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COLLEGE OF HEALTH SCIENCE

FACULTY OF NURSING AND MIDWIFERY

LEVEL OF SATISFACTION WITH SIMULATION BASED LEARNING AND
ASSOCIATED FACTORS AMONG PUBLIC TVET HEALTH SCIENCE
COLLEGE STUDENTS IN TIGRAI REGION, ETHIOPIA, 2025.

BY: GEBREYESUS DESTA (BSc)

A THESIS SUBMITTED TO THE DEPARTMENT OF MIDWIFERY,
COLLEGE OF HEALTH SCIENCES, MEKELLE UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR MASTER OF SCIENCE IN
MIDWIFERY EDUCATION.

FEBRUARY, 2026

MEKELLE, TIGRAY, ETHIOPIA



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COLLEGE OF HEALTH SCIENCES
FACULTY OF NURSING AND MIDWIFERY
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FULL TITLE OF THE THESIS: LEVEL OF SATISFACTION WITH SIMULATION BASED
LEARNING AND ASSOCIATED FACTORS AMONG PUBLIC TVET HEALTH SCIENCE
COLLEGE STUDENTS IN TIGRAI REGION, ETHIOPIA, 2025.

STUDY AREA: PUBLIC TVET HEALTH SCIENCE COLLEGES IN TIGRAI REGION

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Advisor’s Approval Sheet

This is to certify that the research thesis entitled; “Level of satisfaction with simulation based learning and associated factors among public TVET health science college students in Tigray ,Ethiopia ,2025” is submitted in partial fulfillment of the requirements for the degree of master of science (MSc) in Midwifery education to the graduate program of faculty of nursing and midwifery, college of health sciences, Mekelle university and has been carried out by: Gebreyesus Desta Abrha, ID No: CHS/MWE 001/13. Therefore, I recommend that the student has fulfilled the requirements and hence hereby can submit his research thesis to faculty of nursing and midwifery.

Name of main advisor: _____Signature: _____Date:_____2026

Name of co- advisor: _____Signature: _____Date:_____2026

Declaration

I hereby declare that this MSc thesis is my original work and has not been presented for a degree in any other university and all sources of material used for this thesis have been duly acknowledged.

Name: _____Signature: _____Date: _____

This MSc thesis had been submitted for examination with my approval as thesis advisor. Name:

_____Signature: _____Date: _____

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Examiner's approval sheet

Examiners' Approval Sheet We, the undersigned, members of the Board of Examiners of the final open defense by Gebreyesus Desta have read and evaluated his thesis "Level of satisfaction with simulation based learning and associated factors among public TVET health science college students in Tigray , Ethiopia ,2025" and evaluated the candidate. This is therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the Master's Degree in Midwifery education.

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Final approval and acceptance of the thesis is contingent upon the submission of the final copy of the thesis to the candidate's Department through the office of the Department Graduate Program Coordinator.

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I hereby certify that all the corrections and recommendations suggested by the Board of Examiners are incorporated into the final thesis “Level of satisfaction with simulation based learning and associated factors among public TVET health science college students in Tigray, Ethiopia ,2025” by: Gebreyesus Desta Abrha.

Department Head

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Abbreviations /Acronym

AOR.....	Adjusted Odds Ratio
CCU.....	Critical Care Unit
CI.....	Confidence Interval
COR.....	Crude Odds Ratio
Dr.....	Doctor
FOTS	Front Office Tasks Simulator
HFS.....	High Fidelity Simulation
HEI	Higher Educational Institutes
HSC	Health Science College
ICU	Intensive Care Unit
MFS	Medium Fidelity Simulation
SBE	Simulation Based Education
SBT	Simulation Based Training
SPSS.....	Statistical Package for Social Sciences
TVET	Technical and Vocational Education and Training
WHO	World Health Organization

Abstract

Background: Simulation-based learning (demonstration) is one technique of teaching and learning that replaces real-life experiences. Though World Health Organization recommends simulation as a priority learning strategy, it is underutilized and ineffectively offered mainly in low and middle-income countries like Ethiopia. Ultimately this leads to lack of qualified medical personnel, students' poor competency level and poor quality of care.

Objective: To assess the level of satisfaction with simulation-based learning and associated factors among students in public TVET health science colleges in Tigray region, Ethiopia 2025.

Methodology: An institution-based cross-sectional study was conducted among 400 level three students from public TVET. Data was collected using pretested self-administer questionnaire with systematic sampling method. Binary logistic regression was used to determine factors associated with Level of satisfaction, and strength of association between a set of independent variables and the outcome variable was interpreted using OR with 95% CI.

Result: In the analysis 400 students were included. Overall level of Satisfaction from demonstration was 56.5%. Female students were 4.64 times more likely to satisfy with demonstration with AOR= 4.64(95% C.I:2.613, 8.248). Students without interest in their department were 85% less likely to satisfy with AOR =0.15 (95% C.I: 0.086, 0.261). Lack of material availability in the demonstration, students satisfaction was 58% less likely with AOR =0.42 (95% C.I: 0.239, 0.721). Lack of instructor availability in the demonstration student's satisfaction was 84% less likely with AOR =0.16 (95% C.I: 0.088, 0.286). Lack of lab technician assistance during demonstration was 51% less likely to satisfy with OR=0.49 (95% C.I: 0.278, 0.879). Student having no adequate skill practicing program semester were 51% less likely to satisfy from demonstration with AOR =0.49 (95% C.I: 0.274, 0.857). Students taking demonstration without checklist were 57% less likely to satisfy with AOR=0.43(95% C.I: 0.233, 0.811).

Conclusion and Recommendations: Overall student satisfaction from demonstration was low. Students' satisfaction from demonstration was low due to instructed un availability, lack of student's interest, lack of lab technician, shortage of necessary materials and checklist. Female student had high satisfaction. Level of satisfaction should improve by providing necessary materials, hiring skill full and competent instructor, lab technician, providing checklist

Key words: Level of satisfaction, Associated factors, Tigray

1. Introduction

1.1. Background

Simulation-based learning (SBL) is a pedagogical strategy that allows students to practice clinical skills in a controlled, risk-free environment. It has gained standing in health sciences education globally due to its ability to enhance cognitive, psychomotor, and affective learning domains.(1). SBL bridges the gap between theoretical knowledge and practical application, providing students with opportunities to develop competence, self-confidence, and satisfaction with their learning experience (1). It is a technique to replace and amplify real experiences with guided ones, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion (2). Besides, Simulation constitutes a teaching method and a strategy for learning and understanding theoretical knowledge and skills in various medical fields(3).

Simulation was originated in the field of anesthesia in the late 1960s by the use full-body mannequin by Denson and Abrahamson in the University of Southern California (2). In the United States, simulation is rapidly becoming a popular teaching method for undergraduate clinical students(4). More so, simulation-based learning becomes a common methodology in modern medical education in different medical schools in the world in the last years and is now public & vital (4,5). The application of simulation-based learning experiences in healthcare education has significantly improved with the development of technology (6).

Types of simulators include inert simulators, high fidelity simulators, anatomic or mechanical models, virtual reality simulators and simulated patients (1,2). Patient simulators are a common feature of nursing and midwifery programs, offering a different kind of clinical experience (6). Simulation-based learning helps improve health care professionals' knowledge, technical ability, problem-solving decision making, lifesaving skills and communication. It also fosters positive attitudes boosts motivation and confidence, enhances job satisfaction, and promotes patient safety (1,2,5,7,8).The characteristics of simulation which best facilitate learning in medical education includes the ability to provide feedback, repetitive practice, exposure to un common events, curriculum integration, opportunity for assessment of learners and the absence of risks to patients (2,3). Studies in Sub-Saharan Africa and Ethiopia shown that more than 50% of health science students report not satisfied with SBL(10,9)

1.2. Statement of the problem

Globally, Simulation - based learning (SBL) was advanced and medical education has changed dramatically all over the world from traditional lecturing towards technology guided SBL. World- wide freshly graduated health professionals lack technical and non-technical skills in health institutions. In USA, all health science graduates faced different gaps related to their clinical practice as a result of low satisfaction towards SBL (10). A study that is conducted in Ireland states that more than half (55%) of the students are poor in more than three clinical skills (10).

In Sub-Saharan Africa, more than 50% of health science students report not satisfied with simulation based learning (SBL)(9).

A study done in Amhara region, Ethiopia reported that only 45.6% of students were satisfied with simulation based learning (10). Other Study done among midwifery students in Gondar University, Ethiopia was also reported that the level of satisfaction in simulation learning was 54.2%(11).

Studies done in Ethiopia showed that low clinical competency among health science students of Midwifery and Nursing showing competency level of 24.5 % and 48.7% respectively. Hence the problem is widespread and critical in both professions(10).

In middle east and low income countries Simulation based practice had many imminent factors(10). According to different studies there are many gaps that result in low level of satisfaction towards SBL like poor effort of instructors in helping their students during demonstration, In appropriate use of students' learning styles, unavailability of adequate skill practicing programs per semester, Students perceived absence of active learning, poor collaborative learning among students, lack of clear objective and information and absence of problem solving learning (10,12). Ultimately, these challenges have a negative impact on the workforce, patients, and societies at large (13–16).

In Ethiopia 32.5%, 72.8% and 97.8% health care professionals are not registered in health regulatory, didn't renew their license and never identified their need to CPD respectively(17). In Amhara region, Ethiopia, only 14% professionals were competent for all competencies(18).

According to Systematic review and Meta-Analysis study done in Ethiopia, the pooled prevalence of patient satisfaction shown that 36.3% of patients were not satisfied in the clinical service they received as result of low level of satisfaction towards SBL; and also in Tigray 32.7% of patient were not satisfied in the clinical service they received(19). Here as WHO

indicated, low level of satisfaction in SBL results in increasing universal health care challenges, educational inequalities, patients morbidity and mortality (1,20). Many Higher Educational Institutes (HEI) in the world use Simulation based education to improve the quality of education especially health care related fields in midwifery education for the last ten years to address the need of developing effective clinical skills prior to performing clinical practice in facility(12). In order to deliver quality and effective simulation there were set of standards and internationally revised guidelines which focuses on the evaluation and improvement of simulation educational activities(21,22) There are also several global recommendations/statements and proposed strategies that obligate healthcare systems and healthcare education institutions to be committed to the goal of high-quality healthcare and improved patient outcomes by promoting quality & effective simulation as a critical and necessary learning tool worldwide(13,16). World Health Organization (WHO) dedicates for patient safety as a priority area in care delivery worldwide. It also recommends utilization of simulation method resources appropriately in the education of health professionals to scale up health professionals education and training(1,20).

In Ethiopia, more than half of health science students in level based public colleges are not satisfied with SBL, which results to low level of competency and low level of satisfaction towards SBL and directly affects student's motivation, engagement, and ultimately their clinical competency. Simulation-based learning offers a solution by enabling students to acquire hands-on skills without relying entirely on patient interactions (8,15). But, the study shown that the bloody war erupted in Tigray region resulted severe damage in 57 % schools, severely losses in educational materials and played a negative impact in overall education system of the region (23). As a result problems like lack of conducive skill-lab environment , inadequate space in simulation centers, large number of students per teaching group and shortage simulation resources (Simulation materials) may cause low satisfaction of students towards simulation-based learning .However, the level of satisfaction on simulation based learning has not been studied yet in our study area(8,15). Therefore the aim of this study is to determine the level of satisfaction towards simulation based learning and associated factors among public TVET health science college students in Tigray region, Ethiopia, 2025.

1.3. Significance of the study

Simulation benefits the student, patients, and the community as a whole. It is effective teaching method for improving the competencies of health science students and to improve patient safety. So, this research will provide understanding about the level of students' satisfaction with SBL and associated factors and which will help curriculum planners, decision makers and implementers to know the gaps on the implementation of simulation- based learning, to focus on identified gaps and to take action accordingly.

