Clinical Practice Competence and Its Associated Factors among Undergraduate Health Sciences Students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia, 2022

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Abstract

Introduction: Competence is the ability to perform a task with the desired result. Clinical experience is necessary to achieve the highest level of clinical competence after appropriate theoretical and practical training. It is estimated that many women and newborns die every year around the world due to a lack of qualified medical personnel. This is usually because women do not have access to competent health professionals.

Objective: This study aimed to assess clinical practice competence and its associated factors among undergraduate health sciences students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022.

Methods: Institutional based cross-sectional study was conducted from August 12-24/2022 among 403 undergraduate health sciences students at Bahir Dar Health Sciences Colleges. Simple random sampling technique was applied to select study subject and the data was collected by using a self-administered questionnaire. Data template format were prepared and entered into Epi Data version 4.1 and exported to SPSS version 25 for analysis. In binary logistic regression of dependent and independent variables with P-value, ≤ 0.2 were included in multi-variable logistic regression and ≤ 0.05 were considered as significant in this study.

Result: The prevalence of clinical practice competency among the study participant was 147(36.5%). students who were provide 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 significantly associated with clinical practice competence.

Conclusion: About 147 (36.5%) of study participants were clinically competent which was higher than previous studies conducted in Ethiopia. providing logbooks, adequate clinical cases, preceptor show different procedures, student's confidence and suitability of the way of teaching to the learning styles of students were significantly associated with clinical practice competence. Implementing logbooks, selection of clinical site, enhancing confidence of students, preferred teaching and learning styles and clinical preceptor support are important to improve the clinical competence of students.

Introduction

The term competence has been derived from the Latin word "competent" that is to say ability and authorization. The concept of competence and its utilization within the nursing profession was mentioned by Banner (1984) in which nursing competence is the ability to perform a task with desirable outcomes (1).

Although they will sound similar, competence and competency don't seem to be necessarily synonymous. Competence may be a description of actions that will be demonstrated or observed and assessed, but competency refers to the skill itself (2).

Nursing competence has two approaches. The primary approach is Behaviorist, which focuses on skills, supports the direct observation of performance, and depends on the amount of each specific competence. Another approach is the Holistic approach, which regards competence in terms of a broad cluster of abilities that are conceptually linked and focuses on general attributes that are essential to effective performance (1).

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 (6-8).

The clinical learning environment could be a complex and dynamic place where the theoretical components of the curriculum are often integrated with the sensible and transformed into professional skills. It includes everything that surrounds students and affects their professional development within the clinical setting. Therefore, clinical practice occurs through interaction among students, educators, staff, patients, and environments (9, 10).

The result of effective learning in a health-care setting is achievement of clinical practice competency, which is the skill to successfully apply professional knowledge, attitudes and skills to new circumstances as well as familiar ones (12, 13)

Even though, the previous studies done in Ethiopia suggested that most new bachelor graduates have a lack of competence in the clinical environment (3, 6, 11). None of them have assessed wither simulation based learning factors have association with clinical competence or not, study will be to assess the clinical practice competence and associated factors among Midwifery and Nursing students at Bahir Car Health Sciences Colleges.

The results of the study will be useful in designing appropriate clinical practice implementation guidelines for nursing, midwifery education, the higher officials and nongovernmental organizations, the ministry of health, teaching institutions, and other stakeholders. Thus, a more supportive and relevant intervention can be implemented to help them achieve a higher level of clinical competence, contributing to society getting quality health care. It will also serve as a reference for future studies on the subject.

Methods

Study design and period

An institutional based cross-sectional study design was conducted from August 12 to 24/2022 at Bahir Dar Health Sciences Colleges.

Study setting

The study was carried out in Bahir Dar. Bahir Dar is the capital city of the Amhara region in northern Ethiopia. It is a port on the south shore of the huge inland Lake Tana, and it has a population of around 332,856. The city is located approximately 490.34 km north-northwest of Addis Ababa (53).

The city has a number of 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 Medi College, Rift Valley University and Capital College of Business, and Health Science are the most (54).

Source Population

All third and fourth year Bachelor of Science in Midwifery and Nursing students in Bahir Dar University and Bahir Dar health Sciences Colleges.

