COVID-19 pandemic: Nursing students' knowledge and anxiety in clinical practice at the medical department: A cross-sectional survey

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Abstract—Background: The level of knowledge and worry among people involved in patient care is controversial when an infectious disease spread. Clinical procedures caused stress and anxiety in nursing students throughout the epidemic. This study explores the levels of knowledge and anxiety of Saudi nursing students in clinical training at the medical departments during the COVID-19 pandemic.

Method: A descriptive, web-based-cross-sectional study was conducted from September 2021 to April 2022 and was planned to examine 185 nursing students at nursing college Qassim university. The survey collected data on sociodemographic data knowledge of COVID-19 and the Generalized Anxiety Disorder 7-Item Scale (GAD-7) was used to assess anxiety. Result: The results displayed that the majority of nursing students in the clinical practice (65.4%) were a high level of knowledge, 20% did not report any anxiety at all, more than one-third experienced 39.5% moderate anxiety and less than a third experience 30.3% mild anxiety, and 10.3% experience severe anxiety towards the COVID-19 pandemic in clinical practice. There is a negative significant correlation between knowledge level and anxiety score (r = -0.189, p = 0.010)). Conclusions: In our study, nursing students had a high level of knowledge and a moderate level of anxiety, with a strong negative association between anxiety and knowledge. Nursing professors and clinical preceptors/mentors should be encouraged to create programs that will help nursing students prepare for the obstacles they will face during clinical practice.

Keywords---COVID-19, nursing students, knowledge, anxiety, clinical practice, medical department.
Introduction

Coronavirus disease 2019 (COVID-19) was stated by the World Health Organization (WHO) as a community health emergency of worldwide worry and a global pandemic (Organization & others, 2020). The pandemic caused severe consequences to the utmost sectors in numerous countries around the world, including the financial, healthcare, and education sectors (Gautam & Sharma, 2020). Healthcare students, particularly nursing students, were forced to resume their studies in university laboratories and clinical settings, putting them and their families at greater risk of developing COVID-19 (IESALC, 2020). Nursing students have been reported to be more anxious than other healthcare students (Savitsky et al., 2020). Additional pressures associated with social and academic adaptations as a result of COVID-19 in the community (Lewnard & Lo, 2020) and its impact on nursing education delivery are likely to exacerbate this (Hayter & Jackson, 2020).

Clinical practice is an important part of nursing education because it prepares students to use what they learn in real-world theories in clinical practice and helps them build critical thinking abilities for problem-solving (Lee et al., 2015). Through clinical practice education, nursing students gain experience communicating with patient caregivers and other medical personnel and apply basic nursing skills and nursing courses learned in the on-campus practice room, systematically learning theories and practice, as well as basic skills as professional nurses (Kwon & Kim, 2018). On the other hand, nursing students report feeling anxious as they begin clinical practice (Han & Lee, 2012). Nursing students exhibit anxiety in clinical practice, according to Beck and Srivastava5, due to a lack of clinical experience, unfamiliarity, challenging patients, fear of practice, and faculty evaluation in clinical practice. Anxiety hurts one’s quality of life, academic achievement, and clinical practice (Sanad, 2019).

The present extensive outbreak appears to be linked in part to a delay in diagnosis and ineffective infection control techniques (Omrani & Shalhoub, 2015). In addition, hospitals’ and healthcare workers’ protection, knowledge, or having enough information about sources, clinical manifestations, transmission channels, and preventative methods among healthcare professionals might play a part in this gal evaluation. Student nurses are the key part of the virus transmission chain since they are in close touch with sick persons, and their knowledge of 2019-nCoV prevention and protection protocols can assist avoid the transmission chain.

Since the lockdown and closure of the university in Saudi Arabia, nursing students have not had access to clinical practice. Because of their previous experiences and ideas, knowledge might influence nursing students’ impressions of clinical practice (Hamadi et al., 2021). Indeed, it may cause nursing students to be denied permission to resume clinical practice while COVID-19 patients remain on the wards. However, it is unclear what level of understanding and worries nursing students have about COVID-19.
Aim of the Study

To explore the levels of knowledge and anxiety of Saudi nursing students in clinical training at the medical departments during the COVID-19 pandemic

Method

Design and Setting

A descriptive, web-based cross-sectional design survey was carried out from September 2021 to April 2022 among one hundred eighty-five nursing students at nursing college Qassim university to assess knowledge and anxiety in clinical practice at the medical department from all study years at Qassim university who were invited to participate in the study was selected by a convenience sampling technique. Data was collected via an Arabic-language online survey. Students were sent an online survey link via university e-mails, phone numbers, and social groups, all of which are widespread among nursing students around the country. Participants were automatically told about the study and requested to give their informed consent and fill out the forms after clicking the link. To maintain privacy and secrecy during the study, I did not collect any personal information from the students. The results of a completed survey were automatically recorded on the internet.