In addition, the result of this study will help Tigray regional state TVET bureau and the concerned public health Science colleges to improve their quality of simulation- based education & teaching strategies to meet students learning needs ever changing demands. So, they can provide competent health professionals who can deliver quality health service and care in the actual clinical settings, thereby contributing to the broader goal of strengthening Ethiopia's health care work force.

More so, the result of this study will serve as a baseline for future researchers working on related topics, Support policymakers in revising curriculum, and be useful for both instructors and students.

2. Literature review

2.1. Prevalence of satisfaction towards simulation- based learning

The level of satisfaction with SBL among students varies in different studies conducted in different settings. The prospective exploratory study in the University of British, Columbia found the participant's simulation exercise score was increased from 72% to 89% between pre- and post- simulation and mean score for satisfaction with simulation was 4.47(24).

A non-experimental, quantitative research done in Blue Ridge Mountains, United States of America presented that an increase in undergraduate nursing student's skills and knowledge following simulation-based learning(6). Experimental research conducted among nursing students in South Korea also showed that simulation-based practice education improves student's learning satisfaction, immersion, and self-efficacy(25).

In study done in Jerusalem, Palestine simulation-based education was significantly associated with improvements in communication, satisfaction, confidence, and critical thinking among nursing students as evidenced by satisfaction rate of 91.1%(26).

A descriptive correlational research employed in Jordan discovered that students were generally satisfied with their clinical education with high mean satisfaction level and moderate mean satisfaction level regarding their clinical experiences (45.3, 34.0) respectively(27).

Descriptive study took place among TVET students in Sungai Petani, found that students' attitude toward using Front Office Tasks Simulator (FOTS) and students' satisfaction with using FOTS as a whole was high leading to the conclusion that FOTS can increase students' understanding and satisfaction of learning the procedures(28).

Cross-sectional study conducted in Saudi Arabia, demonstrated that 73.9 % of .Students from all years were satisfied and less satisfied on lack of proper training rooms 17.40 %, shortage of training times 34.5%, inadequate facilities 22.6%(29).

In a cross sectional study carried out in Morocco student's satisfaction towards SBL was found to be more than 80% (30).

A descriptive study implemented among nursing students of College of Applied Medical Sciences, at King Khalid University (KKU), Saudi Arabia revealed that the undergraduate nursing students' overall satisfaction with simulation teaching mean score as 4.60 (31).

The cross-sectional study conducted at the Durban University of Technology in South Africa showed that 62.7% of the paramedic students were satisfied with the effectiveness of teaching methods used in the simulation(32).

Institution-based cross sectional study in public health science colleges in Amhara region Ethiopia, revealed that 45.6% of the students were satisfied with simulation - based learning(10). In addition an institutional based cross-sectional study carried out at Harar Health Sciences College, Haramaya and Dire Dawa Universities, Ethiopia founds the proportion of learner satisfaction with simulation-based education to be 71 % (33). Other cross-Sectional Study among midwifery students in Gondar University, Ethiopia was also reported that the proportion of satisfaction in simulation learning was 54.2%(11).

Experimental study in Jimma University, Ethiopia proved that the simulated patient -based training approach was found to be better for communication skill acquisition than the case-based role-play approach, with (AOR= 21.7)(34).

Quasi experimental study conducted in Ethiopia among non-physician clinician midwives' competency showed that simulation-based education improved students' procedural knowledge, self-confidence, Skills and competency(35). This study done in in Amhara region universities reported that 84.7% of the midwifery students satisfied with simulation-based education (36).

A study carried out in Tigray, Ethiopia notices major improvement in knowledge and attitude of non-physician anesthetists on maternal and neonatal anesthesia cares after simulation-based anesthesia training(37).

2.2. Factors affecting the level of satisfaction with simulation -based learning

2.2.1. Educational practice related factors

A survey carried out at College of nursing Jeddah King Saud bin Abdul Aziz University indicated that satisfaction with simulation based learning (SBL) was highly affected by effectiveness of the teaching methods(38). Another cross-sectional study conducted in Morocco effectiveness of teaching methods to learning styles were significantly associated with learner's satisfaction with SBL(30). Cross-sectional study done in Haramaya and Dire Dawa university among public health science students makes evident that students who used helpful and effective learning method were approximately six times (5.77) like to be satisfied compared to those who did not(12).

An institution based cross-sectional study conducted in academic institutions at public university and colleges in Harer and Dire Dawa showed that the odds of the student who perceived the way their instructor conducted skill demonstration where suitable to their learning style were 22.4 times more satisfied with simulation based education than counterpart(39). Similar study done in

Haramaya and Dire Dawa university among public health science students suggested that the way the teacher taught about simulation as suitable to their learning style were twenty-two times more likely to be satisfied compared to others(12).

An institutional based cross-sectional study done in Amhara region among public health science students showed that students who agreed with active learning were about three times (AOR - 2.9) more likely to be satisfied with simulation based learning than student who disagreed with active learning(10) . Similar study done in Amhara region among public health science students revealed that students who worked collaboratively with their peers were two times more satisfied than students who didn't work collaboratively (10). An institution based cross-sectional study conducted in Amhara region governmental university students revealed that being 4th-year midwifery students 2.93 times students more satisfied with simulation based learning than 3rd-year students (36).

2.2.2. Simulation design related factors

Quasi-experimental investigation done in Spain displayed that students were more satisfied when their clinical simulation practices are based on medium-fidelity simulation (MFS) than high-fidelity simulation (HFS)(40).

A cross -sectional study done among students in Harer Health Science College, Haremaya university and Dire Dawa university shown that students who received accurate information about skill requirement at the beginning were approximately three times (2.99) more likely to be satisfied compared to those who did not receive such information (12). An institutional based cross-sectional study done in Amhara region among public health science students showed that those who perceived objective and information at start were two times (2.25) more likely satisfied with simulation based learning (10).Cross -sectional study done in Amhara region among public health science students have shown that students who had agreed with problem solving were approximately three (2.65) times more likely satisfied with simulation based learning than other who scored disagree (10). An institution based cross-sectional study conducted in Amhara region governmental university students revealed that students who received adequate support were about three times (AOR 2.90) more satisfied with simulation based education compared to their counterpart(36).

2.2.3. Organizational related factors

Cross-sectional study in Ireland students stated that pre-briefing and debriefing sessions given by their instructor were also highlighted as important to improve the effectiveness and satisfaction of the simulation based learning (41). A survey carried out at College of Nursing- Jeddah, King Saud bin Abdul Aziz University indicated that satisfaction with simulation based learning (SBL) was highly affected by clinical instructors skill and approach (38). A cross-sectional study was conducted among 243 nursing students in Korea to assess the satisfaction level of nursing students from simulation-based learning. A binary logistic regression analysis was used. In the analysis, 85.2% were female. In simulation-based assessments, female students were more sensitive to interpersonal risks in the simulation environment, whereas male students were more affected by high-fidelity design features. Higher psychological safety and better simulation design features were significantly associated with satisfaction in SBL.(42)

Similar study reveals that student who perceived the number of skill practice per semester was enough was 2.3 times (AOR-2.3) more likely to be satisfied with simulation based learning than others(39). A cross-sectional study was conducted among 110 nursing students in Tunisia to assess factor associated with satisfaction level of nursing students. From the analysis factors significantly associated with students satisfaction were students support , all educational practices and diverse ways of learning(43).

An institution based cross-sectional study conducted in Amhara region governmental university students indicates that availability of instructor during simulation session were results three times (AOR-2.85) more likely to be satisfied for simulation based learning than counterpart(36). Another similar study conducted in academic institutions at public university and colleges in Harer and Dire Dawa highlights student who were assisted by their instructor during demonstration practice were six (AOR 5.62) times more likely satisfied than those who were not assisted (39). Similar study conducted in Amhara region governmental university students indicates that students who gained and utilized checklist during simulation were two (2.32) times more likely satisfied for simulation based learning (SBL) than counterpart (36). Similar Study done among midwifery students in Gondar University, Ethiopia shown that those who perceived assisted by their instructors during skill practice as good were significantly satisfied than others (11). An institutional based cross-sectional study done in Harer Health science college, Haremaya university and Dire Dawa university among public health science students

showed that the odds of satisfaction level is two times (2.34) higher among students who took more than two skill practice per semester than those who took less than two skill practice (12).

2.3. Conceptual framework

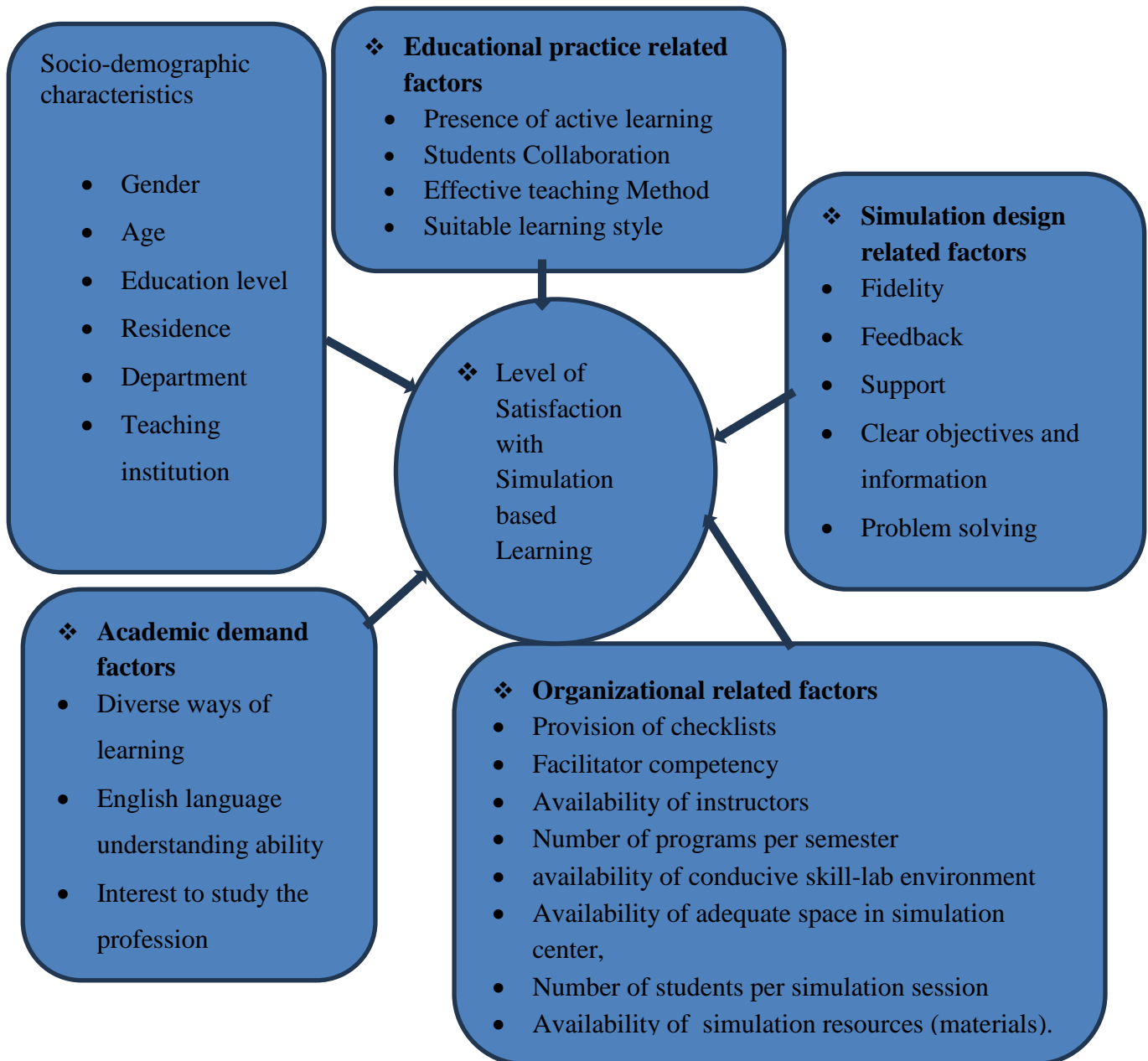


Figure 1: Conceptual Framework for level of satisfaction with simulation -based learning among Public TVET health science college students in Tigray region, Ethiopia was adapted (1,10,12,36)

3. Objectives

3.1. General objective

- To assess the level of satisfaction with simulation based learning and associated factors among students in public TVET health science colleges in Tigray region, Ethiopia 2025.

