Cross-Sectional Study

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Clinical practice competence and associated factors among undergraduate midwifery and nursing sciences students at Bahir Dar city, Northwest Ethiopia

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Background: Competence describes actions that will be demonstrated or observed and assessed while competency refers to the skill itself. Following appropriate theoretical and practical training, clinical experience is required to achieve the highest level of clinical competence. It is estimated that many women and newborns die each year due to a lack of qualified health professional around the world. As a result, the purpose of this study was to determine the prevalence and factors influencing clinical competency in the study area.

Methods: An Institutional-based cross-sectional study was conducted from 12 August to 12 September 2022, among 403 undergraduate health sciences students of Bahir Dar University. Participants were approached through simple random sampling technique. Data were collected using a pre-tested structured questionnaire through a face-to-face interview, and entered into Epidata version 3.1 and analyzed using SPSS version 22. The prevalence was reported using proportion with 95% CI and summary measures. Predictors were assessed using a multivariable logistic regression analysis model and reported using an adjusted odds ratio (AOR) with 95% CI. Statistical significance was declared at *P* value less than 0.05.

Results: Overall, the prevalence of clinical practice competency was 36.5% [95% CI; 33.5, 39.1]. Students who were provided a logbook (AOR = 5.40, 95% CI 2.91, 10.02), adequate clinical cases in the clinical practice placement (AOR = 2.72, 95% CI 1.60, 4.60), preceptor show different procedures (AOR = 2.50, 95% CI 1.33, 4.71), student's confidence during conducting procedure (AOR = 4.16, 95% CI 1.67, 10.35) and the suitability of the way of teaching to the learning styles of students during skills demonstration (AOR = 2.10, 95% CI 1.00, 4.40) were factors statistically associated with clinical practice competence.

Conclusions: According to this study, more than three out of every five participants were found to be clinically incompetent. Providing logbooks, adequate clinical cases, preceptors showing different procedures, students' confidence, and suitability of the way of teaching to the learning styles of students were significantly associated with clinical practice competence. Implementing logbooks, selecting clinical sites, enhancing the confidence of students, preferred teaching/learning styles, and clinical preceptor support were important to improve the clinical competence of students.

Keywords: clinical practice competence, clinical practice, competence, Ethiopia

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

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Introduction

Competence describes actions that will be demonstrated or observed and assessed while competency refers to the skill itself[1]. Nursing competence is the ability to perform a task with desirable outcomes[2]. Nursing and Midwifery students are expected to possess five domains of competence. These are ethical practice, holistic approaches to worry, and also the integration of data, interpersonal relationships, organization, and management of care, and private and professional development[3,4].

The result of effective learning in a healthcare setting is the achievement of clinical practice competency, and it consists of the knowledge, and skills to successfully apply professional knowledge, values, and attitude that students demonstrate in an authentic practice setting[3,5,6]. Globally, students' clinical competence were a great issue within the health science field, and there's a shortage of competent and experienced health professionals[7,8]. As a result,

healthcare administrators face challenges to induce competent and experienced professionals[9,10]. There is an increased prevalence of chronic diseases and disabilities, and the uncertain nature of the healthcare environment requires competent, skilled, and experienced health professionals which is in shortage over the world[11–13].

Globally, an estimated that many women and newborns die annually, due to a lack of qualified health professionals and women have no access to competent health professionals. But the WHO has recently concluded that almost half of all deaths can be prevented with competent Midwives or others with Midwifery skills at birth[14,15]. Worldwide, Midwives can prevent 80% of maternal death. Health worker shortages are further exacerbated by a lack of appropriate clinical competence in Africa, as a result, 90% of global maternal deaths occurred in African countries[15–17].

About 99% of neonatal deaths occur in developing countries with the highest rates in Sub-Saharan Africa and the lack of skilled birth attendants has been one of the contributing factors[14,18]. The healthcare system of Ethiopia is facing a serious shortage of competent healthcare workforces and a World Bank report showed that 70% of healthcare providers were with poor competence[10,19]. The Midwifery workforce in Ethiopia meets only 32% of the needs for maternal and newborn healthcare, bulk needs unaddressed and skilled providers attended only 50% of the births. As a result, lack of competence was a challenge for the Ethiopian government and public sectors[10,16,20].

