

# BMJ Open Clinical practice competencies and associated factors among graduating nursing students attending at universities in Northern Ethiopia: institution-based cross-sectional study

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**To cite:** Getie A, Tsige Y, Birhanie E, *et al.* Clinical practice competencies and associated factors among graduating nursing students attending at universities in Northern Ethiopia: institution-based cross-sectional study. *BMJ Open* 2021;**11**:e044119. doi:10.1136/bmjopen-2020-044119

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2020-044119>).

Received 24 August 2020  
Revised 06 April 2021  
Accepted 07 April 2021



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## ABSTRACT

**Objective** To assess clinical practice competencies and associated factors among graduating nursing students attending public universities found in the Amhara Region, Ethiopia

**Design** Institution-based cross-sectional study design

**Setting** The study was conducted in six universities found in the Amhara Region from February to April 2018.

**Participants** 307 graduating nursing students participated. Of these, 173 were male and 134 were females from different ethnic groups; Amhara 145, Oromo 84, Tigris 44 and Gurage 17. Graduating nursing students attending regular degree programmes were included.

**Outcome measurements** Clinical instructor (good vs not good), clinical environment (conducive vs not conducive), assessment method (measurable vs not measurable), clinical staff-student interaction (good vs not good), clinical practice competency (competent vs incompetent).

**Result** The study revealed that 33.6% (95% CI 26.3% to 39.41%) of students were clinically competent. Orientation about the objective of clinical practice (adjusted OR, AOR 2.387; 95% CI 1.011 to 5.635), enough time for mentoring during clinical practice (AOR 2.247; 95% CI 1.100 to 4.593). Students followed by instructors during conducting a procedure (AOR 2.655; 95% CI 1.294 to 5.449), assessment checklist during clinical practice (AOR 2.663; 95% CI 1.324 to 5.358), students who were allowed by clinical staffs to perform tasks (AOR 5.858; 95% CI 2.657 to 12.916), clinical instructor factors (AOR 3.051; 95% CI 1.717 to 5.421) and student-staff interaction factors (AOR 2.348; 95% CI (1.337 to 4.124) were statistically significant variables with the level of competency.

**Conclusion** Around one-third of the students were clinically competent. Clinical instructor and staff-student interaction were significantly associated with clinical practice competencies among graduating nursing students. Therefore, designing an appropriate clinical practice protocol that includes improving the supervision of a clinical instructor is important to enhance the clinical practice competency of students.

## Strengths and limitations of this study

- This study may be considered the first to assess the clinical practice competency of graduating nursing students in the Amhara Region.
- Multiple logistic regression was used to control the possible confounding factors to assess the relative effect of independent variables.
- For assessment of the level of clinical practice competency, an observation technique was used.
- Comparison and discussion were difficult due to the shortage of similar studies carried out in Ethiopia.
- It was impossible to establish a cause-and-effect relationship as the study design was a cross-sectional study. Since the study was conducted in universities that were found in one region of Ethiopia, it might not be representative of all graduating nursing students in Ethiopia.

## INTRODUCTION

Nursing is a dynamic, caring and helping relationship, where nurses assist the client and their families to achieve and obtain optimal health. As a profession, it has undergone a substantial transformation since the time of Florence Nightingale.<sup>1</sup> Graduating nursing students should apply the core competencies, which are professional roles, responsibility and accountability. Nurses should also meet competency requirements like health assessment and diagnosis, therapeutic management, health promotion and prevention of illness and injuries.<sup>2,3</sup> Clinical practice helps nursing students learn to apply the theory of nursing, facilitating the integration of theoretical knowledge and practical skills in the clinical setting. Nursing students can acquire their learning domains through experience in the clinical setting.<sup>4-6</sup> Clinical practice helps nursing students to develop nursing



skills and adapt to professional roles in the clinical environment.<sup>7</sup> The outcome of effective learning in a clinical setting is achieving clinical practice competency, which is the ability to successfully apply professional knowledge, attitudes and skills to new situations as well as familiar ones.<sup>18</sup>