3.2. Specific Objectives

- To determine level of satisfaction with simulation -based learning among level- based public health science college students in Tigray region, Ethiopia.
- To identify factors associated to satisfaction with simulation- based learning among level based public health science college students in Tigray Region, Ethiopia.

4. Methods and Materials

4.1. Study area and period

This study was conducted at Dr.Tewelde Legesse Health Sciences College and Araya Kahsu Health Science College, both public institutions under the TVET & job creation bureau in Tigray regional state, Ethiopia. Dr. Tewelde Legesse Health Science College is established in 1984 E.C located in Mekelle city, has graduated 28,823 health professionals. Currently the institution has eight active departments with a total of 1050 enrolled level three students. These departments are Nursing, Midwifery, Laboratory, Pharmacy, Environmental Health, Health Extension Services, Dental Hygiene and Radiology. There are also a total of eight SBL centers designed for conducting SBL activities. Araya Kahsu Health Sciences College founded in 1986 E.C, is situated in Axum city which is located 235 km from capital city of Tigray region. Has graduated 27,698 health professionals and presently operates six departments with total of a 1081 enrolled level three students. The active departments are Nursing, Midwifery, Laboratory, Pharmacy, Environmental Health and Health Extension Services. There are also a total of seven SBL centers designed for conducting SBL activities in the institution. Together, both colleges have 124 instructors, contributing to the training of future healthcare professionals in the region.

The study was conducted from June 05, 2025 to July 05, 2025.

4.2. Study design

Institution- based cross sectional study was conducted

4.3. Population

4.3.1. Source population

- All students enrolled in public TVET health Science College in Tigray region, Ethiopia, 2025.

4.3.2. Study population

- All students enrolled in public TVET health Science Colleges and attended simulation learning activities in Tigray region, Ethiopia, 2025.

4.4. Eligibility criteria

4.4.1. Inclusion criteria

- ✓ Students who attended simulation-based learning activity for at least one semester.

4.4.2. Exclusion criteria

- ✓ Students who transferred from another region colleges during data collection period.

4.5. Sample size determination and sampling technique

4.5.1. Sample size determination

The Sample size for the first objective of this study calculated using a single population proportion formula with the following assumption: 95% confidence interval, 5% marginal error (degree of accuracy). Based on previous study in Amhara region Ethiopia, the proportion of students' satisfied with simulation -based learning was found to be **45.6%**(10).

$$n = \frac{(z_{\alpha/2})^2 \cdot pq}{d^2}$$

Where; n= required sample sizes

$Z_{\alpha/2}$ = critical value for normal distribution at 95% confidence level which equals to 1.96 (z value at $\alpha = 0.05$)

d= an absolute precision (margin of error 5%).

P = 45.6%, (.456) Amhara region Ethiopia, the proportion of students' satisfied with simulation -based learning was found to be **45.6 %**.

$$N (n_o) = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2} = \frac{(1.96)^2 \cdot .456(1-.456)}{(.05)^2} = \mathbf{381}$$

To determine the required sample size for the second specific objective of this study different factors which are significantly associated with Level of satisfaction with SBL variable considered with the following assumption; 95% confidence level, 5% margin of error and power of 80% using an open Epi info version 7 software program, 5% for non-response. Finally, the calculated sample size for selected variables and maximum sample size was used (**table1**).

Table 1 : Sample size determination for second objective among students of Public TVET health science colleges in Tigray region, Ethiopia, 2025.

Factors	Level of satisfaction with SBL		AOR	Calculated sample size	Reference
	% of outcome on exposed	% of outcome on non-exposed			
Active learning	64.2	38.23%	2.9	130	(10)
Collaboration	71.3%	54.3%	2.09	332	(10)
Objective	82.1%	66.18%	2.35	259	(10)

The required sample size for this study was determined by comparing the calculated sample sizes for each objective (381, 130, 332, and 259). The largest value, 381 (from the first objective), was selected as the base sample size. Including a 5% non-response rate the final sample size for the study was **400** participants.

4.5.2. Sampling procedure

In the Tigray region there are two public TVET Health Science Colleges. These are: Dr. Tewelde Legesse Health Science College and Araya Kahsu Health Science College. Each college currently offers six departments those are: Nursing, Laboratory, Pharmacy, Midwifery, Environmental Health, and Health Extension Services. During the study period, only Level III students were enrolled across all departments with a total of 2,131 students in both colleges. For this study, all public TVET health science colleges in the region were included. From the six departments in each college, three departments were randomly selected using a lottery method, those are: Midwifery, Nursing and Laboratory. The total number of students who had participated in simulation-based learning (SBL) in these three departments was 1,257 (Midwifery 240, Nursing, 450, Laboratory 567) drawn from all available sections (Midwifery 5 sections, Nursing 7 sections, Laboratory 8 sections). This list served as the sampling frame. A proportional allocation approach was used to ensure that each departments and sections from both colleges contributed participants according to its size. After creating strata for each

department (Midwifery, Nursing, and Laboratory) systematic random sampling was applied within each stratum. The sampling interval (k) for each departments and sections was determined by dividing the total number of eligible students by the proportionally allocated sample size. The first participant in each department was selected using a lottery method, and all subsequent participants were chosen at every 3rd interval ($k = 3$) until the required sample size was achieved. If a selected student was unavailable or declined to participate, the next student on the list was approached to maintain the planned sample size.

Schematic Sampling procedure

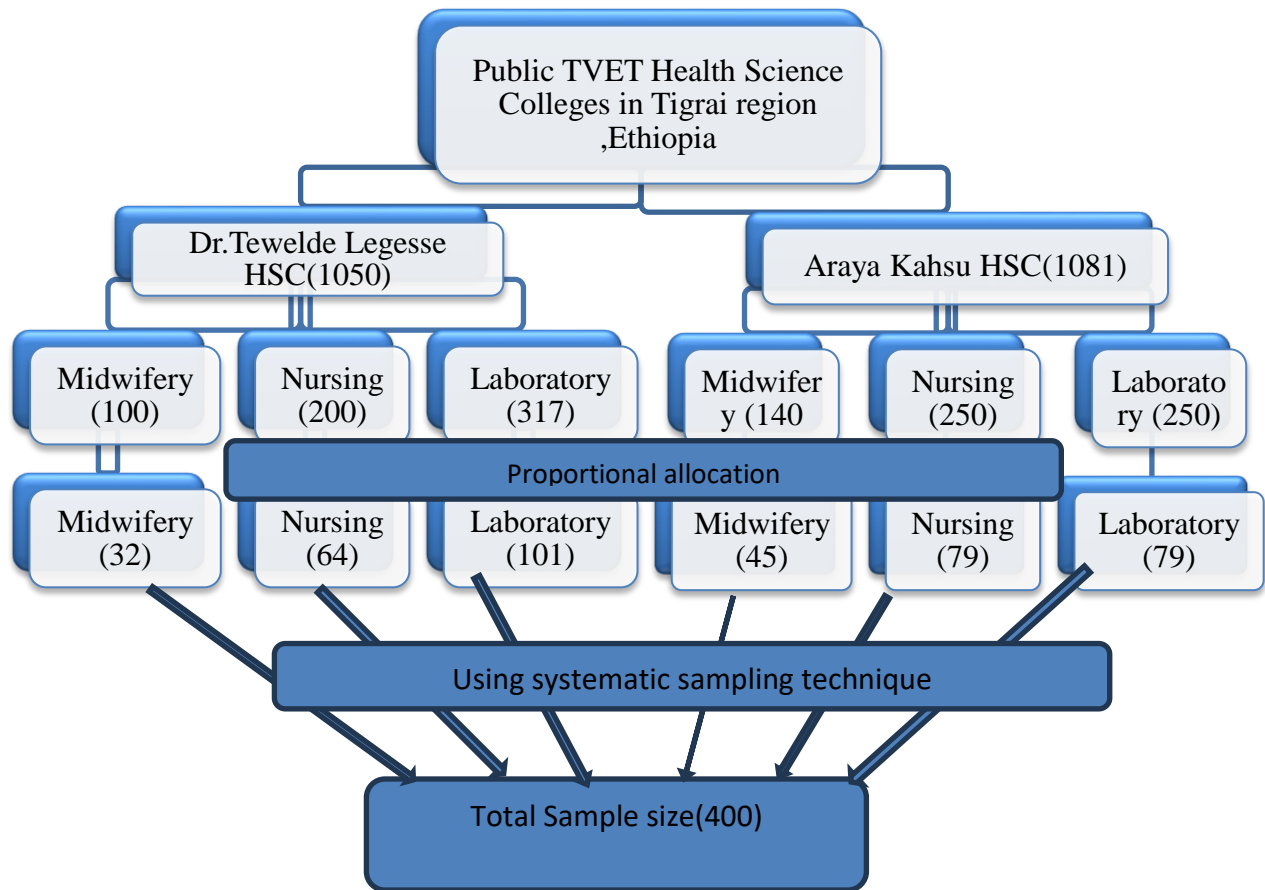


Figure 2: Schematic sampling procedure of participants for level of satisfaction with simulation -based learning among Public TVET health science college students in Tigray region, Ethiopia, 2025

4.6. Study variables

4.6.1. Dependent variable

- Level of Satisfaction with simulation -based learning/satisfied and unsatisfied

4.6.2. Independent variable

- **Socio - demographic characteristics;** Age, Gender, Residence, Education level, Name of the teaching institution, and Department.
- **Academic demand factors:** Cumulative GPA, English language understanding ability, diverse way of learning and Interest to study the profession.
- **Educational practice related factors;** Presence of active learning, Students Collaboration, Effective teaching method and Suitable learning style
- **Simulation design related factors:** Feedback, Fidelity, Support, Clear objectives and information and Problem solving
- **Organizational related factors:** Provision of checklists, Facilitator competency, Availability of instructors, Number of programs per semester, availability of conducive skill-lab environment, Availability of adequate space in simulation center, Number of students per simulation session and Availability of simulation resources (materials).

4.7. Operational definitions and measurements

Satisfaction: Learner satisfaction is the degree to which the learners believe that the learning experience in simulation-based learning meets their learning needs. Five-scale Likert questions was used and satisfaction was categorized based on the mean value. Each item possessed the values from 1 (strongly disagree) to 5 (strongly agree). A student who scores the mean and above of the 5 Likert question was considered as satisfied and below was considered as unsatisfied (44).

Adequate number of skill practicing programs per semester: Is the number of two or more skill practicing courses per semester(33).

English language understanding ability: The student can understand the message of a subject matter without any help from others or materials(33).

Debriefing: A learning conversation between instructors and trainee that follows a simulation based learning(45).

Cue: Information provided that help the participant's process and progress through scenario to achieve stated objective (45).

