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ORIGINAL RESEARCH

Clinical Practice Competence and its Associated Factors Among Midwifery and Nursing Students at Dire Dawa Health Sciences Colleges, East Ethiopia, 2020

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Background: Competence is defined as the ability to perform a task with desirable outcomes. Globally, an estimated 530,000 women and 2 million newborns die each year, because of no access to competent health professionals. But half of those deaths can be prevented with competent health professionals. However, the existing literature shows that most new graduates have a lack of competence in the clinical environment, none of them have assessed whether student or preceptor factors have an association with clinical competence or not. So, this study is crucial to fill data scarcity.

Objective: To determine the clinical practice competence and associated factors among midwifery and nursing students at Dire Dawa.

Methods: Institutional cross-sectional study was conducted on nursing and midwifery students from February 10/2020 to February 30/2020. Self-administered questionnaires were given to 318 students through a simple random lottery. Multivariate logistic regression analysis was done for variables with a p-value <0.2 in binary logistic regression. The odds ratio was used to measure the degree of association.

Results: Only 19.2% are clinically competent. Students who were oriented about assessment methods were 4 times more likely competent [AOR = 4.096 p-value 0.035]. Students who have staff encouragement and have preceptors were 5 times [AOR = 4.900 p-value 0.12] and 11 times [AOR = 11.052 p-value 0.00] more likely competent, respectively. Confident students were 4 times more likely competent [AOR = 4.460, p-value 0.005].

Conclusion: The prevalence of clinical competence is very minimal. This is due to assessment methods orientation, staff encouragement, clinical preceptor support and students' confidence. This finding contributes to the federal ministry of health should work closely with teaching institutions, health facilities, and other stakeholders to overcome those gaps.

Keywords: competence, clinical practice, clinical practice competence

Background

The word competence was derived from the Latin word "competentia" which means capability and permission. Later, the concept of competence and its application in the Nursing field was described by Benner (1984) in which Nursing competence as the ability to perform a task with desirable outcomes. [1]

The demographic changes of the population increased technological advancements, and increased prevalence of chronic illnesses highlighted the necessity of competent graduating students. Meanwhile, the existing evidence indicated that

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globally there is a shortage of competent health-care providers. Globally, an estimated 530,000 women and 2 million newborns die yearly due to a shortage of competent health professionals. Besides, WHO has recently concluded that almost half of all deaths can be prevented with competent Midwives.[2–5]

In Ethiopia, the health-care system is facing a serious shortage of competent health workforces. This is evidenced by the World Bank report that revealed that about 70% of health-care providers were with poor competencies. These inadequate competencies among health professionals were considered as a major factor for the report of low satisfaction of clients among different health facilities of Ethiopia.[6,7]

A study conducted in Hawassa and Amhara Region University shows that the overall prevalence of clinical competence was only 25.2% and 33.6%, respectively. This is potentially a challenge in Ethiopia, given high student enrollment, a shortage of qualified faculty, resource constraints, and questionable clinical competence of students at clinical training sites.[6,8,9]

Studies from different part of the globe also identified factors associated with students' clinical competence such as Gender influence achievement of specific competencies in which male students were scored high performance than females, instructors' constructive feedback during clinical practice, providing orientation about the objective of clinical practice, using a checklist for assessment, staff encouragement during clinical practice, clinical preceptor ship.

Even though the previous studies done in Ethiopia suggested that most new bachelor graduates have a lack of competence in the clinical environment, none of them have assessed whether student or preceptor factors have association with clinical competence or not.[6,8,10]

The results of the study will be useful for overcoming the factors that hinder the clinical competence of students by policymakers, higher officials, NGOs, the ministry of health, teaching institutions and other stakeholders.

Methods

Study Setting and Design

An institutional cross-sectional study was conducted among nursing and midwifery bachelor students at health science schools in Dire Dawa city from February 10 to 30/2020. Self-administered questionnaires were given to 318 students from Dire Dawa University and Rift valley health Science College through a simple random lottery.

Study Population and Sampling Procedure

All Bachelor of Science in Midwifery and Nursing students who were attending Dire Dawa Health Science Colleges were the source population. A single population proportion formula [n = (z α/2)2 p(1-p)/d2] was used to calculate the sample size with the assumption of p-value 0.252, 95% confidence level, 5% margin of error and 10% of non-response rate.