Healthcare workers, including nurses, are not adequately prepared themselves to meet the needs of patients and society at large, especially in low/middle-income countries.<sup>4</sup> Around the world, the demand for competent healthcare workers and the change in the healthcare system has highlighted the necessity for graduating students to be clinically competent, which in turn needs the increasing significance of the quality of nursing students in the clinical environment.<sup>9</sup> A global report on health education sees educational institutions are crucial to transform healthcare systems. However, in many countries including Ethiopia, there is a lack of clinically competent healthcare workers like nurses due to lack of training, insufficient budget and poor organisational infrastructure.<sup>1</sup> Therefore, improving the productivity and performance of healthcare workers to enhance their level of competency is a major challenge for African countries. Although some countries like South Sudan focus exclusively on increasing the number of competent health workers through preservice training, most sub-Saharan countries do not give preservice training to enhance the quality of the students.<sup>10</sup> Although graduating nursing students seem to trust their nurse competency at the point of graduation on self-assessment, the result was purer when assessed by their clinical mentors.<sup>11</sup>

The dynamic nature of the Ethiopian healthcare system requires competent nursing graduates to manage the changing environment.<sup>12</sup> In Ethiopia, the government is the main healthcare service provider. Nursing students need 4 years to complete their education programme that includes Ethics and theoretical aspects of nursing, fundamentals of nursing, first aid and accident prevention, operation room technic for nursing, community health nursing, medical-surgical nursing, reproductive health, obstetrics and gynaecology nursing and paediatrics nursing. Nursing students begin their clinical practice while they are in year two. In the clinical practice, students attend outpatient departments, medical ward, surgical ward, paediatrics ward, delivery room, gynaecology ward, antenatal unit, postnatal unit, immunisation room, intensive care unit, oncology unit, emergency room and family planning unit.<sup>4</sup> Different factors are affecting clinical practice competency, which are the pedagogical atmosphere on the ward, the supervisory relationship between students and mentor, and readiness for practice based on nurse education.<sup>11</sup> The level of clinical practice competency was mainly affected by the clinical instructor. The mentor should have effective communication skills, scholarly knowledge and clinically competent. Therefore, a competent clinical instructor should have a combination of these characteristics, which helps the student to achieve clinical practice competency.<sup>13</sup> Since the role

model clinical instructors is highly valued by nursing students, the instructor must conduct a fair evaluation, respect students as an individual and guide students.<sup>14</sup> The healthcare system of Ethiopia is facing a serious shortage of skillful health workforce. Therefore, when students start clinical practice, during which they gain experience and skills by taking part in the provision of patient care and management, they encounter different problems that can affect their clinical competency.<sup>15</sup> Therefore, the purpose of this study is to assess clinical practice competency and associated factors among graduating nursing students of universities in the Amara Region, northern Ethiopia, 2018.

## METHODS

### Study design and setting

Institutional-based cross-sectional study design was conducted from 25 February 2018 to 25 April 2018 G.C. among graduating nursing students in Amhara Region universities, namely, University of Gondar, Bahirdar University, Wollo University, Debre Birhan University, Debre Marcos University, and Woldia University.

### Source population

All graduating BSc nursing students attended at Universities found in Amara Region, 2018.

### Study population

Graduating daytime BSc nursing students attended at Universities found in Amara Region, 2018.

### Inclusion and exclusion criteria

Graduating BSc nursing students attending regular degree programmes were included, whereas students who were critically ill and unable to respond during the data collection period were excluded.

### Sample size determination

The sample size was calculated using a single population proportion formula designated as  $n = (Z\alpha/2)^2 p(1-p)/d^2$ , based on the assumption of  $p=0.25$ , which was the proportion of clinical practice competency in Hawasa university,<sup>5</sup> a 95% confidence level, 5% margin of error ( $d$ ) and 10% non-response rate. Accordingly, the total sample size calculated was 307.

### Sampling and sampling procedure

All universities having graduating nursing students were included in the study, and the total sample size was proportionally allocated to each university. The lists of graduating students were obtained from the university students' record list. Then, the study participants from each university were selected by a computer-generated simple random sampling technique.

