thinking skills through the practice of psychomotor skills and therapeutic communication techniques (12).

Simulation is an instructional tool and procedure that has been proven to be effective. Simulation encourages students to work together and form bonds, as well as to follow a routine for mastering a skill. It is built on a scenario in which learning becomes interactive, allowing for feedback between the educator and other team members, and encourages clinical reasoning and critical thinking among the team members (13). The purpose of this study was to evaluate the use of simulation to impact the Development of clinical self-efficacy in junior- and senior-level nursing educators.

1.2 Statement of the problem

New nurses must be able to care for patients in a fast-paced environment that emphasizes clinical competence and accurate, timely decision-making skills. Self-efficacy is a characteristic that is believed to increase an individual's ability to be successful at a task. Based on recent research, it is estimated that 85% of the factors affecting clinical simulation are instructor-related factors. These studies have also shown that only 24.5% of participants were competent at clinical practice (14). Simulation-based education presents logistical challenges for academic staff. The heavy reliance on technology and equipment can be frustrating. For example, the pressure to provide clinically realistic contexts for students and to move large numbers of students through small simulation spaces concerned the participants(15) One of the major problems of nursing education is the lack of coordination between theory and practice. With a paradigm shift toward student-centered learning, traditional teaching methods such as lectures and PowerPoint presentations are no longer considered effective for developing students' skills. Nurse educators must develop realistic learning experiences that support student transition to the clinical setting while ensuring safe and competent graduates who are prepared for the technological advances in nursing practice (16).

Educators struggle to effectively teach students due to an inadequate student-educator ratio, an underdeveloped curriculum, insufficient resources, insufficient clinical teaching settings for skills, simulation labs, and insufficient professional development opportunities, a lack of autonomous decision-making, a lack of educational, management, and research support from regulatory bodies, and a lack of educational research (17).

Clinical simulation practice is important to develop psychomotor skills before engaging in clinic, but there is no research about clinical simulation practice and associated factors in Ethiopia, Africa, and the world. Research at Addis Ababa University has reported clinical simulation knowledge and perception towards nurse educators. The cost of setting up and running a contemporary laboratory is fairly high. Computers and high-fidelity simulation models, as well as their upkeep, cost a lot of money (18).

In recent years, skill laboratories have become more widely used in nursing education to teach basic skills. Patients' shorter hospital stays, staff shortages, and an increase in the student-to-teacher ratio have limited appropriate clinical teaching at clinical sites, necessitating the acquisition of skills in skills laboratories(19). Students study clinical skills, communication skills, and technology to a set degree of competency before they are allowed to have direct interaction with patients in skill laboratories. Simulations are employed in the skill laboratories. As a result, nursing schools should place a greater emphasis on teaching practical skills to student nurses. It can range from a single room with simulators to a purpose-built facility with a wide range of equipment and simulations(20). Globally, clinical teaching is faced with unpredictable challenges, and it becomes hard to plan for the clinical teaching environment. Besides, limited time for clinical teaching makes it difficult to maintain standardized clinical teaching practices among nurse educators (21). Simulated learning environments can contribute to expanding students' opportunities for enhancing clinical skills and experience(22).

In Ethiopia, studies that aim to investigate the utilization and application of nursing clinical simulation programs in nursing education have not been found in general and in the Amhara region in particular. As a result, the researcher of this thesis was inspired to fill the gap by conducting research on nursing educators at Bahir Dar health institutes.

1.3 The significance of the study

The findings of this study will be helpful for nursing and midwife education and policymakers. The findings of this study will improve the quality of education. The findings of this study could be used by policymakers to develop an appropriate policy and curriculum. It will also improve students' ability in practical areas and generally the standard of nursing and midwife education and practice. The findings of this study could also be used as a baseline for further study on clinical simulation and its contributions. It can provide input for the nursing and midwife professions and education

2. Literature Review

2.1 Introduction

This thesis is aimed at assessing the level and associated factors of clinical simulation practice in teaching undergraduate nursing students among nurse educators working at teaching institutions. In doing so, I have reviewed different topics which I believe are relevant to the practice of clinical simulation and associated factors. The sum of the topics that I address are: clinical simulation practice and factors for the practice of clinical simulation. The details are presented in the following sections.

2.1.2 Clinical simulation practice

Nurse and midwife educators need a much broader set of skills than only those connected with creating, running, and debriefing if they are to use SBL effectively. They must apply extensive nursing and midwifery educational knowledge, behaviors, and skills, as well as demonstrate proper conduct. Through intentional design, presentation, technical and pedagogical abilities to assist student learning, and facilitative purposeful debriefing, a skilled SBL educator may bring the "kit" and context to life by merging the real and the imagined (23). Due to fewer opportunities for skill practice and growing concerns that graduate nurses lack basic psychomotor abilities, nurse educators must rethink how they teach these skills (2).

Anxious students were also less secure in their capacity and efficacy to care for patients, according to the findings. As a result, nursing educators can determine which aspects of clinical practice create the most anxiety and design simulations accordingly. Furthermore, during their first clinical experience, nursing educators should recognize nervous students and recommend a suitable intervention strategy to lessen their anxiety levels (23). A number of studies have found that simulation-based education enhances healthcare practitioners' clinical abilities and practices. Simulation enhances critical thinking, skill performance, and subject area knowledge, which frequently translates to better patient care (24). Simulation enhances critical thinking, skill performance, and subject area knowledge, which frequently translates to better patient care (25). The effectiveness of simulation was undertaken by a cross-sectional study in Australia. Of those who evaluate outcomes, 77% of participants replied that the most frequently used method was student satisfaction (94%), followed by subjective staff input (82%), and outcomes

of skills tests (47%). Smaller numbers of participants stated that they measured outcomes in relation to competency standards (35%), clinical reasoning (29%), knowledge acquisition (18%), and clinical performance (18%)(25)