Overall, we recruited a total of 318 respondents. One hundred and thirty-seven students from Dire Dawa University and 181 students from Rift Valley University were allocated proportionally based on the number of students in each school.

All 2nd year and above students from Bachelor of Science in Midwifery and Nursing were taken as inclusion criteria while those who were critically ill during the data collection period and those who discontinued their study due to withdrawal were excluded from the study.

Data Collection Tool and Procedures

A structured questionnaire was used after reviewing important literature on the problem under the study.[6,8,10–13]

The questionnaire was designed to obtain information on the main variables which is categorized under 4 sections. A total number of 58 items were included in the data collection tool (10 Socio-demographic data, 15 Clinical practice competence assessment, 19 Clinical practice-related, 6 Preceptor related and 8 Student related)

Clinical competence and clinical practice-related questions were organized through statements with a Likert measurement scale while the rest of the questions includes a "YES" or "NO" alternative and some other relevant alternative responses.

The data collectors were 2 BSC nurses and 2 MSC midwives. A pre-test was conducted by taking 10% of the sample size in Haramaya University and Harar health Science College which was under a similar setup. Appropriate modifications were made after analyzing the pretest result before the actual data collection. Data quality was assured by giving training and appropriate supervision for data collectors. The overall supervision was carried out by the principal investigator. The collected data were also cross-checked on a daily basis for its consistency and completeness.

Data Processing and Analysis

The internal consistency of Likert scale questions was measured by Cronbach's alpha and it was reported 0.928 which is above the recommended value of Cronbach's alpha which is 0.70.

The collected data were entered into Epi Data version 4.2 and exported to SPSS version 20 for data processing and analysis. Descriptive statistics like percentage, mean and standard deviation were done. Both bivariate and multivariate logistic regression analyses were computed to identify associated factors. Odds ratio along with 95% CI was computed to ascertain the association between independent and outcome variables. Variables that have a p-value of <0.2 at bivariate analysis were included in multivariate logistic regression to control possible confounding factors. Statistical tests at a p-value of <0.05 were considered statistically significant.

The model fit was checked by Hosmer and Lemeshow Test which is the most reliable test of model fit available in SPSS. Hence, the chi-square value for the Hosmer-Lemeshow Test is 4.079 with a significance level of 0.85. This value is greater than 0.05, therefore indicating the goodness of model fit.

Results

Socio-Demographic Characteristics of Respondents

A total of 318 students have participated in the study giving a response rate of 100%. As shown in Table 1, the age ranged from 18 to 29 with a mean age of 21.04 years (SD + 21.04) (Table 1).

Clinical Practice Competence of Midwifery and Nursing Students at Dire Dawa Health Science Colleges

As Figure 1 shows, from 318 students, the overall clinical practice competence of the study participant was 19.2% (Figure 1).

Besides, there was a slight difference in clinical practice competence of the study participants in terms of type institution, year of study, and departments (Figure 2).

Regarding the type of institution in which students attend and department of study participants 18.2% of Dire Dawa University students and 20.5% of Midwifery students were clinically competent, respectively.

Clinical Instructor Factors Response of Midwifery and Nursing Students

As Table 2 shows, half of the participants agreed on clinical instructor orient about the objective of clinical practice and

Table 1 Socio-Demographic Characteristics of Midwifery and Nursing Students at Dire Dawa Health Science Colleges

Characteristics		Frequency	Percentage %
University	Dire Dawa	137	43.1
	Rift valley	181	56.9
Religion	Orthodox	159	50.0
	Muslim	122	38.4
	Protestant	34	10.7
	Catholic	3	0.9
	Others		–
Marital status	Single	296	93.1
	Married	20	6.3
	Widowed	1	0.3
	Divorced	1	0.3
Ethnicity	Oromo	136	42.8
	Amhara	97	30.5
	Somali	53	16.7
	Tigray	13	4.1
	SNNPS	19	6.0
Residence	Urban	254	79.9
	Rural	64	20.1
Departments	Midwifery	151	47.5
	Nursing	167	52.5
Year of study	2nd year	126	39.6
	3rdyear	111	34.9
	4th year	81	25.5
Father educational status	Unable to write and read	24	7.5
	Able to write and read	86	27.0
	Primary (1–8)	40	12.6
	Secondary (9–12)	52	16.4
	Degree and above	116	36.5
Mother educational status	Unable to write and read	32	10.1
	Able to write and read	91	28.6
	Primary (1–8)	47	14.8
	Secondary (9–12)	68	21.4
	Degree and above	80	25.2