4.8. Data collection tools and procedure

A structured, self-administrated questioner was used to assess the level of satisfaction with simulation -based learning. The questionnaire was adapted from validated tools used in similar studies assessing level of satisfaction with simulation- based learning. The questionnaire contains five parts: Socio-demographic characteristics, Academic demand factors, educational practice related factors, Simulation design related factors and Organizational related factors. In addition, items was measured using a 5 - point Likert scale (ranging from strongly disagree to strongly agree) to quantify the level of satisfaction. Moreover, the tool was reviewed and validated by experts in health education and simulation to ensure content of validity. Reliability testing was conducted to confirm internal consistency of Likert question using Cronbach's alpha. By discussion with OBT, Department heads and instructors in respective colleges' data collection schedule was arranged. Then, Self-administered questionnaire was distributed to systematically selected students to maximize the response rate of study participants. The distribution was carried out by two trained data collectors, and the process was supervised by two trained supervisors.

4.9. Data quality assurance

Data collectors and supervisors were getting training for two days concerning on the study objective, content of the tool, data collection process and issue related to rights and confidentiality the respondent.

English version measuring questionnaire was translated in to Tigrigna (local language) and back to English to check for language consistency. In addition, the questionnaire was pre-tested at Shaba University College at 5% of the calculated sample size that was twenty participants to investigate reliability of the data collection tool (30). Then the questioner was reformatted based on inputs and comment generated. After that data was checked and was modified and corrected accordingly before starting actual data collection time to asses' reliability and clarity of the questioner. Following that the data was collected using modified questionnaire. Data was collected by two senior data collectors and close supervision was carried out by supervisors to ensure the quality of the data. Finally, the collected data was also checked by a supervisor and principal investigator for its completeness and consistency. Consistency was examined through random selection of questionnaire before analysis.

4.10. Data processing and analysis

Before analysis, data was coded, cleaned and entered using Epi Data version 4.2 and exported to SPSS version 27 for analysis.). Binary logistic regression was used to determine the level, direction and strength of association between a set of independent variables and the outcome variable. Accordingly, those variables having p-value less than 0.25 will be considered for multivariable logistic regression analyses to control for all possible confounders and to identify factors associated with Level of satisfaction with SBL. Multicollinearity was checked using variance inflation factor (VIF) and variable with $VIF > 10$ was considered as having multicollinearity and in the analysis there is no multicollinearity between the variables. The regression model fitness was checked using goodness of fit test (Hosmer Lem show) and the model was fitted. The strength of association was explained using odds ratio with 95% confidence level and p-value < 0.05 was described as a significant association. Finally, the Data was presented using text, chart, tables and figures/graphs.

4.11. Ethical Consideration

Ethical clearance was obtained from institutional review board (IRB) of Mekelle University, College of health sciences. An official permission letter was obtained from Tigray regional TVET and job creation bureau and respected colleges. The purpose, procedures of the study, advantages, and disadvantage was informed to the study participants. Then written informed consent was obtained from each participant prior to data collection and confidentiality was maintained. Participation was voluntary and can withdraw at any time from the study. No personal identifiers were recorded on the questionnaire to ensure anonymity.

4.12. Plan for dissemination of findings

The finding was submitted and presented to Mekelle University, College of Health Science, and department of midwifery and the study result was submitted to Dr. Tewelde Legesse and Araya Kahasu Health Science Colleges. The result of this study was presented on different scientific forums and lastly, efforts will be done to publish in reputable journals.

5. Result

5.1. Sociodemographic characteristics

In the analysis 400 students from three departments were included. Out of these 195(48.8%) were male and regarding their residence 235(58.8%) were living in rural area. The mean age of the students was 22.7 ± 1.77 standard deviation. The average CGPA of students was 3.25 ± 1.94 standard deviation. The average area of the simulation room was 84.4 meter square ± 4.97 standard deviation of per students. The average number of students assigned to the simulation room was around 43 ± 10.87 standard deviation. The rest was summarized in table 2 below.

Table 2: Socio-demographic characteristics of students in the two Health colleges in 2025 G.C

Variable	Category	Level of Satisfaction		Frequency	Percentage (%)
		Unsatisfied	Satisfied		
Sex	Female	67	138	205	51.2
	Male	107	88	195	48.8
Residence	Rural	103	132	235	58.8
	Urban	71	94	165	41.2
Department of study	Laboratory	78	115	193	48.3
	Midwifery	33	37	70	17.5
	Nursing	63	74	137	34.2

5.2. Academic demand related characteristics

Out of the total 400 students, around 256(64%) students were interested in their department. Regarding English language assistance, around 350(87.5%) students need English language assistance.

Table 3: Summarized academic demand related characteristics of students in both health science colleges in 2025 G.C

Variable	Category	Level of Satisfaction		Frequency	Percentage (%)
		Unsatisfied	Satisfied		
Student interest in their department	Interested	75	181	256	64
	Not interested	99	45	144	36
English language understanding ability	Need assistance	155	195	350	87.5
	Need no assistance	19	31	50	12.5

5.3. Organizational related characteristics

Out of the total 400 students around 199(49.8%) students were attending the demonstration with full availability of material whereas 201(50.2%) students were attended the learning without full availability of material. The simulation room was also assessed for availability of ventilation. From these 244(61%) students were learning with ventilated room whereas the remained 156 (39%) students were attending the demonstration without ventilated and the remained variables was presented in table 3.

Table 4: organizational related factors of students in the two Health colleges in 2025 G.C

Variable	Category	Level of Satisfaction		Frequency	Percentage (%)
		Unsatisfied	Satisfied		
Material availability	No	118	83	201	50.2
	Yes	56	143	199	49.8
Material functionality	Fully functional	20	36	56	14

	Not functional	32	25	57	14.3
	Partially functional	122	165	287	71.7
Instructor availability	No	86	41	127	31.8
	Yes	88	185	273	68.2
Lab technician	No	94	79	173	43.3
	Yes	80	147	227	56.7
Checklist	No	70	43	113	28.3
	Yes	104	183	287	71.7
Adequate skill Practicing program per semester	No	103	76	179	44.8
	Yes	71	150	221	55.2
Availability of toilet	No	151	196	347	86.8
	Yes	23	30	53	13.2
Simulation room ventilated	No	68	88	156	39
	Yes	106	138	244	61

Level of Student satisfaction from Simulation based learning

From the analysis out of 400 students 56.5% of students were satisfied and the remaining students around 43.5% were not satisfied. This value indicated students' satisfaction from simulation-based learning was low.

The pie chart below indicated the availability of instructor in the simulation-based learning. From the graph 68% of the instructors were available with the students in the simulation-based learning.

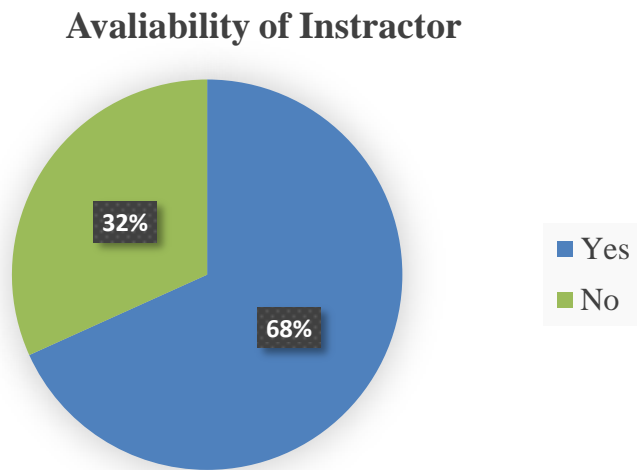


Figure 2: Indicated availability of instructor in simulation-based learning among students of two health college in Tigray, Ethiopia

The bar graph below shows the functionality of materials in the teaching colleges. From the graph the largest percent (71.7%) of the materials were partially functional and only 14% were fully functional.

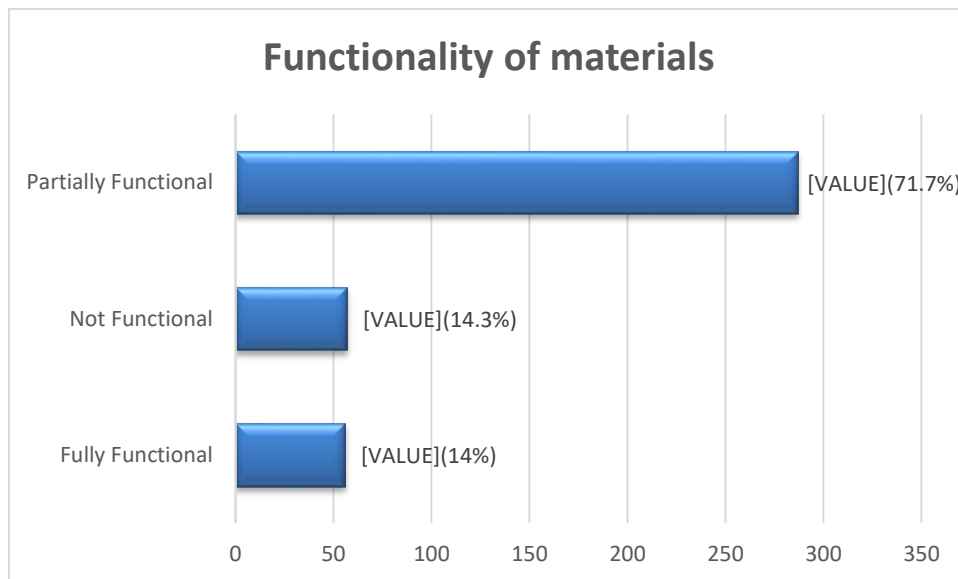


Figure 3: Indicated the functionality of materials for simulation- based learning among students of two health science colleges in Tigray, Ethiopia

5.4 .Bivariable and Multivariable Logistic Regression Analysis of factors associated with satisfaction from simulation-based learning

In the bivariable analysis, sex of students, instructor availability, material availability, availability of lab technician assistance, having adequate skill practicing program per semester, interest of students in their department, functionality of materials and availability checklist were candidate to the multivariable analysis with P-value <0.25.

Reliability Test of Likert question

From this result the Cronbach's Alpha from the standard value indicated the questions had internal consistency.

Model fitness Assessment

The model is fitted as the P-value >0.05. Which is 0.984 indicated the level of satisfaction of students explained well using those independent variables.

Hosmer and Leme show Test

Chi-square	Df	P-value
1.890	8	.984

Multicollinearity Assessment

From the result below there was no multicollinearity in all variables as the VIF<10.

Table 5: Multicollinearity between independent variables of student Satisfaction level

Model	Collinearity Statistics	
	Tolerance	VIF
Sex of students	.902	1.108

Material availability	.804	1.244
Material functionality	.938	1.066
Instructor available	.965	1.036
Lab technician assistance	.818	1.222
Checklist available	.814	1.228
Practicing program per semester	.806	1.241
Students interest in their department	.956	1.046

In the multivariable analyses factors significantly associated with satisfaction from simulation-based learning among college students were sex of students, instructor availability, material availability, Availability of lab technician assistance, having adequate skill practicing program per semester, interest of students in their department and availability checklist at the 5% level of significance

Student's sex difference had significant association with Satisfaction from simulation-based learning. Being a female sex was 4.64 time more likely to satisfy with OR= 4.64(95% C.I: 2.613, 8.248) as compared to male keeping others constant. Interest of students in their department had statistically significant association with satisfaction from simulation-based learning with AOR =0.15 (95% C.I: 0.086, 0.261). Students did not have interest in their department 85% less likely to satisfy with simulation-based learning as compared to students who had interest in their department keeping others constant.

Material availability had statistically significant association with satisfaction from simulation-based learning with AOR =0.42 (95% C.I: 0.239, 0.721). Lack of material availability in demonstration; the students were 58% less likely to satisfy from simulation-based learning as compared to full access of material keeping others constant.