Research conducted in Ethiopia found that the majority of newly graduated bachelor's degree holders lack competence[3,9,10]. A study conducted at Hawassa and Amhara Region universities shows that the prevalence of clinical competence was only 25.2% and 33.6% respectively[3,10,16]. The government of Ethiopia has developed different strategies to extend the competence of health professionals. The tutorial curriculum was changed from 3 years to a 4-year program and pre-service education has been started. But the supply of pre-service education might not translate into improved competence unless they master the essential knowledge and skills during their pre-service education[9,11,16].

Clinical practice occurs through interaction among students, educators, staff, patients, and environments[21,22]. More supportive and relevant contributing factors need to be identified to achieve a higher level of clinical competence and to get quality healthcare for society. Thus, this study aimed to assess the clinical practice competence and associated factors among Midwifery and Nursing students at Bahir Car Health Sciences Colleges, Northwest Ethiopia.

HIGHLIGHTS

- Overall prevalence of clinical competence among the study participants was 36.5% [95% CI: 32.0, 41.0%].
- More than three out of every five participants were found to be clinically incompetent.
- Students who were provided a logbook, adequate clinical cases in the clinical practice placement, preceptor show different procedures, student's confidence during conducting procedure and the suitability of the way of teaching to the learning styles of students during skills demonstration were identified as predictors of outcome variable.

Method and materials

Study design, area, and period

An institutional-based cross-sectional study design was conducted from 12 August to 12 September 2022, at Bahir Dar Health Sciences Colleges, Bahir Dar, Northwest Ethiopia. Bahir Dar is the capital city of the Amhara region in northern Ethiopia. The city is located ~490.34 km north-northwest of Addis Ababa, and it has a population of around 332,856[23]. The city has several public and private Universities and colleges, including Bahir Dar University, Alkan University College, Bahir Dar Health Science College, GAMBY College of Medical Sciences, Kea-Med Medical College, Rift Valley University, and Capital College of Business, and Health Science are the most[24].

Protocol and study design

The work has been reported in line with the strengthening the reporting of cohort studies in surgery (STROCSS) criteria[25]. An institutional-based cross-sectional study was carried out among Midwifery and Nursing students.

Population and eligibility criteria

All third and fourth-year Bachelor of Science in Midwifery and Nursing students at Bahir Dar Health Sciences Colleges. Randomly selected third or fourth-year Bachelor of Science in Midwifery and Nursing Students during data collection time were included in the study while those who withdraw or drop out from clinical placement during the data collection period were excluded from the study.

Sample size determination and sampling procedure

The sample size was computed based on the single population proportion based on the following assumptions: A 95% confidence level, a 5% margin error, a prevalence of clinical practice competence of 39.3% from the study done at Dilla University[9], and 10% of no response rate was added. The final sample size became 404. The total sum of students in health sciences colleges' is 878, from those 433 are the 3rd and the remaining 445 are 4th-year Midwifery and Nursing students. The total sample size was proportionally allocated to the university and each health Sciences College. The lists of students were obtained from the respective university and Health Sciences Colleges registrar. Then, the study participants from the university and each health Sciences College were selected by a simple random sampling technique. The randomness of the selection was ensured until we get the required sample size for each department.

Data collection methods and procedures

The data were collected by a self-administered questionnaire prepared in English. Questionnaires were adapted from previous works of literature. The questionnaires include socio-demographic characteristics, clinical instructor-related factors, assessment method-related factors, ward environment-related factors, clinical staff-related factors, students related factors, preceptor-related factors, and simulation-based learning-related factors. The data were collected by four B.Sc. in public health

officers and supervised by two M.Sc. nurses. Before the actual data collection, four data collectors obtained two days of training on the aim of the study, the method of data collection, and the content of the instrument. Therefore, they were familiarized with each question to minimize bias during the data collection process.

The collected data has been checked for completeness, accuracy, clarity, and consistency after being processed neatly. The pretest was done on 5% (21) of the sample size at Harar College of Health Sciences and Haramaya University, third or fourth-year BSc in Midwifery or Nursing, and the questionnaire was modified based on it is the result. Errors, ambiguities, or incompleteness were corrected. A tool's reliability was tested using the Cronbach alpha test (0.915). During the collection of the data, supervisors supervise the data collection process regularly and they checked the completeness of each piece of data before submission to PI. The principal investigator monitors the data collection and keeps the data confidential.