### Data collection method

The data were collected using self-administered questionnaires and observation techniques which were adapted

from a previous study and prepared in English.<sup>4</sup> The instrument contains an observation checklist used to assess the student's level of clinical practice competency while they conduct the procedure. Self-administered questionnaires were used to assess factors affecting the level of clinical practice competency, which includes socio-demographic factors, clinical instructor-related factors, clinical environments related factors, assessment method-related factors, and clinical staff-student interaction-related factors. Observation technique was also made on 31 (10%) of graduating nursing students during their practical sessions in medical, surgical, obstetrics and gynaecology, paediatrics and outpatient departments to validate self-administered questionnaires which were aimed to assess contributor factors of clinical practice competency. The participants and their instructors were observed blindly by senior nurses who had a certificate of competence. Graduating nursing students, who scored mean and above in all competency domain assessment checklists were considered clinically competent, whereas those who scored below the mean were considered as clinically incompetent.

#### Data management and analysis

The data were entered using Epi Data V.4.2 and exported to SPSS V.24 for analysis. Descriptive statistics like frequency, percentage and SD were computed. The binary logistics regression model was applied to identify determinant factors related to clinical practice competency. Variables with a  $p < 0.25$  on bivariate analysis

were entered into multivariate analysis. Different variables (clinical practice logbook, presence of continuous follow-up, maintaining relationship within the students, orientation of assessment methods, presence of monitoring system by clinical staffs and others) were adjusted to avoid possible confounders. A 95% CI was used to identify associated factors in a multivariable binary logistic regression model. Hosmer-Lemeshow goodness of the model fit was checked and analysis was done by entering procedure.

#### Patient and public involvement

It was not appropriate or possible to involve patients or the public in the design, conduct, reporting, and dissemination plans of our research.

## RESULT

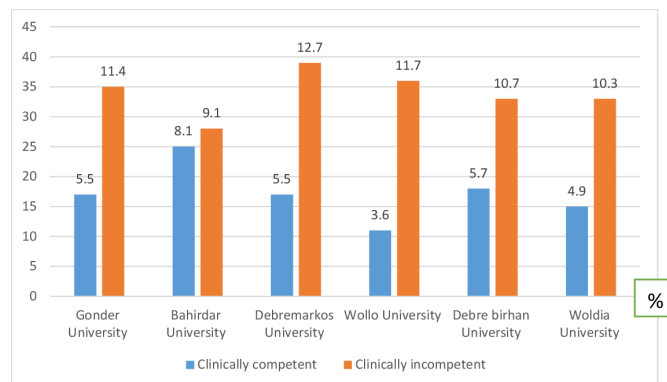
### Sociodemographic characteristics

All 307 graduating nursing students participated in the study, giving a response rate of 100%. In this study, the majority of the students were men. Most of them were single. Regarding age, 82.4% of students were in the range between 20 and 24 years and the mean ( $\pm$ SD) age was 22.68 ( $\pm$ 1.84). Regarding religion, 52.4% were orthodox religious followers. One hundred and forty-five (47.2%) of the students were Amhara in Ethnicity and 52.4% were Urban residents (table 1).

**Table 1** Sociodemographic characteristics of graduating nursing students, Amara Region Universities, 2018

| Sociodemographic variables |                 | Frequency (No) | Percentage (%) |
|----------------------------|-----------------|----------------|----------------|
| Sex                        | Male            | 173            | 56.4           |
|                            | Female          | 134            | 43.6           |
| Age                        | <20 years old   | 10             | 3.3            |
|                            | 20–24 years old | 253            | 82.4           |
|                            | 25–29 years old | 44             | 14.3           |
| Marital status             | Single          | 254            | 82.7           |
|                            | Married         | 53             | 17.3           |
| Religion                   | Orthodox        | 161            | 52.4           |
|                            | Protestant      | 76             | 24.8           |
|                            | Muslim          | 59             | 19.2           |
|                            | Other           | 11             | 3.6            |
| Ethnicity                  | Oromo           | 84             | 27.4           |
|                            | Amhara          | 145            | 47.2           |
|                            | Tigre           | 44             | 14.3           |
|                            | Guragie         | 17             | 5.5            |
|                            | Other*          | 17             | 5.5            |
| Residence                  | Urban           | 161            | 52.4           |
|                            | Rural           | 146            | 47.6           |

\*Other: (Catholic, Wakifeta), other (Sidama, Kembata, Hadya...).