This quantitative study investigated the current clinical teaching practices of nurse educators at a public college of nursing in South Africa. Nurse educators were selected from five campuses over a two-month period using convenience sampling. Data were collected with a structured questionnaire, the design of which was informed by the Dundee Three Circle Outcomes Model for Clinical Teaching. The results showed that 37% of the nurse educators had more than 10 years of clinical teaching experience. Of the 66% who had formal education on clinical teaching practices, 49% received in-service education. Most nurse educators were willing to share documents they used for clinical teaching with their colleagues in order to promote standardization of teaching practices (20). A cross-sectional study in Dilla University's clinical practice competency found 39% Medication administration is an important part of the nurse's role. Students and new nursing graduates often lack the knowledge and competency to safely administer medications. Simulation can facilitate student learning about medication safety (26)

2.1.3 Factors of Clinical Simulation practice

Poor teaching aids and scholarly resources, poorly defined roles, and underdeveloped and inconsistent curricula were among the factors identified by educators(27).Clinical teaching in the clinical context should be supplemented with clinical teaching in the simulation laboratory to meet educational requirements. This strategy allows nursing students to practice complex tasks and acquire confidence in a safe and non-threatening atmosphere before giving nursing care at the patient's bedside. Teaching in a simulation lab can improve student happiness and self-confidence, while also addressing overcrowding and a lack of clinical sites. The level of self-confidence was the most important factor in predicting care efficacy. We discovered that a student's self-confidence affects their caring efficacy, which is validated by earlier research (23). Another challenge in providing effective and high-quality clinical teaching for undergraduate programs is demonstrating a variety of practices in the clinical setting, such as the use of different guidelines and protocols; differences in clinical practices, procedures, and care in nursing and other health professions; and differences in professional, unit, or health center characteristics. These differences make it challenging for nurse educators to standardize their teaching methods in these settings (20). In clinical learning, the instructor's qualities and

interaction with the student are important aspects (28). In Ethiopia, nursing students' clinical practice competence was insufficient to offer quality, safe, and satisfying nursing care. This may not address the holistic needs of patients and may even cause fear, worry, anxiety, and avoidable blunders by clinical students. Nursing schools and teaching hospitals should collaborate to improve the clinical practice competency of nursing students (14).

The following are factors associated with the practice of clinical simulation in health education: Patients' hospital stays are reduced. Technological advancements in healthcare delivery, Recent changes in nursing training to be more practice-oriented, inadequate knowledge of clinical educators to appropriately teach clinical skills during clinical exposure (29). There is an inadequate number of clinical educators in hospitals. Many student nurses are at clinical sites. One of the major challenges with education practices fall into four categories: assessment strategies, teaching and learning strategies, the curriculum, and scarce resources(30).

After reviewing much literature from different sources on clinical simulation and its use in nursing education, it is found that most studies report that clinical simulation has a positive effect on nursing students' knowledge, skills, and confidence. Nurse educators mention different challenges to applying clinical simulation in nursing education, such as time, finance, and availability of resources, which are mentioned as barriers to applying clinical simulation. Even though clinical simulation is stated as an effective teaching strategy in a country where there are limited resources like Ethiopia, there is no available study regarding clinical simulation and the educator's viewpoint toward it in the Ethiopian context in general and in the Amhara region in particular.