Study variables

Outcome variable

Clinical practice competence

Independent variables

Sociodemographic characteristics (age, sex, religion, educational status of family, residence, and year of study), clinical instructor-related factors, assessment method-related factors, ward environment-related factors, clinical staff-related factors, students related factors, preceptor-related factors, and simulation-based learning-related factors.

Operational definitions

Clinical practice competent: those students who scored mean and above the mean score of all competency domain assessment questions[9].

Clinical practice incompetent: those students who scored below the mean score of all competency domain assessment questions[9].

Clinical instructors: a person who provides direct supervision and instruction to students in the clinical aspect of health training education.

Preceptors: an experienced licensed clinician who supervises health students during their clinical rotations, assign from institutions or colleges.

Simulation-based learning: an educational activity that utilizes simulation aides to replicate clinical scenarios.

Health sciences students refer to students who choose to pursue a degree in health science with Midwifery and Compressive Nurse.

Statistical analysis

Data were coded, cleaned, and entered by Epi-Data version 4.1 and, then exported into statistical software SPSS version 25 for analysis. Descriptive statistics such as frequency and percentage were used to represent dependent and independent variables. The association between the independent factors and dependent variables was investigated using logistic regression analysis. Independent factors with a value of *P* less than 0.2 were included in the multivariate logistic regression model. Finally, the most significant associated factors were identified by multivariate logistic regression analysis. Results were reported using adjusted odds ratios (AOR)s with a 95% CI. A *P* value of 0.05 was deemed to be the statistical level for significance. The presence of multicollinearity between independent variables was determined using the variance inflation factor (VIF), and tolerance test, there is no collinearity between variables. The Hosmer-Lemeshow goodness-of-fit test was used to evaluate the model's fitness, and the model was adequately fit with a *P* value of 0.429.

Result

Sociodemographic characteristics of students

A total of 403 students participated in the study and yielding a response rate of 99.8%. More than half of 213 (52.9%) of the respondents were females and the age of the participants ranged from 18 to 29. The majority of students, 348 (86.4%), were

Table 1

Sociodemographic characteristics of midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, ($n = 403$)

Characteristics	Frequency	Percentage (%)
University/College		
Bahir Dar University	69	17.1
Rift valley University	77	19.1
Alkan University College	69	17.1
GAMBY College of Medical Sciences	118	29.3
Kea-Med Medical College	70	17.4
Religion		
Orthodox	270	67.0
Muslim	41	10.2
Protestant	81	20.1
Others	11	2.7
Marital status		
Single	392	97.3
Married	11	2.7
Ethnicity		
Amhara	304	75.4
Gurage	29	7.2
Somali	16	4.0
Tigray	4	1.0
SNNPR	26	6.5
Oromo	24	5.9
Residence		
Urban	326	80.9
Rural	77	19.1
Departments		
Midwifery	173	42.9
Nursing	230	57.1
Year of study		
3rd year	199	49.4
4th year	204	50.6
Father educational status		
Have no formal education	185	45.9
Primary (1–8)	24	6.0
Secondary (9–12)	47	11.7
Diploma and above	147	36.5
Mother educational status		
Have no formal education	231	57.4
Primary (1–8)	35	8.7
Secondary (9–12)	53	13.2
Diploma and above	84	20.8

Table 2

Clinical instructor characteristics response of midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, ($n = 403$)

	Yes		No	
Clinical instructor factor	Frequency	Percent (%)	Frequency	Percent (%)
Provide logbook	285	70.7	118	29.3
Orient the objective of clinical practice	275	68.2	128	31.8
Spent enough time on the clinical site	327	81.1	76	18.9
Use different learning methods	348	86.4	55	13.6
Show clinical procedure	323	80.1	80	19.9
Provides constructive feedback	286	71.0	117	29.0

between the ages of 20 and 24, and half of the study participants, 270 (67%) were Orthodox Christians (Table 1).

Clinical instructor factors

Among the participant, more than half of them 348 (86.4%) agreed on clinical instructor use different learning methods. Regarding the clinical instructor, 327(81.1%) of the participants agreed on Spent enough time on the clinical site and 117(29.0%) of the participant disagreed with the clinical instructor providing constructive feedback (Table 2).