**Figure 1** Level of clinical practice competency among graduating nursing students at different universities, 2018.

### Clinical practice competency

Of all 307 study participants, 33.6% were clinically competent and there is slight variation in clinical competency of participants at different universities found in Northern Ethiopia. The percentage of clinically competent and clinically incompetent students were almost the same at Bahirdar University (figure 1). Observations were made with 31 (10%) of graduating nursing students during their practical sessions in medical, surgical, obstetrics and gynaecology, paediatrics, and the outpatient department to validate self-reported practice. To determine the practice and validate their responses, 13 observation checklists were analysed. Out of the 31 observed participants, 16.1% had instructors that demonstrate skills in cases during clinical practice and 22.6% of students got constructive feedback from their clinical instructors. The overall observed clinical practice competency of graduating nursing students showed that 9 (29%) were competent and 22 (71%) were incompetent (table 2).

### Clinical instructor characteristics

As portrayed in online supplemental table 1, among the 307 participant's majority, 193 (62.9%) of the respondents were agreed and 114 (37.1%) have disagreed that clinical instructors integrate the theory into practice, 126 (41%) were agreed and 181 (59%) disagreed that instructors provide a clinical practice logbook. Regarding orientation about the objective of clinical practice, 167 (54.4%) of the participants were agreed and 140 (45.6%) disagreed. One hundred and twenty-two (39.7%) were agreed and 185 (60.3%) disagreed that instructors spent enough time for mentoring during clinical practice, whereas the majority 204 (66.4%) of the respondents disagreed and 103 (33.6%) agreed that instructors follow students while they conduct the procedure (online supplemental table 1).

### Clinical practice environment characteristics

The majority 204 (66.4%) of the respondents disagreed and 103 (33.6%) were agreed that the clinical environment has sufficient materials to conduct the practice. Regarding the conduciveness of clinical placement, 173 (56.4%) were agreed and 134 (43.6%) disagreed that clinical placement is conducive for clinical practice. One hundred and seventeen participants (38.1%) were agreed and 190 (61.9%) disagreed that clinical placement meets the objectives of clinical practice (online supplemental table 2).

### Assessment methods characteristics

As revealed in online supplemental table 3, 168(54.7%) participants were agreed and 139 (45.3%) disagreed that instructors orient students about assessment methods during clinical practice, 188 (61.2%) of the participants were agreed and 119 (38.8%) disagreed that the

**Table 2** Observation of factors affecting the level of clinical practice competency among graduating nursing students at Amhara Region universities, Northern Ethiopia, 2018

| Observational items                           | Yes            |                | No             |                |
|---|----------------|----------------|----------------|----------------|
|   | Frequency (No) | Percentage (%) | Frequency (No) | Percentage (%) |
| Instructors provide clinical practice logbook | 12 (38.7)      | 38.7           | 19             | 61.3           |
| Instructors have continuous follow-up         | 14             | 43.2           | 17             | 54.8           |
| Instructor integrate theory in to practice    | 16             | 51.6           | 15             | 48.4           |
| Instructors demonstrate skills in cases       | 5              | 16.1           | 26             | 83.9           |
| Instructors provide constructive feedback     | 7              | 22.6           | 24             | 77.4           |
| Place of attachment has sufficient cases      | 10             | 32.3           | 21             | 67.7           |
| Clinical environment has sufficient materials | 8              | 25.8           | 23             | 74.2           |
| Clinical placement has sufficient wards for   | 9              | 29.0           | 22             | 71.0           |
| Orientation about assessment methods          | 9              | 29.0           | 22             | 71.0           |
| Presence of continuous assessment methods     | 8              | 25.8           | 23             | 74.2           |
| Assessment address three learning domain      | 8              | 25.8           | 23             | 74.2           |
| Staff allows students to perform tasks        | 9              | 29.0           | 22             | 71.0           |
| Staff encourages students                     | 8              | 25.8           | 23             | 74.2           |

**Table 3** Bivariate and multivariate analysis of clinical instructor factors affecting clinical practice competency among graduating nursing students, Amhara Region Universities, 2018