Instructor availability had statistically significant association with satisfaction from simulation-based learning with AOR =0.16 (95% C.I: 0.088, 0.286). This means that lack of instructor availability during the demonstration; the students were 84% less likely to satisfy from

simulation-based learning as compared to instructor availability keeping others constant. Student satisfaction from simulation-based learning had significantly affected by assistance of laboratory technician with AOR =0.49 (95% C.I: 0.278, 0.879). This means that demonstration without lab technician assistance; the students were 51% less likely to satisfy from simulation-based learning as compared to students assisted with technician keeping others constant

Having practicing program in demonstration had a statistically significant association with satisfaction with OR =0.49 (95% C.I: 0.274, 0.857). Students did not have adequate practice program in demonstration 51% less likely to satisfy as compared to students who practice more times keeping others variables constant. Checklist availability during the demonstration period had statistically significant association with the student satisfaction from simulation-based learning with AOR =0.43(95% C.I: 0.233, 0.811). Student without checklist during the demonstration period 57% less likely to satisfy from the simulation-based learning as compared to students having checklist keeping others variables constant.

Table 6: Multivariable analysis of factors associated with satisfaction from simulation-based learning among students of two health science colleges in Tigray, Ethiopia.

Variables	Satisfaction level		COR (95% CI)	P-value	AOR (95% CI)		
	Satisfied	Unsatisfied			AOR	Lower	Upper
Sex (Female)	138(67.3%)	67(32.7%)	2.50(1.669,3.758)	<0.001	4.64	2.613	8.248
Male	88(45.1%)	107(54.9%)	1	1	1	1	1
Interest of students (Not interested)	45(31.2%)	99(68.8%)	0.19(0.121,0.293)	<0.001	0.15	0.086	0.261
Interested	181(70.7%)	75(29.3%)	1	1	1	1	1
Material availability (Not)	83(41.3%)	118(58.7%)	0.28(0.181,0.418)	0.002	0.42	0.239	0.721
Yes	143(71.9%)	56(28.1%)	1	1	1	1	1
Material functional (Fully functional)	36(64.3%)	20(35.7%)	1	1	1	1	1
Not functional)	25(43.9%)	32(56.1%)	0.43(0.204,0.9225)	0.190	0.52	0.199	1.377
Partially functional	165(57.5%)	122(42.5%)	0.75(0.451,1.362)	0.696	1.17	0.538	2.533
Instructor availability (No)	41(32.3%)	86(67.7%)	0.23(0.145,0.356)	<0.001	0.16	0.088	0.286
Yes	185(67.8%)	88(32.2%)	1	1	1	1	1
Lab technician assisted (No)	79(45.7%)	94(54.3%)	0.46(0.305,0.685)	0.016	0.49	0.278	0.879
Yes	147(64.8%)	80(35.2%)	1	1	1	1	1

Semester for practice (No)	76(42.5%)	103(57.5%)	0.35(0.232,0.526)	0.013	0.49	0.274	0.857
Yes	150(67.9%)	71(32.1%)	1	1	1	1	1
Checklist available (No)	43(38%)	70(62%)	0.35(0.223,0.547)	0.009	0.43	0.233	0.811
Yes	183(63.8%)	104(36.2%)	1	1	1	1	1

6. Discussion

In this study factors significantly associated with level satisfaction among health science college students were sex of students, instructor availability, material availability lab technician assistance, having practicing program semester, interest of students in their department and availability checklist at the 5% level of significance.

Level of satisfaction from simulation-based learning among college the students in this study was 56.5%. When we compared to another study conducted in Ethiopia in Harari, Dire Dawa and Haramaya university (32) the prevalence of students satisfaction in this study was lower. Similarly when compared to studies conducted South Africa and Morocco (33) (30) the prevalence of students satisfaction in this study was also lower . This could be due to war effect that makes the educational college's lack of access to materials and competent instructors which ends with lower satisfaction off students. In addition when we compared to studies conducted in British, USA, Jerusalem, Saudi Arabia (24) (6) 26) (29) the prevalence of students satisfaction in this study was also lower. This could be due to socio-economic difference which ends with lower satisfaction off students. In contrast to this study the prevalence of students satisfaction from simulation based learning in Amhara region were below this study (10). This might be due to sample size difference that as more individuals include study you can find more students with low satisfaction.

Students having Interest in their department had statistically significant association with level of satisfaction with AOR =0.15 (95% C.I: 0.086, 0.261). Students did not have interest in their department 85% less likely to satisfy with simulation-based learning as compared to students who were interested in their department keeping others constant. This study agree with a study conducted in Amhara region(10).This could be when students have interest in their department, they should have great attention, attitude and perception toward the simulation based learning. This leads to more satisfied in the learning process.

Checklist availability during the demonstration period had statistically significant association with the student satisfaction from simulation-based learning with AOR =0.43(95% C.I: 0.233, 0.811). This means that students without checklist during the demonstration period were 57% less likely to satisfy from the simulation-based learning as compared to students having checklist keeping others variables constant. This study agree with a study conducted in Amhara region

(36). This might be explained by guided learning process though having a clear step by step procedure outline at hand that enhance their satisfaction with simulation based learning.

Instructor availability during demonstration had statistically significant association with satisfaction level from simulation-based learning for college students with AOR =0.16 (95% C.I: 0.088, 0.286). This means that lack of instructor availability during the demonstration; the students were 84% less likely to satisfy from simulation-based learning as compared to instructor availability keeping others constant. This study agrees with a study conducted in Amhara region, Harer, Dire Dawa, Haramaya university, Ireland and Saudi Arabia, (38)(12)(41) (42). This could be due to the availability of the instructor in the simulation-based learning, the students could be supported and get assistance when there is any technical error or difficulty in understanding of the learning process. This makes students easier to understand the learning process and become satisfied in the simulation-based learning.

Availability of simulation material had statistically significant association with level satisfaction of students with AOR =0.42 (95% C.I: 0.239, 0.721). Lack of availability simulation material; students' satisfaction was 58% less likely as compared to full access of material keeping others constant. This study agrees with a study conducted in Haramaya, Dire Dawa university, Morocco and Saud Arabia (38)(30)(12) (42). This might be as the necessary materials for the simulation learning available there is no interruption in the learning process. This leads students to more satisfy with the simulation learning. Because when fully materials were not available the students could be disturbed and become unsatisfied.

Student satisfaction from simulation-based learning had significantly affected by assistance of laboratory technician with AOR =0.49 (95% C.I: 0.278, 0.879). This means that demonstration without lab technician assistance; the students were 51% less likely to satisfy from simulation-based learning as compared to students assisted with technician keeping others constant. This study agrees with a study conducted in Amhara region, Gondar university, Tunisia and South Korea (36)(11) (42) (43). This could be due to lab technician were more experienced in the simulation-based learning, the students get any support while learning and they can get easy method of understanding the simulation-based learning from the lab technicians. Lab technicians also facilitate the learning process by correcting any error that disturbs students. This all makes students to be more satisfied in the simulation -based learning.

Student having no adequate practicing program per semester, their satisfaction from simulation-based learning was 51% less likely as compared to students having adequate practicing program per semester with AOR =0.49 (95% C.I: 0.274, 0.857 keeping others variables constant. This study agrees with a study conducted in Tunisia, Spain and South Korea (39)(12)(42)(43) in which students practicing more times, their satisfaction from simulation-based learning was higher. This might be when students practiced the simulation based learning many times the students become more confidential and increased their skill of understanding the learning process. This makes students more satisfied than students without practice.

Students' sex difference had significant association with level of Satisfaction. Female sex was 4.64 time more likely to satisfy from simulation- based learning with AOR= 4.64(95% C.I: 2.613, 8.248) as compared to male sex keeping others constant. This study was in line with a study conducted in South Korea (42). This could be due to women had additional capacity in better interpreting nonverbal communication such as facial expression, body language or tone of voice and remembering these behaviors. It also female students have great ability to pick up on interpersonal cues (42).

7. Strength and Limitation of Study

Strength: The main strength of the study was use of primary data with large enough sample size which is more reliable and representative than secondary data.

Limitation: The limitation of this study was lack of enough literature especially in the study area that makes difficult to discuss. Another limitation of the study was only including level three students.

8. Conclusion

In conclusion level of satisfaction from simulation-based learning among college students in this study were lower as compared to other studies. Students were less likely to satisfy from simulation-based learning when there is lack of instructor availability in the learning process, lack of student's interest in their department, lack of lab technician during the learning process, shortage of necessary materials, checklist and lack of having practicing program per semester

whereas being female student was more likely to satisfy from simulation -based learning as compared to male sex.

9. Recommendation

1. For bureau of TVET:

The level of student's satisfaction with simulation-based learning should be improved by ensuring the complete availability of simulation materials necessary for the learning process and by recruiting adequate number of instructors and lab assistants to support students during demonstration sessions. Additionally providing adequate skill-practicing programs per semester will allow students to familiarize with simulation environments and resources.

2. For instructors:

To improve level of student's satisfaction instructors should be present throughout simulation process, prepare standardized checklists consistently to guide the students during the demonstration and motivate students and help them develop interest in their department.

3. For individual students:

To improve the level of student satisfaction, students should improve personal interest in their department, as all departments are important and this interest enhances attention and motivation during demonstration process. Students should seek support from instructors and lab technicians whenever challenges arise. In addition, students should practice simulation-based learning repeatedly including during their free time.

10. References

1. Simulation in nursing and midwifery education Simulation in nursing and midwifery education.
2. Lateef F. Simulation-based learning : Just like the real thing. 2010;
3. Koukourikos K, Tsaloglidou A, Kourkouta L, Papathanasiou I V., Iliadis C, Fratzana A, et al. Simulation in clinical nursing education. *Acta Inform Medica*. 2021;29(1):15–20.
4. Lubbers J, Rossman C. Satisfaction and self-confidence with nursing clinical simulation: Novice learners, medium-fidelity, and community settings. *Nurse Educ Today*. 2017;48:140–4.
5. Elshama SS. How to apply Simulation-Based Learning in Medical Education? *Iberoam J Med*. 2020;2(2):79–86.
6. Winum A. BSN Students ' Satisfaction and Self-Confidence in Simulation-based Learning. 2017;
7. Alharbi A, Nurfianti A, Mullen RF, McClure JD, Miller WH. The effectiveness of simulation-based learning (SBL) on students ' knowledge and skills in nursing programs : a systematic review. *BMC Med Educ*. 2024;
8. Msosa A, Msiska M, Mapulanga P, Mtambo J, Mwalabu G. Simulation-based education in classroom and clinical settings in sub-Saharan Africa: a systematic review. *High Educ Ski Work Learn*. 2023;13(6):1126–41.
9. Msosa A, Mapulanga P, Mtambo J, Mwalabu G. Simulation-based education in classroom and clinical settings in sub-Saharan Africa : a systematic review. 2023;13(6):1126–41.
10. Abat A, Tsega G, Getaneh G. Satisfaction with Simulation-based Learning and Associated Factors among Public Health Science College Students in. 2023;12(1):31–40.
11. Gudayu TW, Badi MB, Asaye MM. Factors of Simulation Based Education among Midwifery Students : A Cross-Sectional Study. 2015;2015.
12. Mohammed A. Learner Satisfaction with Simulation-Based Education and Associated Factors among Undergraduate Regular Midwifery Students at Harar Health Sciences College , Haramaya and Dire Dawa Universities , Eastern Ethiopia. 2023;1–12.
13. Ismail FW, Ajani K, Baqir SM, Nadeem A, Qureshi R, Petrucka P. Challenges and opportunities in the uptake of simulation in healthcare education in the developing world: a scoping review. *MedEdPublish*. 2024;14:38.
14. Baayd J, Heins Z, Walker D, Afulani P, Sterling M, Sanders JN, et al. Context Matters : Factors Affecting Implementation of Simulation Training in Nursing and Midwifery Schools in North America , Africa and Asia. *Clin Simul Nurs*. 2023;75:1–10.
15. Review N, Amaechi DC, Okatta AU, Amaechi EC, Elendu TC, Ezech CP, et al. The impact of simulation-based training in medical education. 2024;27(June).
16. Diaz-Navarro C, Armstrong R, Charnetski M, Freeman KJ, Koh S, Reedy G, et al. Global consensus statement on simulation-based practice in healthcare. *Adv Simul*. 2024;9(1):1–10.
17. Dejene D, Yigzaw T, Mengistu S, Ayalew F, Kahsaye M, Woldemariam D. Exploring health workforce regulation practices and gaps in Ethiopia : a national cross-sectional study. 2019;1–12.
18. Tsega G. Health professionals ' competence for the provision of quality primary health care in Amhara region , Ethiopia. 2025;1–15.
19. Biresaw H, Mulugeta H, Endalamaw A, Yesuf NN, Alemu Y. Patient satisfaction towards health care services provided in Ethiopian health institutions : a systematic review and meta-analysis. 2021;