Clinical practice environment factors

Regarding the conducive clinical practice environment, 306 (75.9%) of the study participant agreed and 251 (62.3%) of them disagreed on clinical placement having a room for joint meetings during clinical practice. Concerning staff encouraging students during clinical practice, 251 (62.3%) of the study participants agreed on the clinical practice environment has sufficient cases (Table 3).

Assessment method factors

Regarding assessment methods having a positive influence on clinical practice, 289 (71.7%) of participants agreed and 245 (60.8%) of them disagreed as assessment methods address the three learning domains. About 282 (70.0%) of the participants agreed on instructor orientation about assessment methods during clinical practice (Table 4).

Preceptor factors

Among study participants, 391 (97.0%) respondents agreed that having a preceptor in your clinical practice and 122 (31.2%) the participant disagreed regarding a preceptor providing constructive feedback during clinical practice (Table 5).

Student factors

Regarding absence during clinical practice, 321 (79.7%) were absent from clinical practice without permission, out of them 281 (87.5%) were absent once, 34(10.5%) were twice and 6 (1.8%) were three times and above (Table 6).

Simulation-based learning factors

Among study participants, 340(84.4%) of the respondents agreed that getting necessary help in the use of equipment during skills demonstration and 162 (40.2%) the participant had disagreed regarding programs of skills demonstration were flexible and adjustable for simulation class (Tables 7 and 8).

Prevalence of clinical practice competence

This study revealed that the overall clinical practice competence of the study participant was 147(36.5%) with a 95% CI of 32–41% (Fig. 1).

Clinical practice competencies by year of study and departments

There was a difference in the clinical practice competence of the study participants in terms of year of study and departments. Regarding the department of study participants, 64 (43.5%) of Midwifery students and 83 (56.5%) of nursing students were clinically competent. Concerning the year of study, when there is an increase in the year of study, the clinical competency level also increases (Fig. 2).

Factors associated with clinical practice competence

In bivariate logistic regression analysis provide a logbook, show clinical procedure, sufficient cases in the clinical practice environment, staff encourages students during clinical practice, assessment method has a positive influence on clinical practice,

Table 3

Clinical practice environment characteristics response of midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, ($n = 403$)

	Yes		No	
Clinical practice environment factors	Frequency	%	Frequency	%
The clinical practice environment is conducive	306	75.9	97	24.1
The clinical practice environment has sufficient cases	235	58.3	168	41.7
The clinical practice environment has sufficient material	237	58.8	166	41.2
An environment of practice meets the objectives of clinical practice	251	62.3	152	37.7
The clinical practice environment has sufficient wards	246	61.0	157	39.0
The clinical placement has a room for joint meetings	162	40.2	241	59.8
The staff allows students to perform tasks during clinical practice	249	61.8	154	38.2
Staff encourages students during clinical practice	251	62.3	152	37.7

Table 4

Assessment method characteristics of midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (*N* = 403)

	Yes		No	
Assessment method factors	**Frequency**	**%**	**Frequency**	**%**
Instructors orient about assessment	282	70.0	121	30.0
Assessment method has a positive influence on clinical practice	289	71.7	114	28.3
The instructor uses continuous assessment	224	55.6	179	44.4
Assessment methods address the three learning domain	158	39.2	245	60.8
Instructor use checklists to assess	204	50.6	199	49.4

instructor use checklist to assess the performance, preceptor shows different procedures, confident during conducting the procedure, way of teachers taught the simulation is suitable to the way of learning, number of students per teaching group is small and get the necessary help in the use of equipment were found to be associated factors with clinical practice competence with *P* value less than 0.2.

Multivariable logistic regression provides a logbook, the clinical practice environment has sufficient cases, the assessment method has a positive influence on clinical practice, the preceptor shows different procedures, confidence during conducting the procedure, and the way teachers taught the simulation is suitable to the way of learning where maintain their association with clinical practice competence.

Students who were providing logbooks were 5.4 times (AOR = 5.40, 95% CI 2.91, 10.02) more likely competent than those who were not using logbooks. This study also revealed that students with adequate clinical cases in the clinical practice placement were 2.7 times (AOR = 2.72, 95% CI 1.60, 4.60) higher clinically competent than those students with inadequate clinical cases in the clinical practice placement. Students who were different procedures shown by preceptors during clinical practice were 2.5 times (AOR = 2.50, 95% CI 1.33, 4.71) more likely competent than those who have not shown different procedures.