| Variables  |     | Clinical practice competency |                  | COR (95% CI)           | AOR (95% CI)            |
|--|-----|------------------------------|------------------|------------------------|-------------------------|
|  |     | Competent, (%)               | Incompetent, (%) |                        |                         |
| Clinical practice logbook                          | Yes | 55 (43.65)                   | 71 (56.35)       | 2.146 (1.325 to 3.478) | 0.718 (0.330 to 1.563)  |
|  | No  | 48 (26.52)                   | 133 (73.48)      | 1.00                   | 1.00                    |
| Orientation of objective                           | Yes | 80 (47.9)                    | 87 (52.1)        | 4.678 (2.725 to 8.030) | 2.387 (1.011 to 5.635)* |
|  | No  | 23 (16.43)                   | 117 (83.57)      | 1.00                   | 1.00                    |
| Enough mentoring time                              | Yes | 62 (50.8)                    | 60 (49.2)        | 3.629 (2.209 to 5.962) | 2.247 (1.100 to 4.593)* |
|  | No  | 41 (22.2)                    | 144 (77.8)       | 1.00                   | 1.00                    |
| Continuous follow-up                               | Yes | 70 (45.75)                   | 83 (54.25)       | 3.092 (1.877 to 5.095) | 0.704 (0.312 to 1.589)  |
|  | No  | 33 (21.43)                   | 121 (78.57)      | 1.00                   | 1.00                    |
| Integrate theory with practice                     | Yes | 77 (39.9)                    | 116 (60.1)       | 2.247 (1.331 to 3.794) | 1.012 (0.494 to 2.074)  |
|  | No  | 26 (22.8)                    | 88 (77.2)        | 1.00                   | 1.00                    |
| Demonstrate skills in cases                        | Yes | 66 (47.8)                    | 72 (52.2)        | 3.270 (1.995 to 5.362) | 1.559 (0.723 to 3.361)  |
|  | No  | 37 (21.9)                    | 132 (78.1)       | 1.00                   | 1.00                    |
| Facilitate inter-professional relationships        | Yes | 69 (45.4)                    | 83 (54.6)        | 2.959 (1.800 to 4.862) | 1.082 (0.496 to 2.359)  |
|  | No  | 34 (21.9)                    | 121 (78.1)       | 1.00                   | 1.00                    |
| Maintain relationship with students                | Yes | 66 (42.6)                    | 89 (57.4)        | 2.305 (1.414 to 3.757) | 0.902 (0.436 to 1.864)  |
|  | No  | 37 (24.3)                    | 115 (75.7)       | 1.00                   | 1.00                    |
| Follow you while conduct a procedure               | Yes | 56 (54.4)                    | 47 (45.6)        | 3.980 (2.398 to 6.605) | 2.655 (1.294 to 5.449)† |
|  | No  | 47 (23.0)                    | 157 (77.0)       | 1.00                   | 1.00                    |
| Support from instructors has influence on practice | Yes | 58 (45.3)                    | 70 (54.7)        | 2.467 (1.519 to 4.007) | 1.571 (0.796 to 3.102)  |
|  | No  | 45 (25.1)                    | 134 (74.9)       | 1.00                   | 1.00                    |

\*P<0.05.

†P<0.01.

AOR, adjusted OR; COR, crude OR.

assessment method has a positive influence on clinical practice. Regarding the presence of the assessment checklist, 127 (41.4%) agreed and 180 (58.6%) disagreed that there is an assessment checklist for the assessment of student performance (online supplemental table 3).

#### Staff–student interaction characteristics

One hundred and ninety-four (63.2%) of the respondents were agreed and 113 (36.8) disagreed that staffs encourage students during clinical practice, 190 (61.9%) were agreed and 117 (38.1%) disagreed that staffs allow students to perform tasks during clinical practice, 174 (56.7%) were agreed and 133 (43.3%) disagreed that staffs monitor students during clinical practice (online supplemental table 4).

#### Factors associated with clinical practice competency

As illustrated in table 3, students who had got orientation about the objective of clinical practice were 2.387 times more likely to be clinically competent than their counterparts (adjusted OR, AOR 2.387; 95% CI 1.011 to 5.635). A clinical instructor who spent enough time for mentoring during clinical practice had 2.247 times more likely to have clinically competent students than who did

not spend enough time (AOR 2.247; 95% CI 1.100 to 4.593). Students who had instructors that followed them while they conducted the procedure were 2.655 times more likely clinically competent than students who were not followed by instructors (AOR 2.655; 95% CI 1.294 to 5.449) (table 3).

Regarding the method of assessment, students with a clinical practice assessment checklist had 2.663 times higher clinical practice competency than students who had no clinical assessment checklist during clinical practice (AOR 2.663; 95% CI 1.324 to 5.358) (table 4).