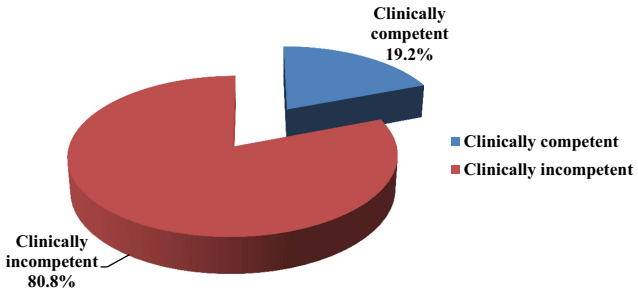

Figure 1 Clinical practice competencies of students.

21.1% of them were neutral regarding clinical instructor provides logbook during clinical practice. 46.5% of the participants agreed that the clinical instructor provides constructive feedback and 30.5% of the participants disagreed on clinical instructor show clinical procedure (Table 2).

Clinical Practice Environment Factors Response

As shown in Table 3, on the clinical practice environment dimension, the lowest recorded score was for the statement "Clinical placement has a room for joint meetings" While the highest score was for "Clinical practice environment has sufficient wards".

Assessment Method Factors Response

As shown in Tables 4, 167 (52.5%) of participants agreed. About 160 (50.3%) of the participants agreed on the instructor use checklist to assess the performance of students and 77 (24.2%) of them disagreed that instructors' orientation about assessment methods during clinical practice (Table 4).

Preceptor Factors Response

As Figure 3 shows, the Majority of the respondents agreed that the preceptor identifies students' learning needs and the minority of the participants have disagreed that the preceptor has good clinical skills during clinical practice (Figure 3).

Student Factor Response

Regarding absenteeism during clinical practice 90 (28.3%) were absent from clinical practice without permission, out of the 44 (48.9%) were absent once, 34 (37.8%) were twice and 12 (13.3%) were three times and above (Table 5).

Factors Associated with Clinical Practice Competence

As Table 6 shows, in bivariate analysis instructors orient the objective of the clinical practice, instructors show clinical procedure, instructors provide feedback, conducive clinical placement and instructors use a checklist to assess performance were found to be significantly associated factors with students' clinical practice competence.

In multivariate analysis, Staff encourages students, Instructors orient about assessment methods, having preceptors in your clinical practice and Confident during performing procedures were found to be significantly associated factors with students' clinical practice competence.

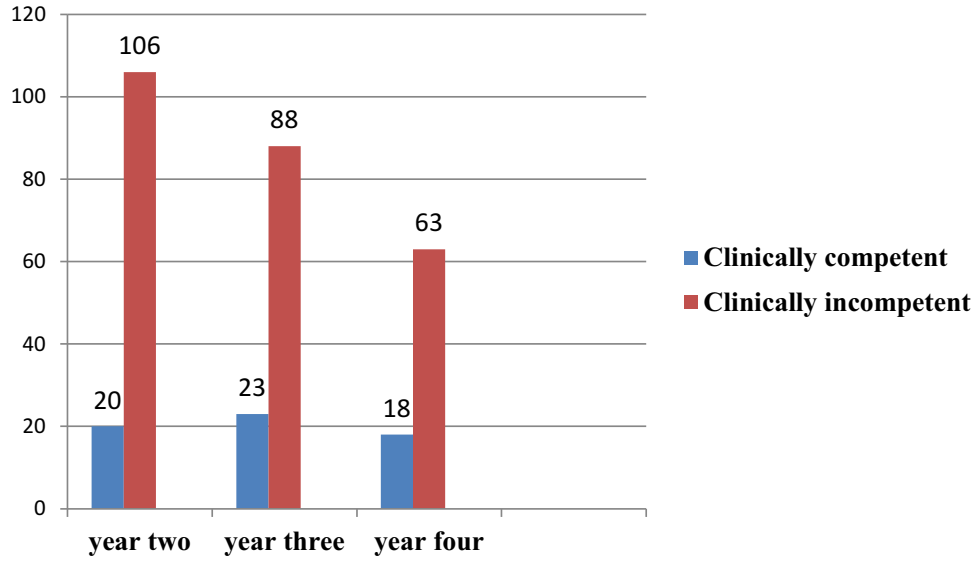

Figure 2 Clinical practice competencies by year of study.