20. Transforming and scaling up health professionals' education and training.
21. Rossler K, Molloy MA, Pastva AM, Brown M, Xavier N. Healthcare Simulation Standards of Best Practice™ Simulation-Enhanced Interprofessional Education. *Clin Simul Nurs*. 2021;58:49–53.
22. Healthcare Simulation Standards of Best Practice™. *Clin Simul Nurs*. 2021;58:66.
23. Zone ET, State T, Tekulu FB. The Effect of War on Educational Institutions of. 2023;1–19.
24. Aljohani AS, Karim Q, George P. Students' Satisfaction with Simulation Learning Environment in Relation to Self-confidence and Learning Achievement. 2016;4:228–35.
25. Hwang J. Effects of Simulation-Based Practice Education on Learning Satisfaction , Immersion , and Self-Efficacy of Nursing Students. 2023;12(1):275–82.
26. Jallad ST. Effectiveness of Simulation-Based Education on Educational Practices of Communication Skills , Satisfaction , and Self-Con fi dence Among Undergraduate Nursing Students. 2024;
27. Higazee MZA, Rayan A, Ades MA, Alrawashdeh F. Nursing Students' Satisfaction with Their Clinical Experiences. [Http://WwwOpenscienceonlineCom/](http://WwwOpenscienceonlineCom/). 2017;4(2):16.
28. Boon QW, Kok RA, Aziz A. Integrating Pedagogical Model for Simulation-Based Learning in Hospitality TVET Students: Attitudes and Satisfaction. *Int J Acad Res Bus Soc Sci*. 2021;11(6):600–12.
29. Ahmed M, Naggar E, Almaeen AH. Students ' perception towards medical-simulation training as a method for clinical teaching. 2020;70(4):618–23.
30. Hafid Saadi, Ahmed Kharbach AA. Exploring students satisfaction and factors influencing simulation based learning in nursing students. 2023;16(4). Available from: <https://doi.org/10.29333/ejmets/13778>
31. Kaliyaperumal R, Raman V, Kannan LS, Ali MD. Satisfaction and Self-Confidence of Nursing Students with Simulation Teaching. 2021;11(February):44–50.
32. Sandy PT, Meyer JT, Oduniyi OS, Mavhandu-Mudzusi AH. Paramedic students' confidence and satisfaction with clinical simulations of an emergency medical care programme in South Africa: A cross-sectional study. *Heal SA Gesondheid*. 2021;26:1–9.
33. Mohammed A. Learner Satisfaction with Simulation-Based Education and Associated Factors among Undergraduate Regular Midwifery Students at Harar Health Sciences *Heal Sci J*. 2023;1–12.
34. Agago TA, Wonde SG, Bramo SS, Asaminew T. Simulated patient-based communication skills training for undergraduate medical students at a university in Ethiopia. *Adv Med Educ Pract*. 2021;12:713–21.
35. Alemu FM, Yimer NB, Kasegn BB, Kassie BA, Ibrahim IY, Abdo AA, et al. Effectiveness of simulation-based cesarean section education on improving non-physician clinician midwife's competency in performing cesarean section in Ethiopia: a quasi-experimental study. *BMC Med Educ*. 2023;23(1):1–12.
36. Gebrekidan FC, Aweke AM, Gella GB, Bekele YA. Midwifery students ' satisfaction with simulation-based education and associated factors among governmental universities in Amhara region , Ethiopia 2022. 2024;
37. Etanaa NB, Benwu KM, Gebremedhin HG, Desta HB. The effect of simulation-based training in non-physician anesthetists in Tigray region, Ethiopia. *BMC Res Notes*. 2020;13(1):1–5.
38. Omer. Nursing Students' Perceptions of Satisfaction and Self-Confidence with Clinical Simulation Experience. *J Educ Pract*. 2016;7(5):131–8.
39. Jamie AH, Mohammed AA. Satisfaction with simulation-based education among

- Bachelor of Midwifery students in public universities and colleges in Harar and Dire Dawa cities , Ethiopia. 2019;1–5.
40. Alconero-Camarero AR, Sarabia-Cobo CM, Catalán-Piris MJ, González-Gómez S, González-López JR. Nursing students' satisfaction: A comparison between medium-and high-fidelity simulation training. *Int J Environ Res Public Health*. 2021;18(2):1–11.
 41. Moloney M, Murphy L, Kingston L, Markey K, Hennessy T, Meskell P, et al. Final year undergraduate nursing and midwifery students' perspectives on simulation-based education: a cross-sectional study. *BMC Nurs*. 2022;21(1):1–11.
 42. Kyung M, Kim H, Kim J hee. Factors associated with nursing students ' satisfaction with simulation-based assessments : interaction between psychological safety and gender in a cross- sectional study. 2025;
 43. Gabbouj SB, Zedini C, Naija W, Gabbouj SB, Zedini C, Naija W. Nursing Students ' Satisfaction and Self- Confidence with Simulation-Based Learning and Its Associations with Simulation Design Characteristics and Educational Practices Nursing Students ' Satisfaction and Self-Confidence with Simulation-Based Learning and Its Associations with Simulation Design Characteristics and Educational Practices. 2024;7258.
 44. Unver V, Basak T, Watts P, Gaioso V, Moss J. The reliability and validity of three questionnaires : The Student Satisfaction and Self-Con fi dence in Learning Scale , Simulation Design Scale , and Educational Practices Questionnaire. *Contemp Nurse*. 2017;53(1):60–74.
 45. Duff JP, Morse KJ, Seelandt J, Gross IT, Sargeant J, Dieckmann P, et al. Debriefing Methods for Simulation in Healthcare A Systematic Review. 2024;e=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_SISTEM_PEMBETUNGAN_TERPUSAT_STRATEGI_MELESTARI

11. Annexes

MEKELLE UNIVERSITY
COLLEGE OF HEALTH SCIENCE
DEPARTMENT OF MIDWIFERY

Annex I: Participant's information sheet in English version

Hello, my name is Gebreyesus Desta Abrha and presently I am studying the course-Masters in midwifery education in Mekelle University College of Health Science. As part of my graduation criteria, I am conducting a research project titled as: Level of satisfaction with simulation based learning and associated factors among public TVET health science college students in Tigray region, Ethiopia, 2025.

This study is aimed to determine the level of student's satisfaction with simulation based learning and associated factors among students in Public TVET health science colleges in Tigray, Ethiopia. This will serve as an input for curriculum planners to design best simulation-based learning strategies which enhances health professional's competencies and quality of care and used for other researchers as a baseline.

There will be neither direct benefits and no incentive to you for participating in this interview nor harm inflicted for being not participating. You may choose to answer all or some of the questions that I put to you. The information collected from you will be kept private and confidential and stored in lockable shelf, without putting your name by assigning a code number to it.

.If you have any further queries, you are free to contact me at my mobile number given below and I will answer all your queries and if you still have any further queries, you can also communicate with my advisors. The approximate time it will take for you is about 20-30 minutes. If you agree to participate in the interview please indicate your agreement. Your name will not be used in any report but your ideas and experiences will be of great help to make better strategies to implement quality and effective simulation techniques in the health care education.

However, you are free to quit the interview at any point of time if you feel so.

Principal Investigator: Gebreyesus Desta (BSc)

Phone number: +251914857669

Email: geredesta1515@gmail.com.

Primary Advisor: Solomon W/Mariam (MSc, assistant professor)

Co advisor: Lidya Nigusse (BSc, MSc in midwifery Education)

Annex II: Informed consent

I (the respondent), the undersigned, am told that the investigator is going to conduct study in this college to determine the level of student’s satisfaction with simulation based learning and associated factors among students in Public TVET health science colleges in Tigray, Ethiopia.

I am also informed that the result of the study will be used by both the college and Tigray regional state TVET & job creation bureau to make quality and effective learning strategies. I am also, told that the research will benefit students, patients and the community in general including me and that the research will not inflict any harm to me. I have been told that I have full right to have enough time to understand and then take part in the study on the basis of my interest and besides, I am briefed that It will not take more than 30 minutes to fill the questionnaire. Moreover, I am notified that my participation in the study is entirely voluntarily, and that I can quit from the study any time I want. Likewise, I am enlightened that I will not be subjected to any form of punishment following my failure to participate in the study. In the same way, I am explained that the information collected from me will not by any means be disclosed to any people other than those participating in the study unless obtained permission from me. Equally, I am told that I can ask them questions I found difficult or any type otherwise.

Could I have permission to continue?

- 1) Yes
- 2) No

Signature_____

Date_____

Annex III: Data collection tool (Structured English Version questionnaire)

Mekelle University, College of Health Science, and Department of Midwifery: Questioner on level of satisfaction with simulation based learning and associated factors among public TVET Health Science College students, Tigray, Ethiopia, 2025: Institution based cross-sectional study.

S.no	Socio demographic characteristics	Category	
1	Sex	1. Male 2. Female	
2	Age	_____	
3	Residence	1.Urban 2. Rural	
4	Family education level (Father or Mother)	1.Illiterate 2.Elementary 3. High school 4.College and above	
5	Name of teaching institution	1.Araya kahsu HSC 2.Dr. Tewelde Legesse HSC	
6	Department	1.Midwifery 2.Nursing 3.Labolatory	
	Academic demand factors		
7	English language understandability to the instructions ,scenarios and tasks	1.Need assistance 2. No need assistance	
8	Interest to study the profession	1.Interested 2.Not interested	
9	Cumulative GPA (Grade point average) in the last semester	_____	
	Organizational related factors		
10	Were sufficient materials available during the simulation practice	1.yes 2.No	

11	Materials in the simulation room were functional?	1.Fully Functional 2.Partially Functional 3.Not Functional				
12	How much space does the simulation room occupy (in kare meter)?	_____				
13	How many students can accommodate the skills lab room?	_____				
14	How many students are assigned in simulation at a single session?	_____				
15	On average, how many students are assigned in single station per session during skill demonstration?	_____				
16	Instructors were available during simulation?	1.yes 2.No				
17	If yes, How often are the instructors available during simulation?	1.Always 2. Sometimes				
18	Did the skill lab technicians assist you during demonstration when the instructor not available?	1.yes 2.No				
19	If yes, Were the skill lab technicians are skillful?	1.yes 2.No				
20	Did the instructor give you a checklist to follow for every procedure?	1.yes 2.No				
21	Is there an adequate skill practicing programs per semester?	1.yes 2.No				
22	Do you think that the simulation room is safe and ventilated?	1.yes 2.No				
23	Does the simulation room has toilet and water?	1.yes 2.No				
S.no	Level of Satisfaction with SBL	1.Strongly disagree	2.Disagree	3.Neutral	4.Agree	5.Strongly agree
	Simulation design related factors					
	<i>Objectives and information</i>					
1	There was enough information provided at the beginning of the simulation to provide direction and encouragement					