In the case of staff–student interaction, students who were allowed to perform tasks by clinical staff had 5.858 times clinical competency than their counterparts (AOR 5.858; 95% CI 2.657 to 12.916) (table 5).

After computing the four major variables; clinical instructor factor, clinical placement factor, assessment method factor and staff–student interaction factor, bivariate and multivariate analyses were made. Accordingly, the results showed that clinical instructor factors had a significant effect on the clinical practice competency of students. Students who had good clinical instructors were 3.1 times more likely to be clinically competent

**Table 4** Bivariate and multivariate analysis of assessment method factors affecting clinical practice competency among graduating nursing students, Amhara Region universities, 2018

| Variables                               |     | Clinical practice competency |                  |                        | AOR (95% CI)            |
|---|-----|------------------------------|------------------|------------------------|-------------------------|
|   |     | Competent, ( )               | Incompetent, ( ) | COR (95% CI)           |                         |
| The orientation of assessment methods   | Yes | 72 (42.9)                    | 96 (57.1)        | 2.613 (1.580 to 4.320) | 0.764 (0.355 to 1.647)  |
|   | No  | 31 (22.3)                    | 108 (77.7)       | 1.00                   |                         |
| The assessment has a positive influence | Yes | 76 (38.3)                    | 112 (61.7)       | 2.312 (1.377 to 3.883) | 1.013 (0.455 to 2.255)  |
|   | No  | 27 (22.7)                    | 92 (77.3)        | 1.00                   |                         |
| Continuous assessment methods           | Yes | 70 (42.2)                    | 96 (57.8)        | 2.386 (1.452 to 3.922) | 1.257 (0.605 to 2.611)  |
|   | No  | 33 (23.4)                    | 108 (76.6)       | 1.00                   |                         |
| Different assessment                    | Yes | 69 (44.2)                    | 87 (55.8)        | 2.729 (1.663 to 4.480) | 1.197 (0.581 to 2.464)  |
|   | No  | 34 (22.52)                   | 117 (77.48)      | 1.00                   |                         |
| Address three learning domain           | Yes | 50 (40.65)                   | 73 (59.35)       | 1.693 (1.047 to 2.738) | 0.521 (0.247 to 1.102)  |
|   | No  | 53 (28.8)                    | 131 (71.2)       | 1.00                   |                         |
| Presence of checklist                   | Yes | 67 (52.76)                   | 60 (47.24)       | 4.467 (2.696 to 7.399) | 2.663 (1.324 to 5.358)* |
|   | No  | 36 (20.0)                    | 144 (80.0)       | 1.00                   |                         |

\*P&lt;0.01.

AOR, adjusted OR; COR, crude OR.

than students who had no good clinical instructors (AOR 3.051; 95% CI 1.717 to 5.421). This result also showed that students who had good interaction with clinical staff were 2.348 times more likely clinically competent than students who had not good interaction with clinical staff (AOR 2.348; 95% CI 1.337 to 4.124) (table 6).

## DISCUSSION

For a country with a national policy aimed at strengthening the quality of healthcare like Ethiopia, it is fundamental to investigate potential factors influencing clinical practice competency. This study gives important findings regarding factors about clinical practice competency of students and possible improvement measures that could be implemented to enhance the clinical practice competency of students. The clinical practice competency of students in this study was 33.6%. This finding is high when compared

with a finding from a study done in Hawasa University which revealed that 25.2% of participants were clinically competent. This discrepancy might be due to the difference in study setting and characteristics of study participants as well as the technique of data collection in which the previous study was conducted in a single institution, including all undergraduate students, and using a self-assessment technique. However, this study covers six institutions, only graduating nursing students were included, and an observation technique was also used.<sup>4</sup> However, it is low when compared with a study conducted among health professionals at Debre Birhan Health Science College, Ethiopia, where 78.6% of the study participants were clinically competent.<sup>16</sup> It is also lower than the study done by Annals' University of Finland (66.7%).<sup>11</sup> This discrepancy might be because of the difference of the study participants in which, in the previous study, participants have graduated health professionals,