Table 2 Clinical Instructor Characteristics Response of Midwifery and Nursing Student at Dire Dawa Health Science Colleges

Clinical Instructor Factor		Agree		Neutral		Disagree		Mean	SD
		Frequency	%	Frequency	%	Frequency	%		
1	Provide logbook	137	43.1	69	21.7	112	35.2	2.07	0.88
2	Orient the objective of clinical practice	159	50	67	21.1	92	28.9	2.21	0.86
3	Spent enough time on clinical site	138	43.4	82	25.8	98	30.8	2.12	0.85
4	Use different learning methods	158	49.7	76	23.9	84	26.4	2.23	0.84
5	Show clinical procedure	141	44.3	80	25.2	97	30.5	2.13	0.85
6	Provides constructive feedback	148	46.5	79	24.8	91	28.6	2.17	0.84

Table 3 Clinical Practice Environment Characteristics of Midwifery and Nursing Student at Dire Dawa Health Science Colleges

Clinical Practice Environment Factors		Agree		Neutral		Disagree		Mean	SD
		Frequency	%	Frequency	%	Frequency	%		
1	Clinical practice environment is conducive	126	39.6	92	28.9	100	31.4	2.08	0.84
2	Clinical practice environment has sufficient cases	127	39.9	84	26.4	107	33.6	2.06	0.85
3	Clinical practice environment has sufficient material	131	41.2	77	24.2	110	34.6	2.07	0.86
4	Clinical practice environment has meet objectives of clinical practice	131	41.2	77	24.2	110	34.6	2.07	0.86
5	Clinical practice environment has sufficient wards	140	44	80	25.2	98	30.8	2.13	0.85
6	Clinical placement has a room for joint meetings	122	38.4	99	31.1	97	30.5	2.07	0.82
7	Staff allows students to perform tasks during clinical practice	132	41.5	96	30.2	90	28.3	2.13	0.82
8	Staff encourages students during clinical practice	137	43.1	65	20.4	116	36.5	2.06	0.89

Table 4 Assessment Method Characteristics of Midwifery and Nursing Student at Dire Dawa Health Science Colleges

Assessment Method Factors		Agree		Neutral		Disagree		Mean	SD
		Frequency	%	Frequency	%	Frequency	%		
1	Instructors orient about assessment methods	155	48.7	86	27.0	77	24.2	2.24	0.81
2	Assessment method has a positive influence on clinical practice	144	45.5	95	29.9	79	24.8	2.20	0.81
3	Instructor uses continuous assessment methods	167	52.5	82	25.8	69	21.7	2.30	0.80
4	Assessment methods address the three learning domain	146	45.9	101	31.8	71	22.3	2.23	0.80
5	Instructor use checklist to assess the performance	160	50.3	72	22.6	86	27	2.23	0.84

Students who were oriented about the assessment methods were 4 times more likely competent than those who were not oriented [(AOR=4.096 (1.104, 15.196)]. Students who were encouraged by clinical staff during clinical practice were 5 times more likely competent than those who were not encouraged [(AOR=4.900 (1.433, 17.380)].

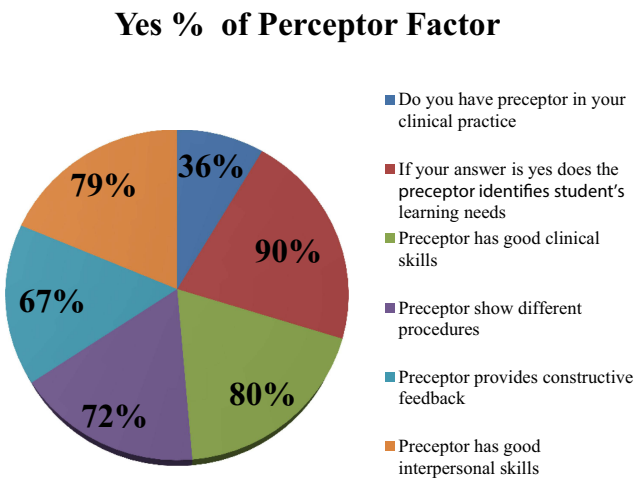

Figure 3 Preceptor factor characteristics of midwifery and nursing student.