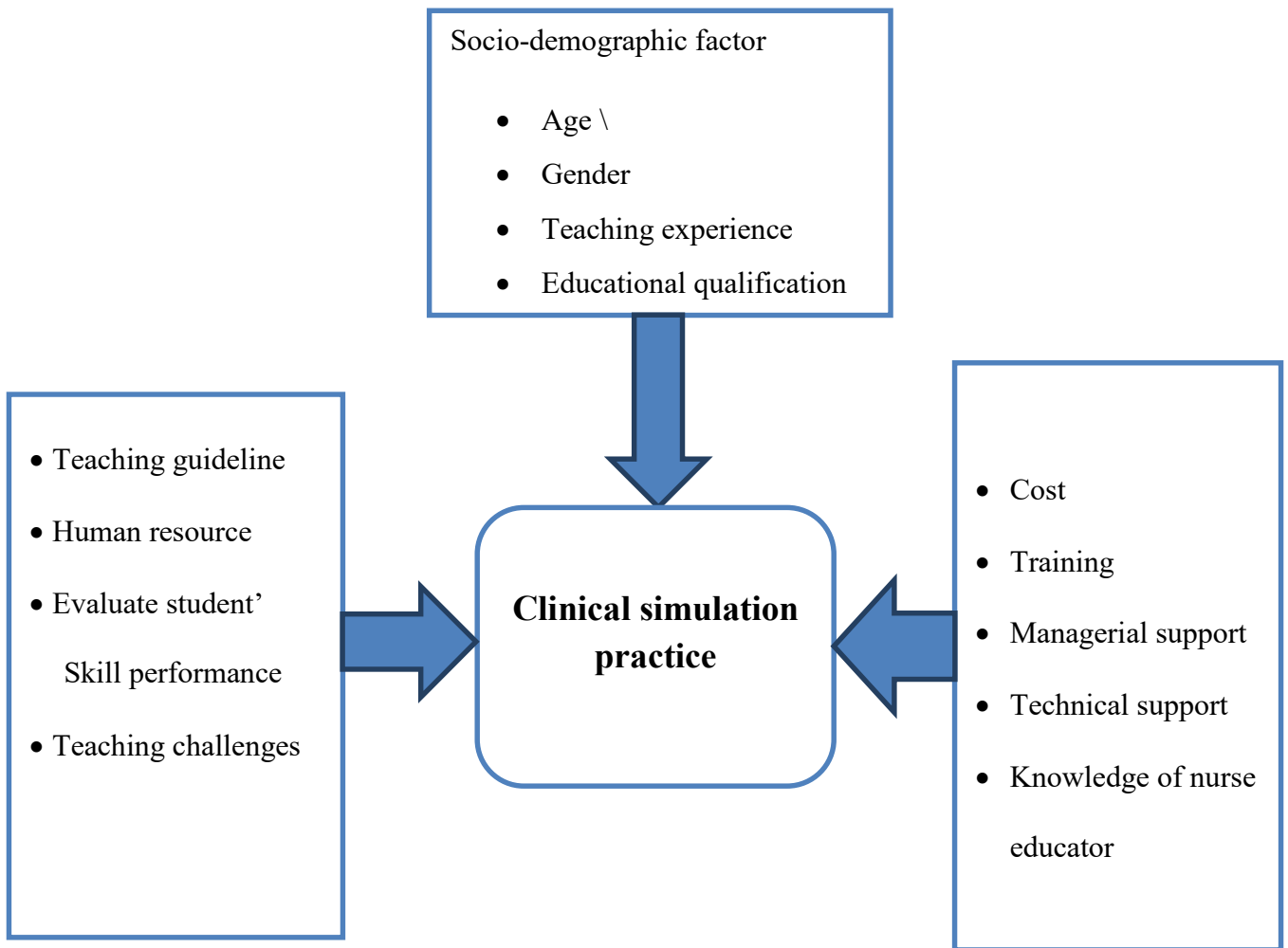


Figure 1: Conceptual framework to clinical simulation practice and associated factor

3. Objectives

3.1 General Objective

The main objective of this study was to assess and explore clinical simulation in teaching practice and associated factors of nurse and midwife educators working at teaching institutions in Bahir Dar, Amhara Region, and Ethiopia. 2022.

3.1.2 Specific Objectives

- To determine the proportion of simulation practice among nurse and midwife educators working at teaching institutions in Bihar, Dar, Amhara Region, Ethiopia, 2022.
- To explore factors influencing effective clinical simulation practice among nurse and midwife educators working at teaching institutions in Bihar, Dar, Amhara Region, Ethiopia, 2022.
- To identify the factors affecting clinical simulation practice among nurse and midwifeeducators working at teaching institutions in Bihar Dar, Amhara Region, Ethiopia, 2022.

4. Methods and Materials

4.1 Research area and time frame

The study was conducted in Bahir Dar City from May 9 to June 7, 2022 in Bahr Dar. Bahir Dar is a city in northwestern Ethiopia, which is situated on the southern shore of Lake Tana, the source of the Blue Nile (or *Abay*)(31). It is the capital city of the Amhara National Regional State (ANRS). There is one governmental health teaching university, one governmental health college, and four non-governmental health teaching institutions in Bahir Dar city with clinical simulation facilities.

4.2 Study design

An institution-based mixed methods study was conducted to assess the practice and associated factors of nurse and midwife educators on clinical simulation.

4.3 Population

4.3.1 Source Population

Nurse and midwifery educators working at a teaching institution in Bahir Dar, Ethiopia

4.3.2 Study Population

Nurse and midwifery educators working at teaching institutions in Bahir Dar, Ethiopia and available during data collection

4.4 Eligibility Criteria

4.4.1 Inclusion Criteria

- For the quantitative study, nurse and midwifery educators working at teaching institutions and having simulation.
- Nurse and midwifery educators, managers, and technical staff with clinical simulation were included in the qualitative study.

4.4.2 Criteria for Exclusion

We did not interview any nurses or midwife instructors who were not involved in the clinical simulation exercise. This study did not include instructors who were not health professionals.

4.5 Sample Size and Sampling Method

Six of the nine health science academic institutions offering a nursing and midwifery undergraduate program in Bahir Dar have been chosen through simple random cluster sampling. There were a total of 220 nurse and midwife educators at the chosen institutions. All nurse and midwife educators who were chosen to participate in the study for the quantitative study. A minimum of two key informants were questioned for each qualitative study, and the maximum sample size was established by the saturation of the data. 63,40,50,20,17,30, Bahir Dar University health science college, Ganbey health science college, Riftvally health science college, Bahir Dar health science college, Kiamied health science college, and Alkan health science college are the names of the selected institutions and the number of instructors, respectively.