**Table 5** Bivariate and multivariate analysis of staff-student interaction factors affecting clinical practice competency among graduating nursing students, Amhara Region Universities, 2018

| Variables  |     | Clinical practice competency |                  |                         | AOR (95% CI)             |
|--|-----|------------------------------|------------------|-------------------------|--------------------------|
|  |     | Competent, (%)               | Incompetent, (%) | COR (95% CI)            |                          |
| The staff allows students to perform tasks         | Yes | 89 (46.84)                   | 101 (53.16)      | 6.483 (3.464 to 12.134) | 5.858 (2.657 to 12.916)* |
|  | No  | 14 (12.0)                    | 103 (88.0)       | 1.00                    |                          |
| Staff encourages students during clinical practice | Yes | 82 (42.27)                   | 112 (57.73)      | 3.207 (1.845 to 5.576)  | 1.301 (0.574 to 2.951)   |
|  | No  | 21 (18.58)                   | 92 (81.42)       | 1.00                    |                          |
| Staff monitors during clinical practice            | Yes | 73 (41.95)                   | 101 (58.05)      | 2.482 (1.496 to 4.116)  | 0.656 (0.295 to 1.443)   |
|  | No  | 30 (22.56)                   | 103 (77.44)      | 1.00                    |                          |

\*P&lt;0.01.

AOR, adjusted OR; COR, crude OR.

**Table 6** Bivariate and multivariate analysis for computed variables affecting clinical practice competency among graduating nursing students, Amhara Region universities, 2018

| Variables                 |                | Clinical practice competency |                  | COR (95% CI)           | AOR (95% CI)                  |
|---------------------------|----------------|------------------------------|------------------|------------------------|-------------------------------|
|                           |                | Competent, (%)               | Incompetent, (%) |                        |                               |
| Clinical instructor       | Good           | 72 (49.3)                    | 74 (50.7)        | 4.080 (2.453 to 6.786) | <b>3.051 (1.717 to 5.421)</b> |
|                           | Not good       | 31 (19.25)                   | 130 (80.75)      | 1.00                   | 1.00                          |
| Clinical placement        | Conducive      | 65 (39.39)                   | 100 (60.61)      | 1.779 (1.095 to 2.890) | 1.160 (0.679 to 1.992)        |
|                           | Not conducive  | 38 (26.76)                   | 104 (73.24)      | 1.00                   | 1.00                          |
| Assessment method         | Measurable     | 74 (40.88)                   | 107 (59.12)      | 2.313 (1.389 to 3.851) | 1.143 (0.629 to 2.078)        |
|                           | Not measurable | 29 (23.02)                   | 97 (76.98)       | 1.00                   | 1.00                          |
| Staff–student interaction | Good           | 78 (43.82)                   | 100 (56.18)      | 3.245 (1.915 to 5.499) | <b>2.348 (1.337 to 4.124)</b> |
|                           | Not good       | 25 (19.38)                   | 104 (80.62)      | 1.00                   | 1.00                          |

AOR, adjusted OR; COR, crude OR.

whereas in the current study, the study participants were graduating nursing students who may lack work experience. The percentage of clinically competent and clinically incompetent students were almost the same at Bahirdar University. The possible suggestion is that; Bahirdar University is one of the first-generation universities found in Ethiopia having senior nursing instructors, the presence of two specialised hospitals in the city used for clinical practice, the presence of more experienced clinical staffs who may have good interaction with nursing students, and the presence of high patient flow in the hospitals leading the students to have more exposure. This study identified different factors affecting the level of clinical practice competency of graduating nursing students. These factors were clinical instructor factors (giving orientation about the objective of clinical practice, having enough mentoring time, supervising students while they conduct the procedure), assessment method related factors (presence of an assessment checklist), and staff-student interaction factor (staff allowing the students to perform a task).

Students who had got orientation about the objective of clinical practice were 2.387 times more likely to be clinically competent than those who did not have an orientation. This might be related with the presence of orientation about the objectives can lead the students to focus on their clinical competent areas. Similarly, students who spend adequate time with their instructor/mentor during clinical practice were 2.247 times more likely competent in clinical skills than their counterparts. While the students spent enough time with their mentors, they will get guidance and necessary corrections, which in turn lead them to become clinically competent. Students who were supervised by their instructors while they conducted the procedures were 2.655 times more competent in clinical performance than students who were not supervised. When comparing this study with a previous study made at Hawassa University, the results are inconsistent with that study, because of the difference in the characteristics of clinical instructor mentoring abilities and strategies.<sup>4</sup>