Students who have clinical preceptor support during clinical practice were 11 times more likely competent than those who have not clinical preceptor support [(AOR=11.052 (4.377, 27.908)].

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=4.460 (1.586, 12.541)] (Table 6).

Discussion

Regarding students' clinical practice competence, only 19.2% of students are clinically competent during clinical practice. This finding is almost similar to the finding of a study conducted among Nursing and Midwifery students at Hawassa University, which is 23.2% and 22.8%, respectively (9.)

In contrast, it is lower as compared with the finding of 33.6% study done among graduating Nursing students attending at Amhara Region Universities. This discrepancy might be due to the difference in study setting and characteristics of study participants. The previous study was conducted in six institutions and the study participants were only graduating Nursing students.[8]

The result of this study was also lower as compared with a study conducted in Finland, which was 66.7%. This might be due to the difference in the socio-economic status of study participants and in the curriculum of the nation.[14]

In this study, students who had been oriented about the assessment method during clinical practice were more likely competent than those who did not get the orientation about the assessment method. This finding is supported by another study conducted in Finland and Ethiopia that indicates that giving orientation about the clinical assessment methods contributes to students' clinical practice competence.[10,14]

The above finding was inconsistent with a study conducted at Hawassa 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 design. The previous study was conducted in one governmental institution and the study participants were all health science students with mixed study design but the current study was conducted in a private and governmental institutions and the study participants were Midwifery and Nursing students with the quantitative cross-sectional study.[6]

Students who have clinical preceptor support during clinical practice were more likely to be competent than

Table 5 Student Factor Characteristics of Midwifery and Nursing Student at Dire Dawa Health Science Colleges

Student Factor During Clinical Practice		Yes		No	
		Frequency	%	Frequency	%
1	Having a good relationship with team members	276	86.8	42	13.2
2	Having good information exchange habit with team members	252	79.2	66	20.8
3	I was motivated and eager to learn	244	76.7	74	23.3
4	I was confident during conducing procedure	217	68.2	101	31.8
5	Absent from clinical practice without permission	90	28.3	228	71.7
6	I was punctual during my clinical practice	234	73.6	84	26.4
7	My parent economic status affected my clinical practice	214	67.3	104	32.7

Table 6 Bivariate and Multivariate Analysis Result for Clinical Practice Competence and Associated Factors Among Midwifery and Nursing Students at Dire Dawa Health Science Colleges