Students who were confident during conducting a procedure were 4.2 times (AOR = 4.16, 95% CI 1.67, 10.35) more likely competent than those who were not confident during conducting a procedure. During skills demonstration, the way of teachers taught the simulation suitable to the way to learn were two times (AOR = 2.10, 95% CI 1.00, 4.40) more likely competent than those large number of students per teaching group (Table 8).

Table 5

Preceptor factor characteristics of midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (*n* = 403)

	Yes		No	
Preceptor factor	**Frequency**	**%**	**Frequency**	**%**
Do you have a preceptor in your clinical practice	391	97.0	12	3.0
The preceptor identifies student's learning needs	357	91.3	34	8.6
Preceptor has good clinical skills	322	82.3	69	17.6
Preceptors show different procedures	309	79.0	82	20.9
Preceptor provides constructive feedback	269	68.7	122	31.2
Preceptor has good interpersonal skills	270	69.0	121	30.9

Table 6

Student factor characteristics of midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (*n* = 403)

	Yes		No	
Student factor during clinical practice	**Frequency**	**%**	**Frequency**	**%**
Having a good relationship with team members	335	83.1	68	16.9
Having good information exchange habits with team members	336	83.4	67	16.6
I was motivated and eager to learn	403	100.0	–	–
I was confident during conducting a procedure	356	88.3	47	11.7
Absent from clinical practice without permission	321	79.7	82	20.3
I was punctual during my clinical practice	365	90.6	38	9.4
My parent's economic status affected my clinical practice	168	41.7	235	58.3

Discussion

This study assessed the clinical practice competence and associated factors among undergraduate Midwifery and Nursing Sciences Students at Bahir Dar University, Northwest Ethiopia. This study revealed that the clinical practice competence of the study participant was 36.5% (95% CI: 32.0, 41.0%). The finding of this study was in agreement with the finding of studies done among graduating nursing students attending Amhara Region Universities (33.6%)[3] and Dilla University in 2016 (39.3%)[9]. The result of this study was lower when compared with the finding of a study done at Bahir Dar University College of medicine and health science students in 2019 (65%)[26], Debre Birhan Health Science College in 2014 (78.6%)[27], and Finland (66.7%)[28]. This discrepancy might be due to the difference in which the previous study was conducted in a single public institution, including all undergraduate students, but this study covers five public, and private institutions, and only graduating midwifery and nursing students were included[26]. In addition, this discrepancy might be due to the difference in study setting and characteristics of study participants. Furthermore, it might be due to the difference in sample size i.e study done in Finland used a small sample size when compared to this study, the socio-economic status of study participants, and the difference in the curriculum of the nation[28].

The result of this study shows that the prevalence of clinical practice competence was higher than the findings of studies done at Mettu University (24.5%)[29], and Dire Dawa Health Sciences Colleges (19.2%)[30]. This discrepancy might be due to the difference in study setting and characteristics of study participants. In addition, this study's result of clinical practice competence by the department were 43.5% among midwifery and 56.5% among nursing students which were higher when compared with the finding of 23.2% among nursing and 22.8% among Midwifery students conducted in Hawassa University[10]. This discrepancy might be due to the difference in which the previous study was conducted in a single public institution, including all undergraduate students, but this study covers five public, and private

Table 7

Simulation-based factor characteristics of midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, ($n = 403$)

	Yes		No	
Simulation-based learning-related factor	**Frequency**	**%**	**Frequency**	**%**
The teacher provides me with accurate information about skills requirements	324	80.4	79	19.6
A teacher explains learning objectives for simulation learning at the beginning of the period	286	71.0	117	29.0
The teacher gives me enough time to meet the objective(s)	290	72.0	113	28.0
The teacher assists me in developing long-term skills	286	71.0	117	29.0
Students' different backgrounds are taken into account	274	68.0	129	32.0
The way my teachers taught the simulation is suitable to the way I learn	336	83.4	67	16.6
The teaching methods used in the simulation are helpful and effective	306	75.9	97	24.1
There are enough skills practicing programs per semester	248	61.5	155	38.5
Programs of skills demonstration are flexible and adjustable for simulation class	241	59.8	162	40.2
The number of students per teaching group is small	248	61.5	155	38.5
I can get the necessary help in the use of equipment	340	84.4	63	15.6
I can assess my own skills performance critically	312	77.4	91	22.6
My teacher gives me the necessary feedback	337	83.6	66	16.4

institutions, and only graduating midwifery and nursing students were included.