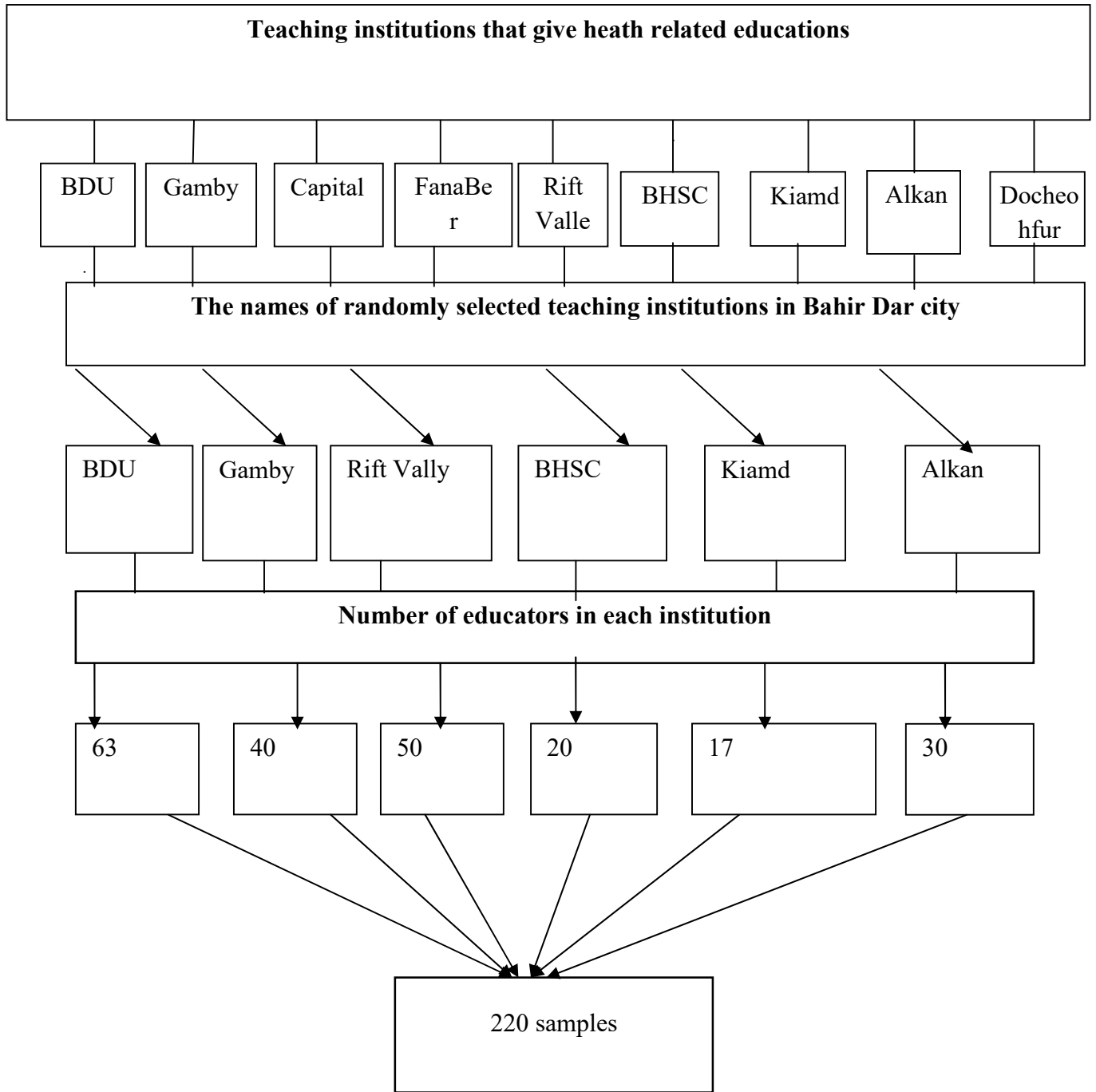


Figure 2: Sampling technique and procedure

4.6 Data Collection Instrument and procedure

The quantitative data were gathered using a self-administered semi-structured questionnaire adapted from various English literatures and designed to meet the study objective. The questionnaire has three parts:

Part I contains the socio-demographic questions.

Part II consists of questions assessing educators' practice toward clinical simulation and

Part III consists of questions assessing educators' associated factors toward clinical simulation.

Four data collectors who have bachelor's degrees in health related professionals were recruited for data collection. Two supervisors with Master's degrees, qualifications in health related disciplines. The qualitative data was gathered through the use of an in-depth interview guide.

The qualitative data was collected through in-depth interviews of key informants using an interview guide. The interview was audio recorded and additional notes were taken to capture the information delivered through non-verbal cues and to support the audio recording. The data was collected by the student researcher.

4.8 Variables

4.8.1 Dependent Variables

Clinical simulation practice

4.8.2 Independent Variables

Socio-demographic characteristics

Age, Gender, Teaching Experience, Educational Qualification clinical simulation training, academic institution type,

Variable related to practice

Clinical skills and tools for student evaluation, compared to clinical skills' assessment items for students, facilitating clinical skill learning through clinical teaching and practice modeling items
Clinical teaching tools and processes are used. Planning for assessment and clinical placement, planning for clinical teaching Debriefing.

Variable related to the factor

Factor related variables are: resources; ongoing faculty training; technical support; managerial support; background knowledge of educators; human resources; teaching guidelines and teaching challenges.

4.9 Operational Definitions and Definition of terms

Clinical simulation practice will be assessed by 17 questionnaires so that:

Poor simulation practice: Is defined as when participants respond to a clinical simulation practice questioner with a scale mean less than 1.5(20).

Debriefing: is a process involving the active participation of learners guided by a facilitator or instructor whose primary goal is to identify and close gaps in knowledge and skills (32).

High-fidelity simulation (HFS): has been proposed as a novel, supplemental teaching-learning strategy to enhance students' confidence and competence in nursing practice(33).

Low-fidelity simulation: provides students with learning opportunities that may not be available through clinical education. Of a patient's status and responses to interventions (34).

4.10 Data Quality Assurance

Data collectors and supervisors were trained carefully on interview procedures and question content. The quantitative questionnaire was pretested on approximately 5% of the sample size in DebreMarkosGabst Health Science College before being used in the selected teaching institution to check for consistency and errors. Close supervision was conducted on a daily basis to ensure the completeness and consistency of each questionnaire and checklist. Data entry and cleaning were done carefully to avoid potential errors during analysis stages to assure data quality.

4.11 Data processing and analysis

Quantitative data were collected by using a self-administered questionnaire, which was adapted from (20). And then it was entered into EpiData and exported to SPSS version 26 for further analysis. Both bi-variable and multi-variable binary logistic regression analysis were used to assess the association between dependent and independent variables. Model adequacy was checked by the Hosmer and Lemshow test and fits the data well **0.45**. Multicollinearity was checked by the variance inflation factor and had no co-linearity or outliers. The variables with a significant association were identified using AOR, with a 95% confidence interval and a P-value of 0.05 as the cut-off point for significance. Finally, the results were presented using text and

tables. The qualitative data was collected using an in-depth interview and then transcribed, translated, and thematically analyzed. The coding and analysis parts of the interview responses were done using QDA Miner Lite version five.

4.12 Ethical Considerations

Ethical clearance was obtained from the Bahir Dar University Institutional Review Board (IRB). And then, during data collection time, informed oral consent was taken from each study participant. Moreover, confidentiality was maintained through anonymity and privacy measures to protect respondents' rights through the research process.

4.12 Dissemination and utilization of results

The results were presented and submitted to Bahir Dar University, School of Health Sciences. A soft and hard copy of the result was submitted to the department of Adult Health Nursing. It was also disseminated to the stakeholders who are concerned with nursing and midwife education, curriculum development, and the quality of education. In addition, the manuscript(s) will be submitted to peer-reviewed scientific journals for publication.

5. RESULTS

5.1 Results for the quantitative part

5.1.1. Socio-demographic characteristics of participants

For quantitative analysis, a total of 220 educators were identified from teaching institutions located in Bahir Dar, Ethiopia. Among these, eight (8) did not take part in the study because they were not available during the study period of participation. This resulted in a final sample size of 212 with a response rate of 96%. Among the 212 respondents, 104 (49.1%) were government employees, and the remaining 108 (50.9%) were working at private health science colleges. Most of the respondents in this study were male (65.6%), and more than half of the participants' age were between 30 and 40 years of age. Furthermore, 24 (11.3%) of the respondents hold a bachelor's degree, whereas 180 (84.9%) hold a master's degree (Table 1).