Variables		Clinical Practice Competence		COR (95% CI)	AOR (95% CI)	P-value
		Competent	Not Competent			
Instructor orient the objective of the clinical practice*	Agree*	49 (80.3%)	110 (42.8%)	6.385 (2.613,15.601)	0.617 (0.159,2.398)	0.486
	Neutral	6 (9.8%)	61 (23.7%)	1.410 (0.434,4.580)	0.219 (0.80,2.207)	0.305
	Disagree	6 (9.8%)	86 (33.5%)	1	1	1
Instructor show clinical procedure *	Agree*	49 (80.3%)	92 (35.8%)	8.078 (3.298,19.787)	2.839 (0.663,12.147)	0.160
	Neutral	6 (9.8%)	74 (28.8%)	1.23 (0.381,3.972)	0.55 (0.105,2876)	0.479
	Disagree	6 (9.8%)	91 (35.4%)	1	1	1
Instructor provide feedback*	Agree*	49 (80.3%)	99 (38.5%)	7.012 (2.862,17.176)	2.399 (0.604,9.537)	0.214
	Neutral	6 (9.8%)	73 (28.4%)	1.164 (0.36,3.767)	0.409 (0.77,2.162)	0.293
	Disagree	6 (9.8%)	85 (33.1%)	1	1	1
Conducive clinical placement*	Agree*	48 (78.7%)	78 (30.4%)	9.641 (3.919,23.718)	3.353 (0.982,11.449)	0.54
	Neutral	7 (11.5%)	85 (33.1%)	1.29 (0.417,3.991)	0.668 (0.153,2.909)	0.591
	Disagree	6 (9.8%)	94 (36.6%)	1	1	1
Staff encourages student **	Agree**	48 (78.7%)	89 (34.6%)	9.888 (4.046,24.162)	4.99 (1.433,17.380)	0.012
	Neutral	7 (11.5%)	58 (22.6%)	2.213 (0.711,6.890)	3.405 (0.751,15.435)	0.112
	Disagree	6 (9.8%)	110 (42.8%)	1	1	1
Instructors orient about assessment methods**	Agree**	49 (80.3%)	106 (41.2%)	5.47 (2.225,13.447)	4.096 (1.104,15.196)	0.035
	Neutral	6 (9.8%)	80 (31.1%)	0.888 (0.274,2.876)	0.972 (0.219,4.322)	0.970
	Disagree	6 (9.8%)	71 (27.6%)	1	1	1
Instructors use checklist to assess performance*	Agree*	43 (70.5%)	117 (45.5%)	4.148 (1.776, 9.688)	0.486 (0.131,1.803)	0.281
	Neutral	11 (18%)	61 (23.7%)	2.035 (0.745,5.559)	0.953 (0.236,3.847)	0.946
	Disagree	7 (11.5%)	79 (30.7%)	1	1	1
Having preceptor in your clinical practice**	Yes**	45 (73.8%)	70 (27.2%)	7.513 (3.989,14.152)	11.052 (4.37,27.908)	0.00
	No	16 (26.2%)	187 (72.8%)	1	1	1
Confident during performing procedure**	Yes**	52 (85.2%)	165 (64.2%)	3.222 (1.518,6.835)	4.46 (1.586,12.541)	0.005
	No	9 (14.8%)	92 (35.8%)	1	1	1

Notes: *Show statistically significant association in bivariate logistic regression. **Show statistically significant association in multivariate logistic regression.

those who have not clinical preceptor support. This finding is similar to the study conducted in Indonesia, Ghana and Pakistan.[13,15,16]

However, the above was inconsistent with a study done in Alberta faculty Nursing, Canada that stated that the workload of clinical preceptors resulted in a negative impact on the clinical competency of students. This variation may be due to the difference in the health system policy and curriculum of the nations.[17]

Students who were confident during conducting procedures during clinical practice were more likely to be competent than those who were not confident. This finding is supported by a study conducted in Indonesia and Sweden. This may be due to the reason that self-confidence is a key component of effective clinical competence.[15,18]

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.[12]

Research Limitation

This research is done using quantitative design. If this research would be supported by Qualitative study design, it could help to build in-depth insight to the nature of the problem. Therefore, I strongly suggest for future researchers to incorporate qualitative study design for further comprehensive output on this area.

Conclusion and Recommendation

About one-fifth of students were clinically competent. Generally, this finding was lower than other recent previous studies conducted in Ethiopia so far. Providing orientation about assessment methods, encouraging students during clinical practice, clinical preceptor support, and students' confidence during conducting procedures during clinical practice was significantly associated with clinical practice competence.

Hence, the federal ministry of health should work closely with teaching institutions, health facilities, and other stakeholders to overcome those gaps. The clinical staff should encourage students during clinical practice and use different mechanisms to increase students' confidence while they are conducting the procedure. The institutions should allocate clinical preceptors in health facilities in which students are practicing and clinical instructors should briefly explain the assessment methods to their students.

Abbreviation

AOR, Adjusted odds ratio; COR, Crudes odds ratio; NGO, Non-Governmental organization; SD, standard deviation.

Data Sharing Statement

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

Ethical Consideration

Ethical clearance was obtained from the institutional ethical review board of Mekelle University, College of Health Sciences. An official letter of permission was written to each college before data collection. Participants were informed about the purpose, benefit, risk, confidentiality of the information and the voluntary nature of participation in the study. Data were collected after informed written consent was obtained from each participant that their data will be included in publications.

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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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Disclosure

The authors declare that they have no conflicts of interest.

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