Study instrument

The questionnaire involved the following three parts: part one is the socio-demographic variable such as age, level of education, and residence. Part two based on the National Health Commission of the People's Republic of China's guidelines for clinical and community care for COVID-19, a questionnaire was adapted (Zhong et al., 2020). Four questions about clinical signs, three about transmission routes, and five about COVID-19 prevention and control were included in the questionnaire. These questions were answered true or false, with the option of saying "I don't know. The knowledge total score ranged from 0 to 12. Scores 0 to 6 indicate a lack of understanding of COVID-19 criteria, whereas scores 7 to 9 and 10 to 12 suggest a moderate and greater level of understanding, respectively. Cronbach's alpha was used to assess an item's internal reliability. In this case, Cronbach's alpha coefficient was 0.71, indicating internal consistency (Taber, 2018).

Third part: the Generalized Anxiety Disorder 7 ("GAD-7") scale (Spitzer et al., 2006) was used to measure the students' anxiety levels in the two weeks before data collection (data were gathered two weeks after the students returned to clinical settings for training). The measure consists of seven items that reflect the basic symptoms of anxiety and is rated on a four-point Likert scale, with 0 indicating not at all, 1 indicating several days, 2 indicating more than half of the days, and 3 indicating virtually every day (García et al., 2018; Spitzer et al., 2006). The scale uses an interval level of measurement. The total potential score runs from 0 to 21, with scores indicating no anxiety, mild anxiety, strong anxiety, and severe anxiety (Löwe et al., 2008). Internal consistency (Cronbach = .92) and
criterion, concept, factorial, and procedural validity were all excellent on the scale (Spitzer et al., 2006).

**Statistical analysis**

The IBM SPSS software package version 20.0 was used to enter and analyze the data. (IBM Corporation, Armonk, NY) frequency and percent were used to describe qualitative data. The Kolmogorov-Smirnov test was employed to ensure that the distribution was normal. The significance of the acquired results was assessed at a 5% level. The Chi-square test for categorical variables was used to compare groups, and Monte Carlo adjustment for chi-square was employed when more than 20% of the cells had an anticipated count of less than 5.

**Results**

Table (1): Relation between the overall knowledge score and fourth level of education to be a significantly higher level of knowledge, haven't currently suffering from Corona, having completed a COVID-19 course, (41.3 %, 99.2 %, 60.3 % respectively with p ≤ 0.05). While the relation between the anxiety in clinical practice of COVID-19 was found to be significantly moderately in the age group 21–26 years, have not you had corona before, having not been in contact with a COVID-19 suspect, having completed a COVID-19 course, no anyone died of coronavirus in your family( 64.4%, 86.3%, 86.3, 63.0, 79.5 % respectively ).

As shown in (Fig. 1), the majority of students (65.4%) were believed to have developed a high level of knowledge regarding COVID-19, while 28.15 % had moderate knowledge, and only 6.5 % were considered to have low knowledge. The higher percentages were ascribed to four items that disclosed wearing medical masks, avoiding going to crowded places, isolating and treating people infected with the coronavirus. and people in contact with a person infected with the coronavirus should be isolated immediately in an appropriate place for 14 days., which scored 92.4, 90.8, 96.8, and 97.3 % respectively.

As revealed in (Fig. 2), the findings show that a fifth of the nursing students (N=37)20 % did not report any anxiety at all, more than one-third experienced (N= 73) 39.5% had moderate anxiety, and less than a third experience (N= 56) 30.3 % mild anxiety, and (N= 19) 10.3% experience severe anxiety towards the COVID-19 pandemic in clinical practice. There was a negative correlation between the knowledge score and anxiety score of the participants (r=—0.189, p = 0.010) (Table 2).