Table 1: Socio-demographic characteristic of participants in Bahir Dar, Ethiopia, May 2014

Variable	Frequency	Percentage
Institution :- Government	104	49.1%
Private	108	50.9%
Gender :- Male	139	65.6%
Female	73	34.4%
Educational :- Master's degree	172	81.1%
B.Sc.	31	14.6%
Diploma	9	4.2%
experience:- 1-5	23	10.8%
6-10	123	58.0%
>10	66	31.1%
Age:- 20-30	99	46.7%
31-40	93	43.9%
>41	20	9.4%
Training;- yes	108	50.9%
No	104	49.1%
Support of administrative ;- yes	96	45.3%
No	116	54.7%
Technical support:- yes	66	31.1%
No	146	68.9%
Knowledge of nurse educator:-Yes	115	54.2%
No	97	45.8%
Cost ;- yes	139	65.6%
No	73	34.4%

Based on the responses each respondent gave, a count was made for each respondent. The aggregate scores of each of the 212 respondents were used to calculate mean and other descriptive statistics. Based on these results and the operational definition, respondents who have regularly practiced simulation more than the mean among the questions that were aimed at assessing practice of clinical simulation were to be considered as good practitioner. Thus, out of the 212 respondents, 1.5 was the mean score among the 17 practice related questions that were asked.

5.1.2 Educators practice towards clinical simulation

One hundred forty-four (47.2%) and fifty-nine (27.8%) participants reported that they sometimes and never plan for simulation teaching, respectively, while only 22 (10.4%) of the participants always plan for simulation teaching. Similarly, one hundred one (47.6%) participants responded that they sometimes plan specific activities to ensure that their simulation teaching skills are up-to-date with the latest clinical evidence, while only 18% of the respondents always plan specific activities to ensure that their simulation practice is up-to-date. On the contrary, nearly only one-fifth of the participants responded that they would give an opportunity for the students to return to demonstration and provide feedback for the students about their performance.

Respondents were also categorized as those who are good practitioner and those who are poor practitioner about clinical simulation. Thus, 121 (57.1%) of the 212 respondents were classified as good practitioner, whereas the remaining 43% at (95% CI: 36% -50%) of the respondents were considered to be poor practitioner of clinical simulation. (Table 2).

Table 2: Practice toward clinical simulation among educators Bahir Dar, May Ethiopia, n=212

Variable	Never	Sometimes	Regularly	Always
I prepare a written plan for simulation teaching in the program in which I teach	59(27.8%)	100(47.2%)	31(14.6%)	22(10.4%)
I make the module learning objectives available to my students	20(9.4%)	109(51.4%)	43(20.3%)	40(18.9%)
I plan specific activities to ensure that my simulation teaching skills are up-to-date with the latest clinical evidence	14(6.6%)	101(47.6%)	66(6.6%)	31(14.6%)
I have highlighted the learning objectives to be achieved by my students in the session	15(7%)	101(47.6%)	61(28.8%)	35(16.5%)
I have prepared a set of teaching skills checklist for evaluating my students	12(5.7%)	92(43.4%)	71(33.5%)	37(17.5%)
I have a written plan for the ongoing assessment of practical competencies of my students	14(6.6%)	102(48%)	75(35.4%)	21(10%)
I identify the individual learning needs of each student for whom I have a practical teaching responsibility,	14(6.6%)	99(46.7%)	72(34%)	27(12.7%)
I assess the suitability of assigning a student at simulation center	14(6.6%)	87(41%)	80(37.7%)	31(14.6%)
I assess the degree to which simulation teaching time conforms to their regulatory body	18(8.5%)	83(39.2%)	85(40.1%)	26(12.3%)
I often provide procedure checklist to the learners to the learners.	13(6%)	38(17.9%)	113(53%)	48(22.6%)
I engage in self-reflection about my own strengths and weaknesses	15(7%)	81(38.2%)	80(37.7%)	36(17%)
I update my personal knowledge of current best clinical practices	14(6.6%)	17(8%)	95(44.8%)	86(41%)
I give my students return demonstration to improve skill by clinical simulation.	21(9.9%)	56(26.4%)	90(42.5%)	45(21.2%)
I debrief with my students about the clinical encounters	13(6%)	71(33.5%)	83(39.2%)	45(21.2%)
I give ongoing feedback	16(7.5%)	62(29.2%)	92(43.4%)	42(19.8%)
I give my students the time and opportunity to reflect upon and discuss	16(7.5%)	72(34%)	78(36.8%)	46(21.7%)
I evaluate the effectiveness of my student skills assessment instruments on a regular basis	13(6%)	16(7.5%)	83(39.2%)	100(47.2%)

1.4 Factors associated towards clinical simulation practice

After being adjusted for important covariates in a multivariable logistic regression model, work experience, educational qualification, training, and cost show statistical association with level of practice.

The odds of having good practice among respondents with experience less than five years, 21% times less likely as compared to respondents with greater than ten years teaching experience. (AOR= 0.21; 95% CI: 0.07-64) The odds of having good practice among respondents with Bachelor degree in simulation practice is by 37% less likely as compared to respondents with master degree (AOR=0.37; (95% CI) = 0.15-0.93). The odds of having good practice training by 52% less likely as compared to those respondents who did take training in simulation practice. (AOR =0.52; (95% CI) = (0.27-.98). The odds of cost having good practice with respond “yes” is by 37% less likely as compared to those who respond “No” (AOR = 0.37 ; (95% CI) = (0.18-0.74).

Table 3: Factors associated with clinical simulation towards undergraduate nurse and midwife health Bahir Dar, Ethiopia

Variable		Simulation practice		COR	AOR	P value
		<mean	≥mean			
Institution	Government	52	52	1		
	Private	39	69	1.77 (1.02-3.065)	1.55 (0.83-2.91)	0.17
Experience	1-5 years	16	7	0.18 (0.06-498)	0.21(.07-64)	0.006
	6-10 years	56	67	0.48 (0.255-.92)	0.57(0.28-1.19)	0.135
	>10 years	19	47	1		
Educational qualification	Masters	64	108	1		
	B.Sc.	21	10	0.28 (0.125-0.64)	0.37(0.15-0.93)	0.034
	Clinical Nurse	6	3	0.30 (0.07-1.23)	0.37(0.07-1.89)	0.23
Training	Yes	38	70	1		
	No	53	51	0.52 (0.30-.906)	0.52 (0.27-.98)	.044
Perceived cost of skill lab materials	Yes	73	66	0.30 (0.16-.55))	0.37(0.18-0.74)	.005
	No	18	55	1		
Support of administration	Yes	41	75	0.50 (0.28-.87)	0.53(0.28-1.01)	.055
	No	50	46	1		
	No	67	79	1		
Age of respondent	20-30	46	53	0.38 (0.13-1.14)	0.36(.0981.304)	0.12
	31-40	40	53	0.44 (015-1.32)	0.42 (.12-1.54)	0.19
	>41	5	15			

5.2 Result of Qualitative part

The qualitative part explored the effectiveness of clinical simulation. Eight in-depth interview participants: two department heads, three technical assistants and three instructors participated in the interview. Two individual selected from government institution whereas the other selected from private college. Interviews exceeding eight were not considered because of the potential for the redundancy of information and the likelihood of data saturation. Through thematic analysis, four main themes were identified: infrastructure and instructional resources; staff and student preparation and human resources; management support and student evaluation system. Each theme is discussed in the following section.

Table 4: Socio-demographic characteristics of nurse educators interviewed in Bahir Dar, Ethiopia, May 2022.

Variable		Frequency (n=8)	Percentage
Educational Institution	Government	2	25%
	Private	6	75%
Gender	Male	3	38%
	Female	5	63%
Educational Qualification	Clinical Nurse	2	25%
	B.Sc Nurse	2	25%
	M.Sc.	4	50%
Teaching Experience	6 months-1 year	3	38%
	2-5 years	2	25%
	Above 5 years	3	8%

5.2.1. Infrastructure and instructional materials

Most of the participants reported that the lack of skill lab equipment, classrooms, and modules affected their performance. For instance:

Participant 7 said:

"We do not have problems with equipment, but during purchasing we don't get the required equipment on time. This will lead students to lose practical classes."

Similarly, P-5 added:

"Large class size and a shortage of classrooms are common problems we are facing in our institute. Besides, some equipment is lacking".

Participant number 1 also supports this opinion:

'The simulation-based teaching and learning process is going well. However, they have problems related to the scarcity of classrooms. This in turn makes them unable to handle classes at a standard level. Participants also said that the number of students is large compared to the standards. Due to this, students could not practice simulation work repeatedly.'

The other has reacted on the way of teaching as P-3 said.

‘The simulation-based teaching and learning process is based on the curriculum. First, the theoretical part is covered by the teachers, and we demonstrate it to the students. Due to a shortage of classrooms, students do not work on simulations individually. However, there is a discussion session.’

‘There is a training scheme, but only few staff members are trained. The support of our bosses is somehow good. The problem is that there is no regular schedule for conducting classes. Teachers run classes by their own schedule.’

Regarding the availability of teaching modules, a participant number 4 spelled it out as that *‘yes there is, but we are not using it properly’*.

Participants also expressed their concern regarding the effectiveness of the Clinical simulation due to shortage of classrooms and consumable instructional (skill lab) materials such as gloves and mannequins. For instance, P-2 said:

‘I believe that it is not effective because we are not using the setup appropriately. It will be effective if we use it properly in the future, seriously. It will be better if the above-mentioned problems are alleviated.’

5.2.2. Staff and student training, as well as human resources

Human resources in general and staff and student readiness in particular play a vital role in the effectiveness of clinical simulation. Accordingly, most of the respondents replied that there is no adequate number of skilled laboratory assistants.

For instance, do you believe clinical simulation effective?

Participant number 5 said:

“I don’t think so. For example, in my department, there is only one assistant. The number of teachers and assistants is not comparable.” They also indicated that simulation classes are not effective because they are not using the setup appropriately. They recommend that it will be effective if they use it properly in the future. Some of them disclosed that it seems okay, and it will be better if the above-mentioned problems are alleviated.

The effectiveness of simulation classes in his respective institution as P-8 said,

‘I believe that it is effective because it increases students’ confidence. Besides, it minimizes errors’.

5.2.3. Management support for clinical simulation teaching

Respondent’s reactions to the support of their manager in relation to simulation classes are diversified. As an example,

A male respondent with 7 years of teaching experience has reported his opinion as:

“The support is not significant, and even training is arranged rarely. Because of a lack of training, some instruments are ideal, and students can’t learn properly using simulation instrument’.

Similarly, indicated her feelings regarding the support of heads as P-5

“The support is somehow good, and we take training when some organizations volunteer to train us”.

According to his response, even though simulation classes in his institution are going well, there are tremendous factors that affect the realization of such practical setups. The participant also added that the concerned bodies of this institution need to work toward alleviating the quoted problems related to simulation classes.

5.2.4 Student evaluation during clinical simulation

Student evaluation is a key factor for the achievement of instructional goals. A majority of the respondents indicated that they use a checklist and evaluate students at the middle and end of the session. Since students do the practice repeatedly, the evaluation continues throughout the session. A few of them indicated that they evaluate students at the end of the simulation session.

‘‘We use a checklist and evaluate students at the end of the session. Since they do the practice repeatedly, we give them comments while following them’’. P -6

P -4 said

“We use checklist and evaluate students at the middle and end of the session”

6. Discussion

The main purpose of this research was to examine the overall practice and associated factors for nurse and midwife educators' regarding clinical simulation education. There have been few studies in both the national and international contexts that specifically aim to assess the existing practice of nurse and midwife educators towards clinical simulation education; this study attempted to address this by assessing the level of practice and towards clinical simulation and identifying factors associated with clinical simulation. The study showed that 43% at (95% CI :36 % -50%) of participants had poor practice, Accordingly, the odds of having poor simulation practice for a male instructor are less likely as compared with a female. It is also shown that teaching experience and the poor practice of clinical simulation have a direct correlation. Those with less than five years of teaching experience have a 21% lower simulation practice than those with more than ten years of experience. This study is supported by a study conducted in America (35).

The present study showed that those who said cost affects the implementation of clinical simulation were 37% less likely to practice as compared to those who said cost has no effect. It is also supported by our qualitative analysis. Most of the participants reported shortages of skill lab equipment, classrooms, and modules affected their performance in clinical simulation practice. Previous studies(36-38)supported the effect of cost, teaching experience, and other related factors on the practice of simulation.

The quantitative analysis clearly showed that a teacher with sufficient training was more effective in clinical simulation than those who had not received training. The majority of respondents had no continuous training in the institution, according to the qualitative research that also supports this finding. Students were unable to learn effectively utilizing simulation instruments due to a lack of training and unknown instrumentation. This result is in line with a Chinese study that showed how simulative training can greatly increase students' competence in comparison to no-gain training(39).

The majority of interviewees stated that simulation-based classes are successful, but they are ineffective in their context. Basically, they have reasoned that the shortage of simulation equipment, the slow purchasing process, and large class size are dominantly affecting the

implementation of simulation classes. This finding is in line with a report by (40, 41). They specifically reported that the prospective benefit of increased competence and safe practice of practitioners following exposure to simulation was specifically reported. There is an indication that the skills acquired during simulation exercises will be transferred to the clinical setting to the advantage of patient care. Although there was some ambivalence regarding the realism of the simulator and the case scenarios, overall the simulated learning was considered to be an authentic learning experience.

Furthermore, simulation classes will be effective if they are supported with the preparation of a session plan and syllabus. Accordingly, these materials have a direct impact on the effectiveness of simulation-based classes. Similar findings were compiled by (39, 41). Which specifically disclosed that simulation-based nursing educational interventions were effective with particularly large effects in the psychomotor domain?

Finally, regarding the evaluation of students during simulation classes, the participants of this study have indicated that they evaluate students using a checklist at the middle and end of the session. Similarly, the report by (41). The study has figured out that for nurse educators, clinical simulation experiences offer an opportunity to assess and measure a student's integration of multiple professional competencies. A thoughtful and informed evaluation plan is necessary to maximize the individual student learning experience and improve the effective application of simulation as a teaching and learning strategy. We investigated the usefulness of clinical simulation practice in the qualitative section. The majority of the participants indicated that their performance has been impacted by the lack of skill lab equipment, classrooms, and modules under the theme of infrastructure and educational resources. The efficiency of clinical simulation is greatly influenced by staff, student readiness, and human resources in general, and staff and student readiness in particular. The majority of respondents said there are not enough skilled laboratory assistants. The manager's support is generally decent, and we occasionally attend training. Most of the respondents said they utilize a checklist and assess pupils halfway through and at the end of the class. Since the activity is repeated by the students, the evaluation lasts the entire class period. A handful of them said they evaluated the pupils at the conclusion of the exercise.

Strength of the study

It can be utilized as a background resource for other academics because it is a current study issue.

7. Conclusion and Recommendation

7.1 Conclusion

The majority of educators were enthusiastic about integrating clinical simulation in the department, according to the study's findings. More than half of the respondents had solid experience with clinical simulation, despite the fact that there are still steps to be taken.

It was found that the educators were enthusiastic about including clinical simulation in their lesson plans and curricula. Additionally, it was noted that clinical simulation training generally improves. Moreover, it was found that master's degree holders tend to practice clinical simulation more effectively than bachelor's degree holders. Every nurse and midwife educator we spoke with agreed that qualified individuals should play the roles of teachers and mentors in clinical simulations. The biggest obstacles to the effective implementation of clinical simulation were determined to be the size of the class and the unavailability of materials. Finally, according to our findings, clinical simulation practice is unproductive because of the sizeable class numbers, a dearth of resources, and a drawn-out purchasing procedure.

7.2 Recommendation

- Teaching institutions need to provide additional training to their staff to advance their practice and promote using new teaching methodologies, and assign a well-trained individual to the responsibility of managing clinical simulation.
- Responsible governmental bodies should give attention for nursing and midwifery education,
- Policy amendment should be done in improving the quality of nurse and midwife education.

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Annex

ANNEX I: INFORMATION SHEET AND CONSENT FORM

Information Sheet Title of Research: CLINICAL SIMULATION PRACTICE AND ASSOCIATED FACTORS IN TEACHING UNDERGRADUATE NURSING STUDENTS AT ACADEMIC INSTITUTIONS IN BAHIR DAR, ETHIOPIA.

School of Health Sciences, Department of Nursing. Name of principal investigator: MelkamAlebachew Mobile- +251975157964 Name of Advisor: Dr. AshagreMolla(PhD, Assistant Professor) HaileyesusGedamu (MSc., Assistant Professor)

Purpose and benefits of the study: The aim of this study is to assess practice and associated factor of nurse educators' working at academic institutions toward clinical simulation in teaching undergraduate students. The finding of this study will be helpful for nursing education and policymaking.

Voluntary participation: Your participation is voluntary, and you have the right to participate or decline participation. There are no costs to you for participating in this study, other than the time you will spend on answering the questionnaire. You will not gain any personal benefit or money from your participation in this study. However, your participation in the study will contribute very much to the effort to scale up nursing education.

Confidentiality and Risks: The information you provide will be kept confidential, and I will ensure that your name is not connected to the information you provide. It will not be reporting on how individuals responded to the questions. You are also not required to offer personal information about yourself.

Are you willing to participate in this study? If your response is yes, place your signature in the space below, and please continue to the next page.

Signature: _____ Date: _____

ANNEX II: QUESTIONNAIRE

General instructions: this questionnaire was developed to assess the level of practice and associated factor towards nursing clinical simulation among nurse educators working in health science academic institution in Bahir Dar, Ethiopia. The questionnaire has three parts, all asking questions regarding sociodemographic characteristics, practice and associated factor related to nursing clinical simulation. Please read the instructions and questions carefully before proceeding to answering the questions

Part I: Questions assessing Socio Demographic characteristics of respondents Instructions: Please encircle the number in front of the option you choose. If you are asked to write a response, please do in the blank space provided.

No	Question	Response and code	Skip
101	What is the name of the Educational Institute/College you're working at?		
102	How old are you?		
103	Gender	1. Male 2. female	
104	What is your current educational qualification	1. Bachelor's Degree 2. Master's Degree 3. Doctorate Degree(PhD) 4. Other (Specify	
105	How many years of experience do you have a teacher,	_____	

Part II: Questions assessing nurse educators' practice toward clinical simulation Instructions:
Please tick in front of the option you choose. If you want to write a response instead of choosing among the alternatives, please do in the blank space provided.

No	Question	Never(0)	Sometimes(1)	Regularly(2)	Always(3)
201	I prepare a written plan for simulation teaching in the program in which I teach				
202	I make the module learning objectives available to my students when I start facilitating a new group of students				
203	I plan specific activities to ensure that my clinical simulation teaching skills are up-to-date with the latest clinical evidence				
204	I have highlighted the learning objectives to be achieved by my students during a particular time?				
205	I have prepared a set of skills' assessment instruments for evaluating my students				
206	I have a written plan for the ongoing assessment of clinical competencies of my students				
207	I identify the individual learning needs of each student for whom I have a clinical teaching responsibility				
208	I assess the suitability of student placement in relation to the students' skills acquisition Need				

209	I assess the degree to which clinical teaching time conforms to the requirements of the regulatory body				
210	How often do you provide procedure checklist to the learners?				
211	I engage in self-reflection about my own strengths and weaknesses regarding how to apply best practices in clinical teaching				
212	I update my personal knowledge of current best clinical practices in my area of clinical teaching on a regular basis				
213	I give my students an opportunity (return demonstration) to improve skill by clinical simulation				
214	I debrief with my students about the clinical encounters they experience that need clarification				
215	I give ongoing feedback to my students about their clinical performance				
216	I give my students the time and opportunity to reflect upon and discuss their clinical encounters with me,				
217	I evaluate the effectiveness of my student skills assessment instruments on a regular basis.				

Part III: Questions assessing nurse educator's factors affect the implementation of clinical simulation in your institution? Do it tick the blank space.

Variables	YES	NO
Costs • Cost of material		
Lack of ongoing faculty training		
Need technical support		
Support of administration		
Background knowledge of educators		

ANNEX III: QUESTIONNAIRE

In-depth Interview Question

Introduction

This is in-depth interview questions are prepared to be administered to nurse educators and managers at academic institutions. The purpose of this research is to assess level and associated factor of clinical simulation practice in teaching undergraduate nursing students among nurse educators working at teaching institutions in Bahir Dar.

Part 1: Socio demographic Question

1. Type of institutions
2. Participant code
3. Participant role
4. Experience in years
5. Educational Qualification

Part 2: simulation related question

1. How is your practical teaching experience in clinical simulation?
Can you describe overall practical teaching process, scheduling, number of student, return demonstration, small group discussion
2. Can you describe factors you commonly faced during practical teaching process? Before, between and after the session? Can you describe practical teaching challenges?
3. Is there any practical teaching guideline in your institution?
4. How did your institution educators learn to perform the simulation?
 - Do you avail learning guide in the demonstration room?
 - Do you prepare session plan, course syllabus and others?
 - Do you have constant checklist by all nurse educator
5. Managerial support
 - Do you arrange training to nurse educator?
 - Do you allocate adequate time for simulation-based classes?
 - Do you allocate enough budgets to update and purchase simulation facilities?
6. Human resource, How many technical assistant do you have in your institution?
7. How do you evaluate student's skill performance? Do you use formative or summative evaluation approach, or both?

Declaration

I, the undersigned below declare and confirm that this thesis which is entitled “Assess and explore clinical simulation in teaching practice and associated factors among nurse and midwife educators working at teaching institutions in Bahir Dar, Amhara Region, and Ethiopia. 2022” is my own work. I followed all ethical principles in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I confirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis. This will be submitted in partial fulfillment of the requirement for the degree of masters in adult health nursing from Bahir Dar University College of Medicine and Health Sciences, Department of Adult Health Nursing.

The thesis will be deposited in the Bahir Dar University digital library and will be available to local, national and international scientific community through publications.

I declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

The student:

Name	Signature	Date
1. MelkamAlebachew	_____	

Place of submission: Department of Adult Health Nursing, College of Medicine and Health Science, Bahir Dar University.

Date of submission: _____

Approval

BAHIRDAR UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES
DEPARTMENT OF ADULT HEALTH NURSING

Approval for defense

I hereby certify that I had advised, supervised, and evaluated this research paper which is entitled “Assess and explore clinical simulation in teaching practice and associated factors of nurse and midwife educators working at teaching institutions in Bahir Dar, Amhara Region, and Ethiopia. 2022”. Institution based mixed concurrent study was investigated by MelkamAlebachewwith my advice, guidance, and support. Hence, I approve as this can be submitted as the final thesis paper for defense.

Advisors Name

Signature

Date

1. Dr.AshagrieMolla

2. Mr.HayleyesusGedamu

Examiners approval form

BAHIR DAR UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF ADULT HEALTH NURSING

Approval of Thesis Report

I hereby certify that I have examined this thesis report entitled "assess and explore clinical simulation in teaching practice and associated factors of nurse and midwife educators working at teaching institutions in Bahir Dar, Amhara Region, and Ethiopia. 2022" by Melkam Alebachew. We recommend and approve the thesis report for a degree of "Masters of Science in Adult Health Nursing".

Board of Examiners

External examiner's name

Signature

Date

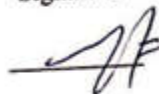
Haymanot Zeleke (MSc, Assistant Professor)

Internal examiner's name

Signature

Date

Dr worku Animaw (PhD, Assistant Professor)



12/12/2024

Chair person's name

Signature

Date

Dagmawit Zewdu (MSc, Lecturer)


for

12/12/2024