Clinical practice competency of students was affected by assessment method factors. Students who were assessed using the assessment checklist had 2.663 times higher clinical practice competency than students who were not assessed with the assessment checklist, which is inconsistent with a study made at Hawassa University.<sup>4</sup> Since the assessment checklist is prepared based on core competencies, evaluating the student using this assessment checklist can help the student to be clinically competent. A study conducted in the Annals' University of Finland among graduating nursing students showed that students assessed by peers (student to student) had higher nurse competence than was assessed by their mentors.<sup>8</sup> On the contrary, in the current study, staff-student interaction had a positive association with clinical competency. This is evidenced by students who were allowed to perform tasks by staff nurses were 5.858 times more likely competent than students who were not allowed by staff nurses to perform tasks. This might be related with students who are allowed to conduct the procedures can acquire different skills, which makes them competent in their field of study.

Among the four factors (clinical instructor factor, clinical placement factor, assessment method factor and staff-student interaction factor), clinical instructor-related factors and staff-student interaction-related factors were significantly associated with the clinical practice competency of students. In this regard, students who had good clinical instructors at the time of clinical practice can easily achieve their competency. In support of this, supervision by the clinical instructor during the clinical attachment supports the development of the student's competency.<sup>11</sup>

In a qualitative study conducted in Iran Tarbiat Modares University's nursing department, clinical instructors stated that a competent instructor is a role model.<sup>13</sup> He/she has an understanding of behaviour with the patients, students and even the environment. He did not focus on only practical or theoretical tasks. Participants of this study believed that instructors are the communicative bridge between the students, staff and hospital departments.



Overall, the characteristics of a competent instructor in stressful situations were as follows: respecting students in front of others, providing a peaceful learning environment and using encouragement instead of punishment. Staff–student interaction had a significant effect on clinical practice competency with 2.348 odds for those who had good interaction with staff nurses than students who had not good interaction. The presence of a harmonious interaction between students and clinical staff helps the students to observe, assist and conduct different tasks, which helps them to improve their competency.

In this study, comparison and discussion were difficult due to the shortage of similar studies carried out in Ethiopia. It was impossible to establish a cause-and-effect relationship as the study design was a cross-sectional study. Since the study was conducted in universities that were found in one region of Ethiopia, it might not representative of all graduating nursing students in Ethiopia.

## CONCLUSIONS

Generally, the results of this study revealed that only around one-third of the students were clinically competent. Clinical instructor variables like the presence of orientation about the objective of clinical practice, spending enough time for mentoring, and following of students while they conduct the procedure; assessment method factors like presence of an assessment checklist; and staff-student interaction factors like allowing them to do tasks were significantly associated with the clinical practice competency of graduating nursing students. Therefore, there should be oriented about the objective of clinical practice, the presence of enough mentoring time during clinical practice, preparing an assessment checklist to evaluate each student, strengthening the relationship between clinical staff and nursing students and allow students to conduct different procedures.

**Acknowledgements** The researchers would like to thank Addis Ababa University, College of Health Science for permitting us to conduct this research. We would like to thank our data collectors and study subjects who were volunteered and took their time to give us all relevant information for the study.

**Contributors** AG conceived the study, wrote the study proposal, conducted the fieldwork, supervised data entry, analysed the data and wrote the manuscript. YT participated in refining the research proposal, supervised the field activity, analysed the data and wrote the manuscript. EB, KGT and AD participated in refining the research proposal, supervised the field activity and analysed the data. All authors participated and approved the final manuscript.

**Funding** The funding organisation is Addis Ababa University.

**Disclaimer** There is no role in the development of the paper except the logistics one.

**Competing interests** None declared.

**Patient consent for publication** Not required.

**Ethics approval** Paper of approval and a letter of permission was obtained before the beginning of data collection from the Departmental review Board of Nursing and Midwifery, College of Health Science, Addis Ababa University (riff number/ID 031/18/SNM). Permission letters were provided for universities found in Amara region. Informed written consent was also obtained from all study participants after information was provided about the purpose of the study, non-invasiveness of the data collection procedure. The confidentiality of the information was reassured that

they were anonymous. The respondents had the chance to ask anything about the study and had the right to refuse or stop at any moment they want.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** All data relevant to the study are included in the article or uploaded as online supplemental information.

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