Table (1): Relation between overall knowledge, anxiety, and characteristics of students in studied nursing students in clinical practice (n = 185)

<table>
<thead>
<tr>
<th>Overall Knowledge</th>
<th>x² (p)</th>
<th>Anxiety</th>
<th>x² (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (n = 12)</td>
<td></td>
<td>No anxiety (n = 37)</td>
<td></td>
</tr>
<tr>
<td>Moderate (n = 52)</td>
<td></td>
<td>Mild anxiety (n = 56)</td>
<td></td>
</tr>
<tr>
<td>High (n = 121)</td>
<td></td>
<td>Moderate anxiety (n = 73)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe anxiety (n = 19)</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>&lt;21 years</td>
<td>21–26 years</td>
<td>Level of education</td>
<td>Residence</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>--------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>&lt;21 years</td>
<td>7 (58.3) 5 (41.7)</td>
<td>18 (34.6) 34 (65.4)</td>
<td>42 (34.7) 79 (65.3)</td>
</tr>
<tr>
<td>21–26 years</td>
<td>16 (30.8) 21 (40.4)</td>
<td>38 (31.4) 33 (27.3)</td>
<td>50 (41.3)</td>
</tr>
<tr>
<td>Level 2</td>
<td>8 (66.7) 4 (33.3)</td>
<td>22 (59.5) 15 (40.5)</td>
<td>19 (33.9) 37 (66.1)</td>
</tr>
<tr>
<td>Level 3</td>
<td>0 (0.0)</td>
<td>16 (30.8) 21 (40.4)</td>
<td>38 (31.4) 33 (27.3)</td>
</tr>
<tr>
<td>Level 4</td>
<td>13 (8.6) 40 (25.9)</td>
<td>99 (61.8) 22 (13.8)</td>
<td>8 (5.3)</td>
</tr>
<tr>
<td>Rural</td>
<td>2 (16.7) 10 (83.3)</td>
<td>8 (15.4) 44 (84.6)</td>
<td>8 (6.6) 113 (93.4)</td>
</tr>
<tr>
<td>Urban</td>
<td>10 (83.3)</td>
<td>4 (33.3)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>No</td>
<td>12 (100.0) 0 (0.0)</td>
<td>40 (76.9) 12 (23.1)</td>
<td>99 (81.8) 22 (18.2)</td>
</tr>
<tr>
<td>Yes</td>
<td>2 (16.7)</td>
<td>0 (0.0)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>No</td>
<td>12 (100.0) 0 (0.0)</td>
<td>42 (80.8) 10 (19.2)</td>
<td>106 (87.6) 15 (12.4)</td>
</tr>
<tr>
<td>Yes</td>
<td>2 (16.7)</td>
<td>0 (0.0)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>No</td>
<td>3 (25.0) 9 (75.0)</td>
<td>11 (21.2) 41 (78.8)</td>
<td>48 (39.7) 73 (60.3)</td>
</tr>
<tr>
<td>Yes</td>
<td>9 (75.0)</td>
<td>41 (78.8)</td>
<td>73 (60.3)</td>
</tr>
<tr>
<td>Anyone Died of Coronavirus in Your Family</td>
<td>No</td>
<td>10 (83.3) 34 (65.4)</td>
<td>96 (79.3) 4.256 (0.119)</td>
</tr>
<tr>
<td>Yes</td>
<td>2 (16.7)</td>
<td>18 (34.6)</td>
<td>25 (20.7)</td>
</tr>
</tbody>
</table>

*: Statistically significant at p ≤ 0.05

$\chi^2$: Chi square test
MC: Monte Carlo
Figure (1): Distribution of the studied nursing students according to overall knowledge (n = 185)

Figure (2): Distribution of the studied nursing students according to anxiety in clinical practice (n = 185)

Table (2): Correlation between Nursing Students’ Knowledge of anxiety in clinical practice (n = 185)

<table>
<thead>
<tr>
<th>Knowledge vs. Anxiety</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.189*</td>
<td>0.010*</td>
</tr>
</tbody>
</table>