2	I clearly understood the purpose and objectives of the simulation					
3	The simulation provided enough information in a clear manner for me to problem-solve the situation					
4	There was enough information provided to me during the simulation					
5	The cues were appropriate and geared to promote my understanding					
	<i>Support</i>					
6	Support was offered in a timely manner					
7	My need for help was recognized by my instructors					
8	I felt supported by the teacher's assistance during the simulation					
9	I was supported in the learning process					
	<i>Problem-solving</i>					
10	Independent problem-solving was facilitated					
11	I was encouraged to explore all possibilities of the simulation					
12	The simulation was designed for my specific level of knowledge and skills					
13	The simulation provided me an opportunity to goal set for my					

	patient					
	<i>Feedback/guided reflection</i>					
14	Feedback provided was constructive					
15	Feedback was provided in a timely manner					
16	The simulation allowed me to analyze my own behavior and actions					
17	There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level					
	<i>Fidelity(realism)</i>					
18	The scenario resembled a real-life situation					
19	Real-life factors, situations, and variables were built into the simulation scenario					
	<i>Educational practice related factors</i>					
20	The teaching methods used in this simulation were helpful and effective					
21	The simulation provided me with a variety of learning materials and activities to promote my learning.					
22	I enjoyed how my instructor taught the simulation					

23	The teaching materials used in this simulation were motivating and helped me to learn					
24	The way my instructor(s) taught the simulation was suitable to the way I learn					
	Collaborative learning					
25	I had the chance to work with my peers during the simulation					
26	During the simulation, my peers and I had to work on the clinical situation together					
	<i>Active learning</i>					
27	I had the opportunity during the simulation activity to discuss the ideas and concepts taught in the course with the teacher and other students					
28	I actively participated in the debriefing session after the simulation					
29	There were enough opportunities in the simulation to find out if I clearly understand the material					
30	I learned from the comments made by the teacher before, during, or after the simulation					
31	I had the opportunity to put more thought into my comments during the debriefing session					
32	I received cues (signal to					

	guide your attention) during the simulation in a timely manner					
33	I had the chance to discuss the simulation objectives with my teacher					
34	The instructor was able to respond to the individual needs of learners during the simulation					
35	I had the opportunity to discuss ideas and concepts taught in the simulation with my instructor					
36	Using simulation activities made my learning time more productive					
37	I actively participated in the re-demonstration session after the simulation					

የኒቨርስቲ መቐለ
ኮሌጅ ሳይንስ ጥዕና
ክፍሊ ትምህርቲ ሚዲያዊ

ቅጥረ I :-ሐበሬታ ወረቀት ንተሳተፍቲ

ሰላም ሸመይ ገብረየሱስ ደስታ ኣብርሃ ይብሃል ። ሐዚ ኣነ ኣብ ዩኒቨርስቲ መቐለ ኮሌጅ ሳይንስ ጥዕና ብ ሚዲያዊ ፈሪ ኢዱክሽን ካልኣይ ድግሪ ተምሃራይ እየ። እዚ መፅናዕቲ ብዋንነት ዝካየድ ንመግልኢ ካልኣይ ድግሪ ትምህርቲ ሚዲያዊ ወይ መመሪቕ ፅሑፍ ንምድላው እንትኹን ኣርእስቲ እቲ መፅናዕቲ ድማ :- ድረጃ ዕግበት ተምሃሮ ምስ ሰምዮሽን መሰረት ዝገበረ ትምህርቲን ተዛመድቲ ረጅሒታትን ኣብ ትሕቲ ቴምትሰ ዝርከባ ናይ ህዝቢ ጥዕና ሳይንስ ኮሌጃት ኣብ ትግራይ ፡-ኢትዮጵያ 2025 ዓ/ም/ፈ እዩ።

ዕላማ ናይዚ መፅናዕቲ :-ደረጃ ዕግበት ተምሃሮ ምስ ሰምዮሽን መሰረት ዝገበረ ትምህርቲ ተዛመድቲ ረጅሒታትን ኣብ ትሕቲ ቴምትሰ ዝርከባ ናይ ህዝቢ ጥዕና ሳይንስ ኮሌጃት ኣብ ትግራይ ፡-ኢትዮጵያ 2025 ዓ/ም/ፈ ንምፍላጥ እንትኹን ውፅኢት እዚ መፅናዕቲ ድማ ን ተለምዶ ስርዓተ ትምህርቲ ንምንዳፍ ሰምዮሽን መሰረት ዝገበረ ትምህርቲ ፣ ንምዕባይ ብቐዓት ሰብ ሞያ ጥዕናን ግልጋሎት ጥዕናን ብተወሳኺ ን ተመራመርትን ‘ውን ክም ሕንፃፅ ሰረት ክገልግል ይክእል። ኣብዚ መፅናዕቲ ብምስታፍኪ/ካ ዝህልው ቀጥታ ግላዊ ጥቕሚ ወይ ዝኾነ መተባብሩ የብሉን፡- ብምንፃኪ/ካ ‘ውን ምንም ጉድኣት ኣይበፅሐኪን/ካን። ኣብዚ ተቐሚጦም ዘለዉ ሕቶታተ ኩሎም ወይ ገሊኦም ክትምልሲ/ስ ትኮኒ/ን ኢኺ/ኻ። እዚ ኣብዚ መፅናዕቲ ትህብዎ ሐበሬታን ኮነ መንነትኩም ብ ኮድ ኣምበር ሸምኩም ሰለዘይገልፅን ኣብ ዝቐለፍ ሳጥን ዝቐመጥን፣ ካብ መፅናዕቲ ወፃኢ ንምንም ግልጋሎት ዘይውዕልን ሚስጥራውነቱ ዝተሓለወን እዩ።

ዝኾነ ሕቶ እንትሃልዩ ኸይተሰከፍኩም ታሕቲ ብዘሎ ስልኪ ቐፅሪይ ደዊልኩም ጠይቐኒ ከብራህርህልኩም ኣየ ።ተወሳኪ ሕቶ እንተሃልዩ ‘ውን ምስ መማኸሪይ ክትነጋገሩ ትኻእሉ ኢኹም።ነዘም ሕቶታት ብዝግባእ ንምምላስ ኣስታት 20-30 ደቓይቕ ክወስደኩም ኸወስደልኩም ይኸእል እዩ። ኣብዚ መሕተት ንምስታፍ ፍቓደኛ እንተኾይንኩም ንምስምዕማዕኹም ዝገልፅ ምልክት ኣቐምጥሉ ። ኣብዚ መፅናቲ ሸምኩም ዘይኮነስ ሓሳብኩምን ልምድኹምን ኣብ ትምህርቲ ግልጋሎት ጥዕና ንምትግባር ፅፈት ዘለዎን ውፅኢታውን ሜላ ሰምዮሽን ንኸህሉ ኸሕግዘና እዩ። ይኹን እምበር እዚ መሕተተ ኣብ ዝኾን እዋን ከይተሰከፍኩም ምቁራፅ ትኻእሉ ኢኹም።

ዋና መርማሪ :- ገብረየሱስ ደስታ (ቢ ኤስ ሲ)

ስ/ቐ :- +251914857669 ኢሜይል:- geredesta1515@gmail.com.

ዋና ኣማኻሪ :- ሰሎሞን ወ/ማርያም(ኤም ኤስ ሲ፣ተሓጋዝ ፕሮፌሰር)

ሓጋዚት ኣማኻሪ :-ሊድያ ንጉሰ (ቢ ኤስ ሲ፣ ኤም ኤስ ሲ)

ቅጥዒ II: ኣብ ሓበሬታ ዝተሰነየ ፍቓድ

ኣነ (መልሲ ዝሃበ): እዚ ኣብ ታሕቲ ዝፈረምኩ ኣብ ትግራይ ኢትዮጵያ ኣብ ዝርከባ ናይ ህዝቢ ቴሞትስ ጥዕና ሳይንስ ኮለጃት ኣብ ዝርከቡ ተማሃሮ ደረጃ ዕግበት ተምሃራይ ኣብ ስሚዩሽን መሰረት ዝገበረ ትምህርትን ተዛመድቲ ረጅሙታትን ንምፍላጥ ኣብዚ ኮሌጅ መጽናዕቲ ክካይድ ምዃኑ ነገሩ።

ውፅኢት እቲ መፅናዕቲ ብኸልቲኡ ኮሌጅ ይኹን ቢሮ ቴሞትስ ክልል ትግራይ ፅሬት ዘለዎን ውፅኢታዊን ስትራቴጂ ትምህርቲ ንምስራሕ ከምዝውዕል እውን ይሕበር። ኣነ እውን እቲ መጽናዕቲ ንዓይ ሓዊሱ ንተማሃሮ፡ ሕሙማትን ብሓፈሻ ንሕብረተሰብን ከም ዝጠቓምን እቲ መጽናዕቲ ዝኾነ ጉድኣት ከም ዘየውርደለይን ተነገሩ። ምሉእ መሰል ከም ዘለኒ ተነገሩኒ ኣሎ ። ንምርዳእ እኹል ግዜ ክረከብን ድሕሪኡ ኣብቲ መጽናዕቲ ብመሰረት ተገዳስነተይ ክሳተፍን ብዘይካዚ ድማ ነቲ መሕተቲ ንምምላእ ካብ 30 ደቓይቓ ንላዕሊ ከምዘይወስድ ተሓቢሩኒ ኣሎ። ብተወሳኺ ኣብቲ መጽናዕቲ ዝተሳተፍኩዎ ምሉእ ብምሉእ ብወለንታይ ከም ዝኹነን ኣብ ዝደለኸዎ ግዜ ድማ ካብቲ መፅናዕቲ ክገድፎ ከም ዝኸለል ተሓቢሩኒ ኣሎ ። ብተመሳሳሊ ኣብቲ መፅናዕቲ ዘይምስታፊይ ስዒቡ ዝኾነ ዓይነት መቐፃዕቲ ከምዘይበፅሓኒ ፈሊጠ ኣለኹ። ብተመሳሳሊ መንገዲ ካባይ ዝተኣከበ ሓበሬታ ካባይ ፍቓድ እንተዘይተረኺቡ ብዘይካ እቶም ኣብቲ መጽናዕቲ ዝሳተፉ ሰባት ብዝኾነ ይኹን መንገዲ ንኸልእ ስብ ከምዘይግለፅ ተነገሩኒ። ማዕረ ማዕረኡ ድማ ኣፀጋሚ ኮይኑ ዝረኽብኩዎም ሕጻናት ወይ ዝኾነ ዓይነት ሕቶ ክሓቶም ከም ዝኸለል ተሓቢሩኒ።

ኣብዚ መጽናዕቲ ክትሳተፍ/ፊ ፍቓድኛ ድኻ/ኺ? 1. እወ 2. ኣይፋል

ክታም _____

ዕለት _____

ቅጥዒ III:- መሳርሒ ምእካብ መረዳኢታ

የኒቨርስቲ መቐለ፣ኮሌጅ ሳይንስ ጥዕና፣ክፍሊ ትምህርቲ ሚድዋፊሬ

መአከቢ መረዳኢታ ብዛዕባ ደረጃ ዕግበት ተምሃሮ ኣብ ስሚዩሽን መሰረት ዝገበረ ትምህርትን ተዛመድቲ ረጅሒታትን ኣብ ትሕቲ ቴምትስ ዝርከቡ ናይ ህዝቢ ጥዕና ሳይንስ ኮሌጃት ፣ ትግራይ፣ ኢትዮጵያ፣ 2025 ዓ/ም/ፈ ትካል መሰረት ዝገበረ መፅናዕቲ