Study Population

Randomly selected Bachelor of Science in Midwifery and Nursing Students

Inclusive and Exclusive Criteria

Inclusive Criteria

All Third and Fourth year Bachelor of Science in Midwifery and Nursing students in Bahir Dar University and Bahir Dar health Sciences Colleges.

Exclusive Criteria

Third and Fourth year Bachelor of Science in Midwifery and Nursing students in Bahir Dar University and Bahir Dar health Sciences Colleges who withdraw or dropped out clinical placement during data collection period.

Sample Size Determination

The sample size was computed based on the single population proportion calculation formula. The prevalence of clinical practice competence in the study done at Dilla University in 2016 was used to determine the sample size of 39.3% (6). The sample size for the second specific objective of this study to assess factors associated with clinical practice competence was determined by considering factors that are significantly associated with the outcome variable at ($p<0.05$), two-sided confidence level of 95%, margin of error of 5%, power of 80% and ratio of exposed to unexposed 1:1 using EPI Info Version 7. Finally, the required sample size for this particular study is decided by taking the maximum from the

calculated sample size for the first objective 366 plus 10% non-response rate (37), and then the final required sample size was 403.

Sampling Procedure

Bahir Dar University and all Bahir Dar health Sciences Colleges of all Third and Fourth year Bachelor of Science in Midwifery and Nursing students were included in the study. 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 simple random sampling technique. The randomness of the selection was ensured until we get the required sample size for each department.

Study Variables

Dependent variable:

Clinical practice competence

Independent variables:

- Socio-demographic factor (Age, Sex, Religion, Educational status of family, Residence and Year of study)
- Clinical instructors related factors
- Assessment method related factors
- Ward environment related factors
- Clinical staff related factors
- Students related factors
- Preceptor related factors
- 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 (6).
- Clinical practice incompetent: those students who scored below the mean score of all competency domain assessment questions (6).
- 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: in this study refers to students who choose to pursue a degree in health science with Midwifery and Compressive Nurse.

Method of Data Collection

The data were collected by a self-administered questionnaire prepared in English. Questionnaires are partially adapted from (3, 4, 6, 11, 25, 35, 40, 43). The data were collected by four B.Sc. in public health officers and supervised by two M.Sc. (a nurse and a midwife). The principal investigator from August 12 to 24/2022 supervised the data collection. Before the actual data collection, four data collectors were obtained one-day training about the aim of the study and the content of the instrument. Therefore, the data collectors were familiar with each question. It were considered as a mechanism for minimizing bias during the process of the data collection period.

Data Quality Assurance

The data that has been collected is checked for completeness, accuracy, clarity and consistency after being processed neatly. 5% or 21 third and fourth year undergraduate courses in Midwifery and Nursing at Harar College of Health Sciences and Haramaya University are implemented, and the equipment is modified accordingly. Errors, ambiguities or incompleteness found are immediately corrected. Data collectors received a day's training on the content of the questionnaire, the method of data collection, and the purpose of the research. Supervisors and researchers monitor the data collection process during data collection. In addition, when you log into the computer, the data is checked before analysis. Reliability analysis was conducted to check the internal consistency of the 15 items of the competence measurement instrument, and the overall value of Cronbach's alpha was 0.915, indicating the very high consistency of the instrument to measure competence.

Data processing and Analysis

Data were coded, cleaned and entered by Epi. Data was analyzed using computer database software version 4.1 and entered into statistical software SPSS version 25. Descriptive statistics such as frequency and percentage were used to represent dependent and independent variables. Frequency tables and graphs are used to present descriptive results. A bivariate logistic regression model was fitted as the most analytical method for this study. For the factors considered in this study, comparisons were made with 95% confidence intervals (CI) to predict clinical practice skills. Independent factors with a value of $P < 0.2$ were included in the multivariate logistic regression model. Finally, the most significant associated factors were identified by multivariate logistic regression analysis. Then, adjusted odds ratios (AORs) with 95% confidence intervals were calculated for the most predictable variables, and statistical significance was accepted (P < 0:05).

Results

A total of 403 students have participated in the study, giving a response rate of 100%. The total, 213 (52.9%) of the respondents were females and the minimum and maximum age of the participants were 18 and 29 respectively. The largest numbers of students belonging to the age category of 20-24, 348 (86.4%) Half of the study participants 270 (67%) were Orthodox followers and 304 (75.4%) of them were Amhara by ethnicity (Table 1).

Table 1: Socio-demographic 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
	Somalie	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	3^{rd} year	199	49.4
	4^{th} year	204	50.6
Father educational status	Unable to write and read	36	8.9
	Able to write and read	149	37.0
	Primary (1-8)	24	6.0
	Secondary (9-12)	47	11.7
	Diploma and above	147	36.5

Mother educational status	Unable to write and read	72	17.9
	Able to write and read	159	39.5
	Primary (1-8)	35	8.7
	Secondary (9-12)	53	13.2
	Degree and above	84	20.8

Prevalence of clinical practice competence

This study revealed that the overall clinical practice competence of the study participant was 147(36.5%) with 95% CI 32 - 41% (Figure 4).

Clinical practice competencies by year of study and departments

There was a difference in 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 year of study when increase in yea the clinically competent level should be also, increase (Figure 2).

Clinical instructor factors

Among the participant, more than half of them 348 (86.4%) were agreed on clinical instructor use different learning methods, and 128(31.8%) of them were disagreed regarding clinical instructor Orient the objective of clinical practice during clinical practice. Regarding the clinical instructor, 327(81.1%) of the participants were agreed on Spent enough time on clinical site and 117(29.0 %) of the participant were disagreed on clinical instructor provides constructive feedback (Table 2).

Table 2: Clinical instructor characteristics response of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

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

Clinical practice environment factors

Regarding the clinical practice environment is conducive, 306 (75.9%) of the study participant were agreed and 251(62.3%) of them were disagreed on clinical placement has a room for joint meetings during clinical practice. Concerning staff encourages students during clinical practice, 251(62.3%) of the study participant were agreed and 168 (41.7%) of them were disagreed on Clinical practice environment has sufficient cases (Table 3).

Table 3: Clinical practice environment characteristics response of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

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

Assessment method factors

Regarding assessment methods has a positive influence on clinical practice, 289(71.7%) of participants were agreed and 245(60.8%) of them were disagreed as assessment methods address the three learning domains. About 282 (70.0%) of the participants were agreed on instructor orient about assessment methods during clinical practice and 199(49.4%) of them were disagreed on instructor use checklist to assess the performance during clinical practice (Table 4).

Table 4: Assessment method characteristics of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

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

Preceptor factors

Majority 391(97.0%) of the respondents agreed that have preceptor in your clinical practice and 122 (31.2%) of the participant have disagreed regarding preceptor provides constructive feedback during clinical practice (Table 5).

Table 5: Preceptor factor characteristics of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

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

Student factors

Regarding the 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).

Table 6: Student factor characteristics of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

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

Simulation-based learning factors

Majority 340(84.4%) of the respondents agreed that get necessary help in the use of equipment during skills demonstration and 162 (40.2%) of the participant have disagreed regarding programs of skills demonstration are flexible and adjustable for simulation class (Table 7).

Table 7: Simulation-based factor characteristics of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

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

Factors associated with clinical practice competence

Hosmer and lemeshow model of fitness show that the model was adequately fit with p-value of 0.429 which is greater than 0.05.

In bivariate logistic regression analysis, provide logbook, show clinical procedure, clinical practice environment has sufficient cases, staff encourages students during clinical practice, assessment method has a positive influence on clinical practice, instructor use checklist to assess the performance, preceptor show different procedures, confident during conducing procedure, way of teachers taught the simulation is suitable to the way of learn, number of students per teaching group is small and get necessary help in the use of equipment were found to be associated factors with clinical practice competence in bivariate with p-value less than 0.2. Thus, transferred to multivariable logistic regression model. In multivariable model provide logbook, clinical practice environment has sufficient cases, assessment method has a positive influence on clinical practice, preceptor show different procedures, confident during conducing procedure and the way of teachers taught the simulation is suitable to the way of learn where maintain their association with clinical practice competence.

Students who were providing logbook were 5 times more likely competent than those who were not logbooks [(AOR=5.40, 95% CI 2.91, 10.02)].

This study also revealed that students with adequate clinical cases in the clinical practice placement were 2 times clinically competent than those students with inadequate clinical cases in the clinical practice placement with [(AOR=2.72, 95% CI 1.60, 4.60)].

Preceptor show different procedures was significantly associated with the clinical practice competence of students. Students who were different procedures showed by preceptors during clinical practice were 2 times more likely competent than those who have not shown different procedures [(AOR=2.50, 95% CI 1.33, 4.71)].

Among student factors included in the study, student's confidence during conducting procedure was significantly associated with the clinical practice competency of students. Students who were confident during conducting a procedure were 4 times more likely competent than those who were not confident during conducting a procedure [(AOR=4.16, 95% CI 1.67, 10.35)].

The way of teachers taught the simulation is suitable to the way of learn was significantly associated with the clinical practice competence of students. During skills demonstration, the way of teachers taught the simulation is suitable to the way to learn were 2 times more likely competent than those large number of students per teaching group [(AOR=2.10, 95% CI 1.00, 4.40)].

Table 8: Results of bivariate and multivariate analysis for clinical practice competence and associated factors among Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

Variables		Clinical practice competence			
		Clinically Incompetent	Clinically Competent	COR (95%CI)	AOR (95%CI)
Instructor provide 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
Instructor show 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
Clinical placement has sufficient cases	Yes	157 (39.0%)	78 (19.4%)	0 .71 (0.47, 1.07)	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 has a positive influence on clinical practice	Yes	194 (48.1%)	95 (23.6%)	0.58 (0.37, 0.90)	2.147(1.251, 3.684) ***
		62	52		

	No	(15.4%)	(12.9%)	1	1
Instructors use checklist to assess 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 show 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 to the way of learn	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
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		216	124		

necessary help in the use of equipment	Yes	(53.6%)	(30.8%)	1.00 (0.57, 1.75)	0.89 (0.43, 1.84)
	No	40 (9.9%)	23 (5.7%)	1	1

P<0.05*, P<0.01**, P<0.001***, COR= Crude Odd Ratio, AOD=Adjusted Odd Ratio, CI=confidence Interval, P-value set <0.2 for bivariate logistic regression and 0.05 for multivariate logistic regression

Discussion

This study revealed that the overall clinical practice competence of the study participant was 147(36.5%) with 95% CI (32.0, 41.0%).

The result of this study was shows that lower than compared with the finding 65% in Bahir Dar University College of medicine and health science students in 2019. 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, only graduating midwifery and nursing students were included (26). In addition, this study result it is lower than compared with the finding 78.6% study done at Debre Birhan Health Science College in 2014. This discrepancy might be due to the difference in study setting and characteristics of study participants (23).

The result of this study is also inconsistent with a study conducted in Finland, which was 66.7%. This discrepancy may be due to the difference in sample size in which the previous study use small sample size compared to this study, socio-economic status of study participant and difference in curriculum of the nation (22).

The present study revealed that prevalence of clinical practice competence was almost similar as compared with the finding in two studies of 33.6% study done among graduating nursing students attending at Amhara Region Universities and 39.3% at Dilla University in 2016 (3, 6).

The result of this study shows that the prevalence of clinical practice competence were 36.5%. It is higher than the findings in two recent studies in Mettu University and Dire Dawa Health Sciences Colleges. This discrepancy might be due to the difference of study setting and characteristics of study participants (24, 25). In addition, this study result it is higher than compared with the finding of 23.2% among nursing and 22.8% among Midwifery student conducted in Hawassa University. 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, only graduating midwifery and nursing students were included (11).

In this study, students with adequate clinical case in practice placement has increase clinical practice competence (AOR=3.239, 95% CI 1.717, 6.110) than students with few clinical cases in practice placements. This is in line with the study done in Hawassa University in 2016 and Bahir Dar University College of medicine and health science students in 2019 (11, 26).

The above finding was inconsistent with a cross-sectional study done in Dilla University that was not significantly associated with the clinical practice competence of students. This variation might be due to the difference in characteristics of the respondent, sample size and study setting. The previous study was conducted in one governmental institution, the study participants were all health science students, but the current study was conducted in a private and governmental institution, and the study participants were Midwifery and Nursing students, and also it is the sample size was relatively smaller than the current study (6).

In this study, instructor provides clinical practice logbook during clinical practice are statistically significant factors. Those students who have logbook were five times more likely they are clinically competent compared with those who do not have logbook [(AOR=5.40, 95% CI 2.91, 10.02)]. This finding is supported by a study conducted in Assiut University and Shiraz University. This may be due to the reason that logbook effects on clinical learning (55, 56).

However, the above was inconsistent with a study done in Mettu University and Dire Dawa Health Sciences Colleges that was not significantly associated with the clinical practice competence of students. This discrepancy might be due to the difference of study setting and characteristics of study participants and in which might be due to lack of education on logbook in part of clinical teachers. Further study of the whole of the logbook would be useful (24, 25).

Preceptor show different procedures was significantly associated with the clinical practice competence of students. Students who were different procedures showed by preceptors during clinical practice were 2 times more likely competent than those who have not shown different procedures [(AOR=2.50, 95% CI 1.33, 4.71)]. This finding is in line with a study conducted in Amhara Region Universities, in Ghana, Indonesia and Pakistan (3, 37, 41, 42).

The above finding was inconsistent with a cross-sectional study done in Dilla University and Mettu University that was not significantly associated with the clinical practice competence of students. This variation might be due to the difference in characteristics of the respondent and study setting. The previous study was conducted in one governmental institution, the study participants were all health science students, but the current study was conducted in a private and governmental institution, and the study participants were Midwifery and Nursing students, and also they have preceptors in clinical practice.

Among student factors included in the study, student’s confidence during conducting procedure was significantly associated with the clinical practice competency of students. Students who were confident during conducting a procedure were 4 times more likely competent than those who were not confident

during conducting a procedure [(AOR=4.16, 95% CI 1.67, 10.35)]. This finding is in line with a study conducted in Dire Dawa Health Sciences Colleges, Indonesia and Sweden. This may be due to the reason that self-confidence is a key component of effective clinical competence (25, 37, 38).

The above finding was inconsistent with a cross-sectional study done in Tanzania, in which the confidence of nursing students was not significantly associated with clinical practice competence. This variation might be due to the difference in sample size and the characteristics of the study participants, in which the sample size was 208 and the study participants were Diploma Nursing Students (35).

In the current study, the suitability of the way of teaching to the learning styles of students was significantly associated with the clinical practice competence of students. During skills demonstration, suitability of the way of teaching to the learning styles of students were 2 times more likely competent than those large number of students per teaching group [(AOR=2.10, 95% CI 1.00, 4.40)]. This finding is supported by a study conducted in public universities and colleges in Harar and Dire Dawa cities, Eötvös Loránd University, Indonesia, SMS & R, Sharda University, India and northwestern South Carolina (43, 55-58)

The above finding was inconsistent with a cross-sectional study done in Gondar University in which was not significantly associated. This variation might be due to the difference in characteristics of the respondent, sample size and study setting. The previous study was conducted the study participants were only midwifery students, but the current study was conducted in a study participants were Midwifery and Nursing students and also it is the sample size was smaller than the current study (59).

Research Limitation

This study was includes both private and governmental institution compares to study done in northern Ethiopia. The study was also based on self-report by students and was not supported by qualitative methods.

Conclusions

Generally, the results of this study revealed that about 147 (36.5%) of study participants were clinically competent, which was higher than previous studies conducted in Ethiopia. Providing logbooks during clinical practice, adequate clinical placement cases, preceptor show different procedures during clinical practice; student's confidence during conducting procedure during clinical 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.

Recommendations

Federal Ministry of Health (FMOH) and Ministry of Education

The federal ministry of health and ministry of education should be training of core faculty in simulation-based teaching and assessment methods, and acquisition of a wide range of simulation equipment. Incorporating simulation based teaching activities designed to improve the skills, attitudes, and knowledge of the graduate students. In addition to that, the teaching - learning process are understanding the nature of individual difference and use the right strategies and method together with adopting teaching style of teachers, that it to get the smooth interaction in the classroom. This helps learners to develop their critical thinking, problem- solving and applying for their real life. Should work closely with a teaching institution and health facilities, other stakeholders to overcome those gaps.

To Bahir Dar University and Bahir Dar Health Science Colleges

- The Colleges also give much infuses to quality of education by monitoring the flow of course and practical session.
- The Colleges must assign those clinical instructors and preceptors who have clinical experience.
- The Colleges must Strength the skill's lab (demonstration) room, and it should be together with focusing on the way of teaching of the teacher in terms of his or her teaching styles, the use of the method, technique, and strategy.
- The Colleges should take different actions to improve the student's confidence while they are conducting procedure and establish a team to overcome those gaps.
- The Colleges monitor before attaching the student's appropriate selection of clinical placement site.
- The Colleges develop a system to control instructors who miss practice schedule and integrating the clinical staff to academic staff
- The College's Implementation of logbook in clinical education for all clinical courses and inserts logbook as a method of evaluation of internships students during an internship training course in the midwifery and nursing bachelor program.

Abbreviations

AOR, Adjusted Odds Ratio, BSc N/Mw, Bachelor of Science in Nursing/Midwifery, CI, Conference Interval, FMOH, Federal Ministry of Health, OR, Odds Ratio, SBL ,Simulation Based Learning, SPSS, Statistical Package for the Social Sciences, SSA, Sub Saharan Africa, WHO, World Health Organization

Declarations

Data Sharing Statement

All the data of this study are available from the corresponding author upon request.

Ethical Consideration

Ethical approval was obtained from the Institutional Review Board of Bahir Dar University College of Medicine and Health Science with protocol number 517/2022. Formal letters were taken from the College of Medicine and Health Sciences and the Department of Midwifery, and letters are sent to the Colleges of Health Sciences and other relevant bodies for cooperation. The purpose of the study were explained to the study participants. During data collection, verbal consent it was obtained from participants to confirm their willingness to participate. Participants were informed that participation was voluntary and that they could withdraw at any time if they are not comfortable with the questionnaire. Names or personal identifiers will not be included in written questionnaires to ensure participant confidentiality.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted and agree to be accountable for all aspects of the work.

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Figures

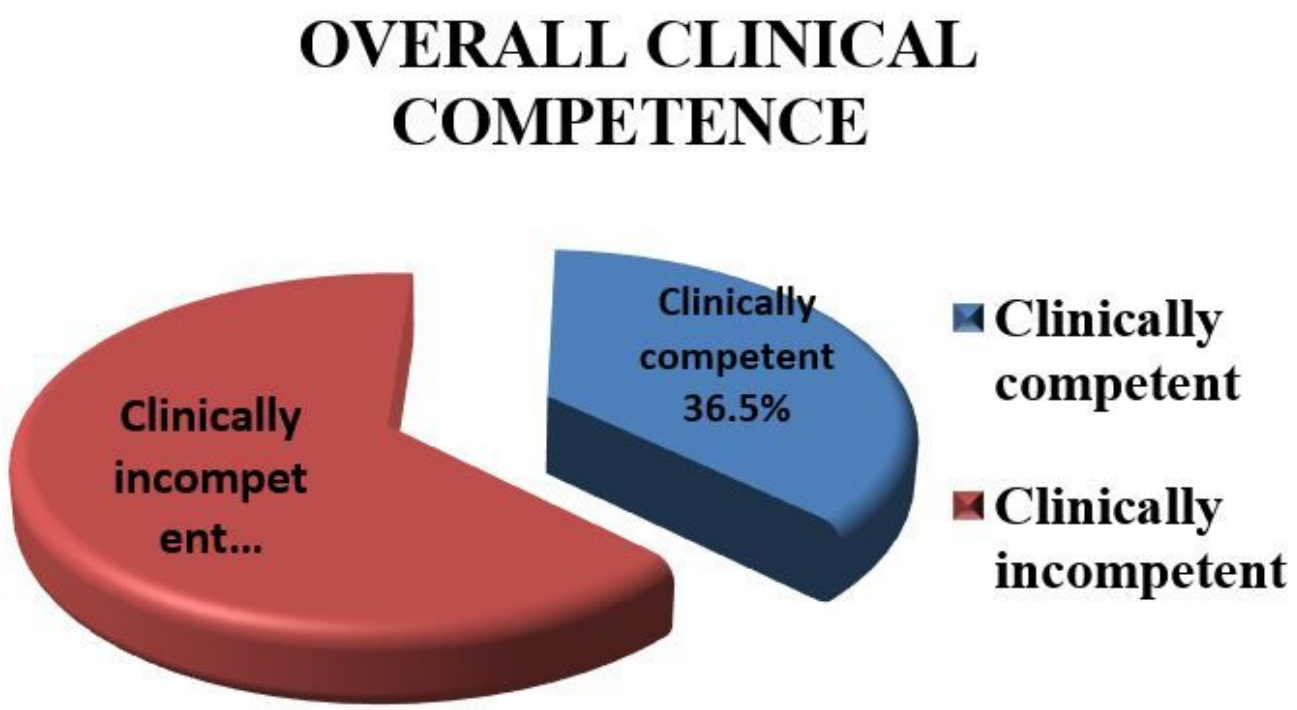

Figure 1

The overall clinical competence of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).

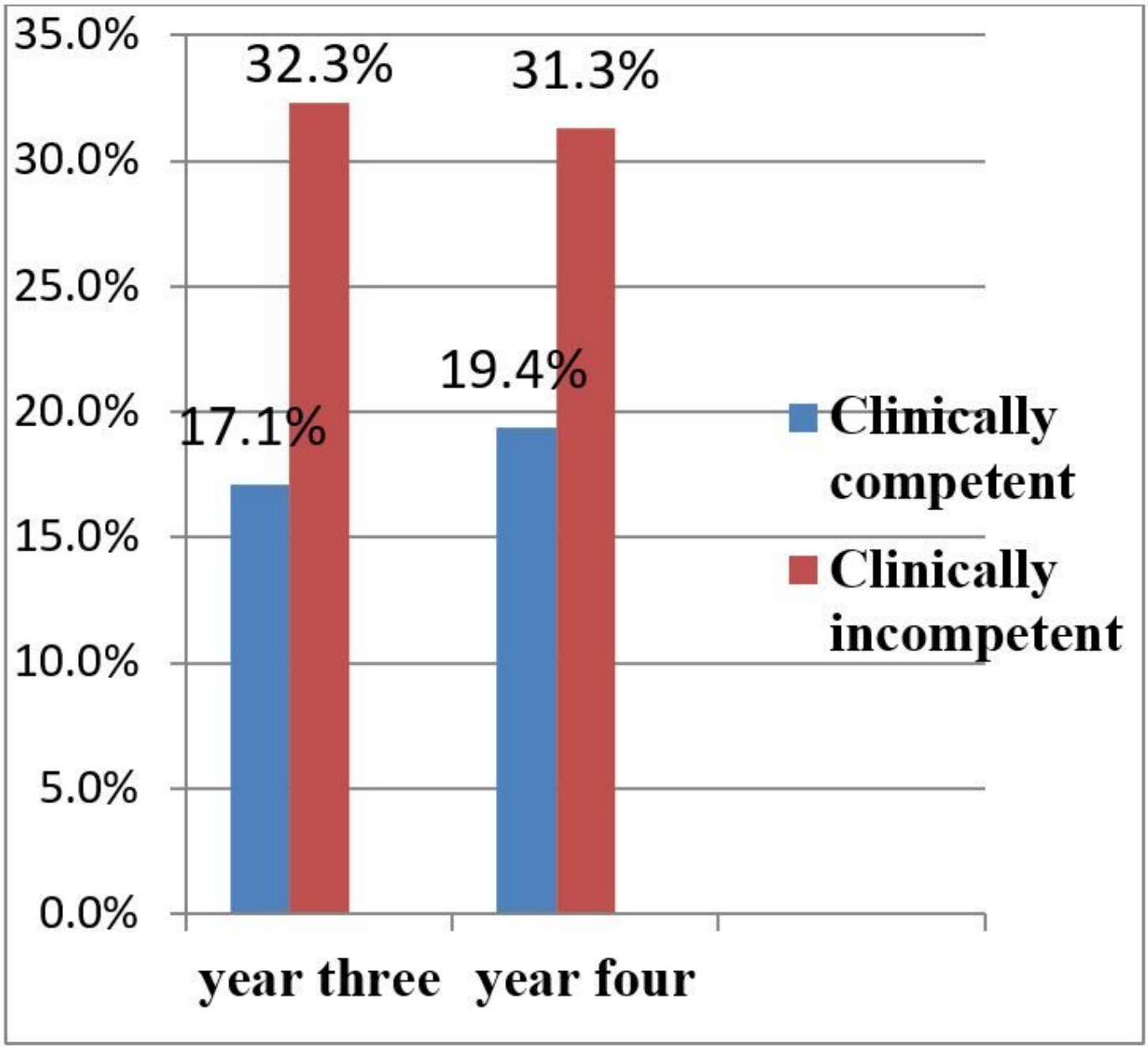

Figure 2

Clinical practice competencies by year of study of Midwifery and Nursing students at Bahir Dar Health Sciences Colleges, Northwest Ethiopia 2022, (n=403).