In this study, students with adequate clinical cases in practice placement had increased clinical practice competence than students with few clinical cases in practice placements. This is in line with the study done at Hawassa University in 2016[10] and Bahir Dar University College of medicine and health science students in 2019[26]. This might be due to those students who had sufficient cases also having sufficient exposure to them and related those cases to their theoretical background knowledge.

Those students who had logbooks were five times more likely they were clinically competent compared with those who do not have logbooks. This finding is supported by a study conducted at Assiut University[31] and Shiraz University[32]. This may be due to the reason that the logbook affects clinical learning, and it might make students eager to learn and compute with their peer which boost their competency.

The preceptor shows different procedures were significantly associated with the clinical practice competence of students. Students who were different procedures shown by preceptors during clinical practice were two times more likely competent than those who have not shown different procedures. This finding is in line with a study conducted in Amhara Region Universities[3], in Ghana[33], Indonesia[34], and Pakistan[35]. This might be due to the capacity to adapt theory to practice being improved, psychomotor skills well improved, self-confidence boosted, and socializing improved once the preceptor was there and support those students[33].

Students who were confident during conducting a procedure were four times more likely competent than those who were not confident during conducting a procedure. This finding is in line with a study conducted in Dire Dawa Health Sciences Colleges[30], Indonesia[34], and Sweden[36]. This may be due to the reason that self-confidence is a key component of effective clinical practice. During skills demonstration, suitability of the way of teaching to the learning styles of students was two times more likely to boost the competency of students than those large number of students per teaching group. This finding is supported by a study conducted in public universities and colleges in Harar and Dire Dawa cities[37], Eötvös Loránd University[38], Indonesia[39], SMS & R, Sharda University, India[40], and northwestern South Carolina[41]. This might be due to preferred teaching and learning styles being important to improve the clinical competence of students this helps learners to develop their critical thinking, problem- solving, and applying for their real life.

Strength and limitations

This study includes both private and governmental institutions. The study was also based on self-report by students, but it was not supported by qualitative methods (mixed study design). Moreover, it was more advisable to include the instructors as it

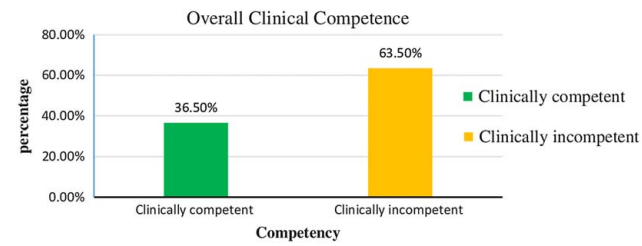

Figure 1. The overall clinical competency of Midwifery and Nursing students in at Bahir Dar city, Ethiopia.

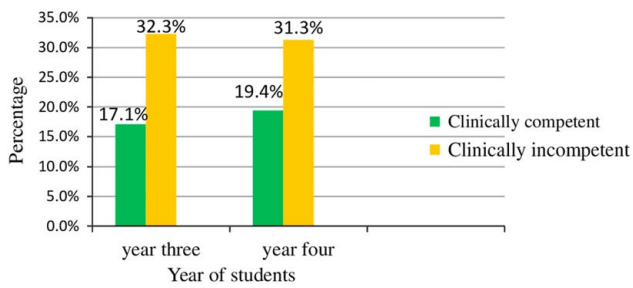

Figure 2. The overall clinical competency of Midwifery and Nursing students according to year of students in at Bahir Dar city, Ethiopia.

Table 8

Factors associated with clinical practice competence among midwifery and nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, ($n = 403$).

Variables	Clinical practice competence, *n* (%)		COR (95% CI)	AOR (95% CI)
	Incompetent	Competent		
Instructor provides clinical practice logbook				
Yes	166 (41.2)	119 (29.5)	2.30 (1.41, 3.74)	5.40 (2.91, 10.02)***
No	90 (22.3)	28 (6.9)	1	1
The instructor shows the clinical procedure				
Yes	197 (48.9)	126 (31.3)	1.79 (1.04, 3.10)	1.63 (0.71, 3.74)
No	59 (14.6)	21 (5.2)	1	1
The clinical placement has sufficient cases				
Yes	157 (39.0)	78 (19.4)	0.71 (0.47, 0.87)	2.72 (1.60, 4.60)***
No	99 (24.6)	69 (17.1)	1	1
Staff encourages students during clinical practice				
Yes	170 (42.2)	81 (20.1)	0.62 (0.41, 0.94)	1.40 (0.75, 2.61)
No	86 (21.3)	66 (16.4)	1	1
Assessment method positive influence on clinical practice				
Yes	194 (48.1)	95 (23.6)	0.58 (0.37, 0.90)	2.147(1.25, 3.68)***
No	62 (15.4)	52 (12.9)	1	1
Instructors use a checklist to assess the performance				
Yes	131 (32.5)	73 (18.1)	0.51 (1.00, 2.29)	0.71 (0.40, 1.27)
No	125 (31.0)	74 (18.4)	1	1
Preceptor shows different procedures				
Yes	197 (48.9)	124 (30.8)	1.61 (0.94, 2.74)	2.50 (1.33, 4.71)**
No	59 (14.6)	23 (5.7)	1	1
Confident during performing procedure				
Yes	220 (54.6)	136 (33.7)	2.02 (0.99, 4.10)	4.16 (1.67, 10.35)**
No	36 (8.9)	11 (2.7)	1	1
The way of teachers taught the simulation is suitable for the way of learning				
Yes	211 (52.4)	125 (31.0)	1.21 (0.69, 2.11)	2.10 (1.00, 4.40)*
No	45 (11.2)	22 (5.5)	1	1
The number of students per teaching group is small				
Yes	148 (36.7)	100 (24.8)	0.64 (0.42, 0.98)	1.10 (0.64, 1.91)
No	108 (26.8)	47 (11.7)	1	1
During skills demonstration, I can get the necessary help in the use of equipment				
Yes	216 (53.6)	124 (30.8)	1.00 (0.57, 1.75)	0.89 (0.43, 1.84)
No	40 (9.9)	23 (5.7)	1	1

AOD, adjusted odd ratio; COR, crude odd ratio.

P value set <0.2 for bivariate logistic regression and 0.05 for multivariate logistic regression.

*$P < 0.05$.

**$P < 0.01$.

***$P < 0.001$.

give more depth and valuable information regarding the clinical competences of the students.

Conclusion

Generally, the results of this study revealed that about 36.5% of study participants were clinically competent. Providing logbooks during clinical practice, adequate clinical placement cases, preceptor showing procedures during clinical practice, student's confidence during conducting procedures, and suitability of the way of teaching to the learning styles of students during skills demonstration were significantly associated with clinical practice competence of study participants. Thus, implementing logbooks, selecting clinical sites, enhancing the confidence of students, preferred teaching/learning styles, and clinical preceptor support were important to improve the clinical competence of students.

Ethics approval and consent to participate

Ethical clearance was taken from the Institutional Health Research Ethics Review Committee (IHRERC) of the College of Health and Medical Sciences of Bahir Dar University. In addition, Permission to proceed was obtained from all public hospitals. And also, informed, voluntary Written and signed consent was obtained from each participant.

Consent

Not applicable.

Sources of funding

The funder (Bahirdar University) has no role in the design of the study, collection, analysis, and interpretation of data, and in writing the manuscript.

Author contribution

T.Y.Y. participated in the conception of the study, design of the study, data collection, statistical analysis, data interpretation, and drafted the manuscript. S.A., A.A., W.F., M.H., B.S., A.D., A.M., I.M., E.Y., A.A., H.M., M.L., A.D. and A.E. participated in the design of the study, data analysis, interpretation, and drafting of the manuscript. All authors have agreed on approval of the final manuscript and are accountable for all aspects of the work.

Conflicts of interest disclosure

The authors declare that there is no competing interest in this work.

Research registration unique identifying number (UIN)

Already applied and on the progress.

Guarantor

Telksew Yelma Yezengaw and Adera Debella.

Availability of data and materials

All relevant data are included in this study. However, additional data will be available from the corresponding author upon reasonable request.

Provenance and peer review

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