ማሕበረ-ስነ-ህዝባዊ ባህርያት			
ተ.ቐፅሪ	ማሕበረ-ስነ-ህዝባዊ ባህርያት	ምድብ	ርእይቶ
1.	ፆታ	1. ተባዕታይ 2. ኣነስታይ	
2.	ዕድመ	_____	
3.	ትነብረሉ/ርሉ ቦታ	1. ከተማ 2. ገጠር	
4.	ደረጃ ትምህርቲ ስድራቤት (ኣቦ ወይ ኣደ)	1. ዘይተምሃረ 2. መባእታዊ 3. ካልኣይ ደረጃ 4. ኮሌጅን ልዕሊኡን	
5.	ስም መምሃሪ ትካል	1. ኣርኣያ ካሕሱ ጥሳኮ 2. ዶ/ር. ተወልደ ለገሰ ጥሳኮ	
6.	ክፍሊ ትምህርቲ	1. ሚድዋፊሬ 2. ነርሲንግ 3. ላቦራቶሪ	
ኣካዳሚያዊ ጠለብ ረጅሒታት			
7.	ቋንቋ እንግሊዝ ናይ ምርዳእ ኸኣለት ን መምርሒታት ፣ ስናርዮታትን ዕማማትን	1. ሓገዝ የድልየኒ 2. ሓገዝ ኣየድልየንን	
8.	ነቲ ሞያ ንምጽናዕ ዘለካ/ኪ ድልየት	1. ድልየት ኣለኒ	

		2. ድልዎት የብለይን	
9.	ናይ ዝሓለፈ ስሚስተር ማእኸላይ ድምር ውጽኢት ትምህርቲ ኸንደይ እዩ?	_____	
ምስ ትካል ዝተኣሳሰሩ ረጅሒታት			
10.	ኣብ እዋን ልምምድ ስሚዩሽን እኹል ንብረት ነይሩ ድዩ	1. እወ 2. ኣይፋል	
11.	ኣብቲ ናይ ስሚዩሽን ክፍሊ ዝነበሩ ንብረትት ይሰርሑ ዶ?	1. ምሉእ ብምሉእ ዝሰርሑ 2. ብኸፊል ዝሰርሑ 3. ዘይሰርሑ	
12.	እቲ ናይ ስሚዩሽን ክፍሊ ስፍሓት ክንደይ ይኾን (ብካረ ሜትር)?	_____	
13	እቲ ስሚዩሽን ክፍሊ ክንደይ ተምሃሮ ከሳትፍ ይክእል?	_____	
14	ኣብ ሓደ ክፍለ ግዜ ክንደይ ተምሃሮ ኣብ ስሚዩሽን ይምደቡ?	_____	
15.	ገምጋም ኣብ እዋን ምርኢት ክእለት ኣብ ሓደ ክፍለ ግዜ ኣብ ሓደ ናቕጣ ብማእኸላይ ክንደይ ተምሃሮ ይምደቡ?	_____	
16.	ኣብ እዋን ስሚዩሽን መምህራንኩም ይርከቡ ዶ?	1. እወ 2. ኣይፋል	
17.	እወ እንተኾይኑ፣ እቶም መምህራን ኣብ እዋን ምምሳል ክንደይ ግዜ ይርከቡ	1. ኩሉ ግዜ 2. ሓልሓሊፉ	

18.	እቶም ናይ ስሚዮሽ ቴክኒሻናት ኣብ እዋን ምርኢት እቲ መምህር ኣብ ዘይተረኽበሉ እዋን ይሕግዡኹም ዶ?	1. እወ 2. ኣይፋል	
19	እወ እንተኾይኑ፡ እቶም ናይ ስሚዮሽ ቴክኒሻናት ውሕሉላት(ፈላጣት) ዶ ነይሮም?	1. እወ 2. ኣይፋል	
20	መምሃራንኩም ንነፍሲ ወከፍ ኣገባብ ክትክተሎ ዘለካ ዝርዝር መፈተሺ (ቸክሊስት) ይህቡኹም ዶ ?	1. እወ 2. ኣይፋል	
21	ኣብ ኣደ ሰሚስተር እኹል ናይ ክእለት ልምምድ መደባት ይውሃቡኩም ዶ?	1. እወ 2. ኣይፋል	
22.	እቲ ናይ ስሚዮሽ ክፍሊ ውሑስ ን ዘይዕፍንን ድዩ?	1. እወ 2. ኣይፋል	
23	እቲ ናይ ስሚዮሽ ክፍሊ ሽቓቕ ን ማይን ኣለዎ ዶ?	1. እወ 2. ኣይፋል	

ደረጃ ዕግበት ኣብ ስሚዮሽን ዝተመርኮሰ ትምህርቲ

ተ.ቐፅፅ	ምስ ስሚዮሽን ዲዛይን ዝተኣሳሰሩ ረጅሒታት	1.ብፍፁምኣይስ ማዕመዑን	2.ኣይስ ማዕመዑን	3.ምንጎኛ ኣዩ	4.ይስማዕመዑ	5.ብፍፁም ይስማማዑ
	ዕላማን ሓበሬታን					
1.	ኣብ ምጅማር እቲ ስሚዮሽን እኹል መብርህን ምትብባዕን ዝሕግዝ ሓበሬታ ይወሃበኒ ነይሩ					
2.	ዕላማን ጥቕምን ናይቲ ስሚዮሽን ብንጹር ይርደኣኒ እዩ					
3.	ጸገም ንምፍታሕ እቲ ስሚዮሽን ብንጹር መንገዲ እኹል ሓበሬታ ሂቡኒ					
4.	ኣብ እዋን ስሚዮሽን እኹል					

	ሐበሬታ ተዋሂቡኝ ነይሩ					
5.	ርድኢታይ ንምዕባይ ግቡእን እኹልን ምልክታት ይወሃበኝ ነይሩ					
ሓገዝ						
6.	ደገፍ ብእዋኑ ይወሃበኝ ነይሩ					
7.	ሓገዝ ኣብ ዘድልየኝ ሰዓት መምህራነይ ይፈልጡ እየም					
8.	ኣብ እዋን ስሚዩሽን መምህራይ ሓጋዚ ኮይኑ ተሰሚዑኝ					
9.	ኣብ እዋን ምምሃር ምስትምሃር ተደጊፈ እየ					
ፀገም ምፍታሕ						
10.	ዓርሰ-ተምርኩሳዊ ምፍታሕ ፀገማት ተመዓራዩለይ እየ					
11.	ንኹሉ ተኸእሎታት ናይቲ ስሚዩሽን ክድህስስ ተተባቢዐ እየ					
12.	እቲ ስሚዩሽን ንፍሉይ ደረጃ ፍልጠታይን ክእለተይን ዝተዳለወ እየ					
13.	እቲ ስሚዩሽን ንሕሙመይ ሸቶ ንኸገብር ዕድል ሂቡኝ					
ግብረ መልሲ						
14.	ዝተዋህበ ግብረ መልሲ ሃናጺ እየ ነይሩ					
15.	ግብረ መልሲ ኣብ እዋኑ ተዋሂቡኝ					
16.	እቲ ስሚዩሽን፡ ንባህርያተይን ተግባራተይን ክትንትን ኣኸኢሉኝ					
17.	ድሕሪ እቲ ስሚዩሽን ፍልጠት ናብ ካልእ ደረጃ ንምህናጽ ካብ መምህር መምርሒ/ግብረ መልሲ ናይ ምርካብ ዕድል ነይሩ					

ተአማንነት(ደረጃ ክውንነት)						
18.	እቲ ኸነታት ኣብ ናይ ሓቂ ህይወት ዝርእ ኸነታት እዩ ዝመስል ነይሩ					
19.	ኣብቲ ናይ ምምሳል ስናርዮ ናይ ሓቂ ህይወት ረጃሒታት፡ ኩነታትን ተለዋዋጢ ነገራትን ተሃኒጾም					
ምስ ትምህርታዊ ልምምድ ዝተኣሳሰሩ ረጃሒታት						
20.	ኣብዚ ስሚዩሽን ዝተጠቐመሉ ኣገባብ ኣመሃህራ ሓጋዝትን ውጽኢታውን እዩም ነይሮም					
21.	እቲ ስሚዩሽን ንትምህርታዊ ንምድንፋዕ ዝተፈላለዩ ናይ ትምህርቲ ንዋትን ንጥፊታትን ኣቕሪቡሊይ ኣዩ					
22.	ኣቀራርባ እቲ ስሚዩሽን ብመምህራይ ዝመሃሮ ሕጉስ እዩ					
23.	ኣብዚ ስሚዩሽን ዝተጠቐመሉ መምሃሪ ናውቲ ድርኺት ዝፈጥርን ንክመሃር ዝሓገዝንን እዩ ነይሩ					
24.	መምህራይ/ራይ ነቲ ስሚዩሽን ዝምህሩሉ ዝነበሩ ኣገባብ ምስቲ ዝመሃረሉ ኣገባብ ዝሰማማዕ እዩ ነይሩ					
ናይ ምድግጋፍ ትምህርቲ						
25.	ኣብቲ ስሚዩሽን ምስ መሓዙተይ ናይ ምስራሕ ዕድል ረኺቢ እዩ					
26.	ኣብቲ ስሚዩሽን ኣነን መሓዙተይን ኣብቲ ክሊኒካዊ ኩነታት ብሓባር ንሰርሕ ነይርና					
ንጡፍ ትምህርቲ						
27.	ኣብቲ ናይ ስሚዩሽን ንጥፊት ኣብቲ ኮርስ ዝነበሩ ሓሳባትን ኣምርን ምስ መምህርን ካልኣት					

	ተማሃሮን ከዘራረብ ዕድል ረኽቦ እየ					
28.	ድህረ እቲ ስሚዩሽን ኣብ ዝተኻየደ ናይ ዲብራሬንግ ክፍለ ግዜ ብንጥፊት ተሳቲፊ እየ					
29.	ነቲ ንዋት ብንጹር ከም ዝተረዳእከዎ ንምፍላጥ ኣብቲ ስሚዩሽን እኹል ዕድላት ነይሩኒ					
30.	ካብቲ መምህር ቅድሚ እቲ ስሚዩሽን፡ ኣብ እዋን እቲ ስሚዩሽን ፡ወይ ድህረ እቲ ስሚዩሽን ካብ ዝሃቦ ርእይቶታት ይመሃር እየ					
31.	ኣብቲ ናይ ዲብራሬንግ መድረኽ ኣብ ርእይቶታታይ ዝያዳ ሓሳብ ከእቲ ዕድል ረኽቦ					
32.	ኣብ እዋን ስሚዩሽን ብእዋኑ ምልክታት (ኢቻልቦኻ ዝመርሖ ምልክት) ይቅበል እየ					
33.	ምስ መምህራይ ብዛዕባ ዕላማታት ስሚዩሽን ከዘራረብ ዕድል ረኽቦ					
34.	እቲ መምህር ኣብ እዋን ስሚዩሽን ንውልቃዊ ድሌታት ተምሃሮ ምላሽ ይህብ እየ					
35.	ኣብቲ ስሚዩሽን ዝተማህርናዮ ሓሳባትን ኣምርን ምስ መምህራይ ከዘራረብ ዕድል ረኽቦ					
36.	ናይ ስሚዩሽን ንጥፊታት ምጥቃመይ ናይ ትምህርቲ ግዜይ ዝያዳ ኣፍራዩ ገይርዎ					
37.	ድህረ እቲ ስሚዩሽን ኣብ ዝነበረ ናይ ዳግመ ምርኢት መደብ ብንጥፊት ተሳቲፊ					

የቐንየለይ!!