r: Pearson coefficient  
*: Statistically significant at p ≤ 0.05

**Discussion**

As nursing students will be future healthcare providers, it is critical to comprehend their knowledge and concerns about clinical procedures throughout the pandemic and provide answers. This will aid them in dealing with pandemic situations and providing high-quality medical care. The finding showed that
during the Covid19 epidemic, the majority of nursing students in clinical practices have moderate anxiety, followed by students who have severe anxiety. Anxiety levels were influenced by age, with students aged 21-27 years having a considerably higher anxiety score than students under the age of 20. This result is consistent with (Asad et al., 2021) finding that During the Covid19 pandemic, the majority of Saudi nursing students report moderate anxiety, followed by students who experience severe anxiety. Except for age, which showed a considerably lesser anxiety score among students aged 21-24 years, demographics did not affect anxiety levels associated with students aged fewer than 20 years. Even in normal circumstances, anxiety is frequent among the general population (Singh et al., 2020), particularly among student communities. Before the outbreak of the pandemic, anxiety levels among university students in Hong Kong showed that around 12% of students had moderate anxiety and about 6% of students had severe worry. (Lun et al., 2018) In a 2016 study conducted in Portugal, approximately 16 percent and 8% of students, respectively, suffered from moderate and severe anxiety. Suffering from a lot of anxiouslyness (Bártolo et al., 2017). According to studies of anxiety levels among students during Covid19, the pandemic hurt pupils' mental health. According to a survey from Bangladesh, 15% of pupils experienced moderately high anxiety, while 18% had severe anxiety (Islam et al., 2020). In a study on the impact of Covid19 on student mental health in Saudi Arabia, it was discovered that roughly 35% of students had moderate to severe anxiety, which was closely correlated with age, sex, and educational level (Lai et al., 2020).

Nurses and nursing students come into direct touch with infected patients, putting them at risk, therefore worry and anxiety are unavoidable. Nursing students were concerned about their careers as well as their health because they provided treatment for COVID-19-positive patients and were in direct touch with them throughout the pandemic. (Abazie et al., 2021; Okuyan et al., 2020) Students felt higher stress, dread, and anxiety as a result of their fear of infecting family members and their uncertainties. Relation between overall knowledge and the fourth level of education to be a significantly higher level of knowledge, haven't currently suffering from Corona, having been in completed a COVID-19 course, (41.3 %, 99.2 %, 60.3 % respectively with p ≤ 0.05). while another researcher (Medina Fernández et al., 2021) found that knowledge of COVID-19 is predicted by having had contact with someone as well as having been in a completed course relating to the disease. Relation between the anxiety in clinical practice of COVID-19 was found to be significantly moderately in the age group 21–26 years, have not had corona before, no contact with a COVID-19 suspect, having completed a COVID-19 course, no anyone died of coronavirus in your family (64.4% 86.3%, 86.3, 63.0, 79.5 % respectively). Furthermore, these findings are congruent with those of a prior study (Rahman & Sathi, 2020), which found that COVID-19 knowledge varies significantly between age groups and educational levels. The findings demonstrated that the respondents’ anxiety levels differed greatly depending on their educational levels. These findings by (Al-Hanawi et al., 2020) reported that respondents’ level of fear or concern about COVID-19 varies greatly depending on their educational level.

This study found that the level of COVID-19 knowledge among nursing students in clinical practice in the medical department (65.4%) was believed to have
developed a high level of knowledge regarding COVID-19, while 28.15% had moderate knowledge, and only 6.5% were considered to have low knowledge. The findings are in line with those of a previous study conducted in Yemen, which found that healthcare providers, including nurses, had enough knowledge and a moderate level of anxiety (Alrubaiiee et al., 2020). The study also showed a negative association between anxiety and COVID-19 knowledge, comparable to (Ali et al., n.d.). In contrast, (Hossain et al., 2020) found that when people have more understanding of COVID-19, they have less fear of it, which could support the theory that a lack of knowledge about a topic can assist the creation of ingrained beliefs or myths about it. Thus, understanding COVID-19 is a prerequisite for forming prevention beliefs, forming good attitudes, and promoting positive behaviors and cognition, and people’s attitudes toward the disease influence the success of their coping methods and behaviors to some extent.

**Conclusion**

This study presents that the majority of students were believed to have developed a high level of knowledge regarding COVID-19, while 28.15% had moderate knowledge, and only 6.5% were considered to have low knowledge. Regarding anxiety, a fifth of the nursing students did not report any anxiety at all, more than one-third experienced moderate anxiety, less than a third experience mild anxiety, and experienced severe anxiety towards the COVID-19 pandemic in clinical practice. There was a negative correlation between the knowledge score and the anxiety score of the participants. To address this, nursing students should be assisted in managing their anxiety in addition to receiving additional information about COVID-19.

**Limitation**

The sample size was quite tiny. As a result, more large-sample studies from other Saudi Arabian locations are needed to better understand nursing students’ awareness and attitudes at the national level. so, I recommend that nursing academic organizations must enhance COVID-19 nursing prevention guidelines based on nursing students’ deficits in anxiety, and improve their knowledge

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**Disclosure**

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**Conflict of interest**

The authors declare no conflict of interest.
Reference


Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting