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The COVID-19 pandemic and its effects on nursing students' performance

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Abstract---The COVID-19 pandemic has led to unexpected changes in nursing students' education, which constitutes the suspension of face-to-face education and a halt to their professional practice in hospitals. The lockdown came to effect when the pandemic had an escalating effect on nursing students and their studies. This study was conducted to evaluate the impact of the COVID-19 pandemic on nursing students studying at different levels on four campuses in the Southern Region of Saudi Arabia via their perceived stress levels. The research design was carried out using a descriptive approach and a Google documents link was used to collect data. This research took place between April 2020 to September 2021 and consisted of 233 nursing students from different Nursing branches in the area. This study indicated that nursing students had moderate stress levels through the Perceived Stress Scale (PSS) measuring scale, with a PSS score of 31.69 ± 6.91 . There was a significant difference in age and gender of $p \leq .001$ and $p \leq .001$, respectively. This study showed that age and gender impacted the stress levels amongst nursing students. In this study, the sudden onset of the COVID-19 pandemic impacted nursing students and their studies negatively and created moderate levels of stress. The results showed that watching pandemic news and fear of contracting the disease added to students' stress levels. Lack of knowledge about the pandemic formed an unpredictable future. In addition, students' unpreparedness for the pandemic created unpleasant feelings during the process of learning. It was observed that proper awareness could have improved preparedness for a pandemic. Having relevant knowledge and adaptation methods for

future pandemics could lower the stress level experienced by nursing students.

Keywords---coronavirus, Saudi Arabia, stress, perceived stress scale, nursing students.

Introduction

The impact of the COVID-19 pandemic was felt across the globe, with millions of cases reported by the World Health Organization (WHO) in 2020. As a result of the spread and transmission of COVID-19, countries worldwide implemented changes such as lockdown and quarantine measures to curb the spread of the virus. These changes affected people's daily activities tremendously across all sectors and the nursing students [1, 2]. With regards to academic activities, reverting to a virtual learning environment was one of the measures taken to control the pandemic [3]. In Saudi Arabia, the first case of the COVID-19 infection was reported on March 2nd, 2020, when detected on a returning traveller from Iran [4], and measures were taken to ensure that persons exhibiting COVID-19 related symptoms were required to call 937, an Emergency line dedicated to COVID 19 [5]. Strict measures have been implemented to contain the virus and spread of infection. The measures incorporated include home quarantine, physical distancing, wearing gloves, masks, suspension of travelling, academic activities in schools, including universities. Later in the same month, on March 23rd, 2020, King Salman issued restricted movements on the Kingdom[6]. Ministry of High Education also announced continuing distance education and training through online methods[7]. Research data showed that infectious diseases could be accompanied by a few psychological and mental issues in individuals, such as distress, anxiety, fear, mental illness, and confusion[8]. . COVID 19 pandemic created inconveniences for students, from lockdown and hectic switch from physical class attendance in schools to Virtual classes. This led to emotional instability, stressful situations, and depression among students[9, 10]. Students had to familiarise themselves with the new normal routine and faced a lack of coping mechanisms. Anxiety and fear may lead to substantial psychological distress and physical issues. Isolation could cause distress and irritability among the adult population as stated in a study by Viner et al. 2020[11]. The isolation resulting from home quarantine could even be more distressing if there were a lack of information as to when the pandemic will end.

In Saudi Arabia, the education of nursing students was interrupted, and students had to remain at home during the lockdown and perform all their schooling online, according to the guidelines implemented by the Ministry of Education. In addition to this, students' clinical practice in hospitals and laboratories was ceased at an unknown stage, purposely for the safety of staff, students, and patients[12]. As many nursing programs include training practice hours, students have been through stages where they thought their clinical education was inadequate. Other changes due to the pandemic involve preparation for clinical practicum by taking online classes[2], and difficulty having face-to-face interaction with instructors[13]. The uncertainty of the pandemic situation on students' studies and the quarantine measures created stressful educational life

for nursing students. This study was performed during the pandemic because it was believed that this was the students' first time experiencing the pandemic. The reality of coming to terms with the lockdown by not engaging in clinical activities and skill acquisition that are necessary for nursing students could have created a stressful situation for nursing students. In light of the above, this study intends to assess nursing students' perceived stress levels during the COVID-19 pandemic.

Methods

Study design

This study was a descriptive study and was performed between April 2020 to September 2021.

Study sample

The population explored for this research was selected from three different campuses in the Southern Region of Saudi Arabia. The total number of students was 671. The sample size in this study was 245 nursing students. Power analysis was selected as a measurement to select the sample size of nursing students, which was 245 students. The population size estimation was established using an alpha of 0.05 error level, assumed size effect for sample size estimation of 0.5, and power of 0.8. Sampling in this study followed a random manner. The representation increased through a survey of 245 students in total, 233 of the students' surveys were included in the analysis, while 12 were excluded due to incomplete answers.

Inclusion and exclusion

Nursing students from all levels aged over 18 years old and who had internet access were invited to participate in the study.

Study variables

The perceived stress from the views of nursing students was the dependent variable. The independent variables comprise gender, age, insight, levels of schooling, and answers to COVID-19 related questions.

Data collection tools

The link to the form containing sociodemographic data and COVID-19 related questions was sent to all the students. Each student is expected to fill in the sociodemographic data before answering the rest of the questions. These sociodemographic items include gender, age, and level of study in nursing school. Subsequently, students answered the 13 items about the COVID-19 pandemic. The author created the items, and this was after reviewing pandemic-related literature [14, 15]. Listed items as follows; pandemic news, other countries' measures for COVID-19, feeling worried about becoming infected, recognizing a person with a positive COVID-19 test, whether they thought they had taken

enough pandemic precautions, the safety precautions implemented in Saudi, succession in the prevention of the pandemic, evaluation of restriction, how they felt about staying quarantined at home during the pandemic, knowing someone infected with the disease, nursing college applications of pandemic guidelines, thoughts on nursing college preparedness for coming back to school and downloading the pandemic application.

Validity

Validity of information acquired from the answers to the questions was performed by evaluating the accuracy of the generated questions and suitability for this study. A pilot study was performed before the beginning of this study. Expert opinions of four academic faculty members and another two psychology experts were consulted. An email containing the questions link was sent to the faculty. Adequate information on the aim of this study was provided to them to determine whether the items reflect the purpose of the study. The expert opinions were consulted, and there was approval from the experts on the content; therefore, the validity of the content of the questions was confirmed to be appropriate.

Perceived stress scale

The perceived stress scale (PSS) was used to assess students' stress levels; this scale was established by Cohen et al.,[16] in 1983 with 14 items Likert questionnaire mainly to evaluate the perceptions and assess life events and their stress level. The concept and language of equivalence are similar to the original script. Moreover, translation to Arabic of items in the scale was warranted. The PSS was translated into different languages, including Arabic. The stress scale contains 10 items, and each item is designed to look at how stressful the situations were for each individual. Each item is scored by a 5-points Likert-type scale, from never, which is scored zero, to very often, which is scored 4. The stressful individuals usually have high scores on the scale, which means they experience more stressful situations than others. The internal consistency was examined to maintain scale reliability.

Data collection

A questionnaire was developed to measure students' stress. A link to access the questionnaire through Google forms with a consent form appended to it was sent to the students. The link was provided to the students via Blackboard and email. The incomplete forms of answers were excluded, which amounted to a total number of 12 forms.

Statistical analysis

Data were analysed with Statistical SPSS, and students' views on the pandemic were performed using standard deviations and percentages. In addition, data analysis was accomplished through the Kruskal-Wallis H test to identify the significance between dependent and independent variables.

Results

The majority of the students in this study were between the ages of 18 to 20 years old with a percentage of 61%, 82% were female, while 21.45% were at the 7th level or 4th year in their nursing studies, as presented in Table 1.

Table 1
Sociodemographic data of students

Factor	N (233)	Percentage
Age		
18-22	143	61%
23 and above	90	39%
Gender		
Male	43	18%
Female	190	82%
Level		
2 nd	9	3.86%
3 rd	35	15.05%
4 th	34	14.59%
5 th	45	19.31%
6 th	34	14.59%
7 th	50	21.45%
8 th	26	11.15%

This study showed that 38.19 % of nursing students were interested in the world news of COVID-19, and 100% of them kept updated with pandemic news in Saudi Arabia. The majority of students of 86.27 % thought the quarantine was the right safety measure. Additionally, 84.12 % of students thought the nursing college provided adequate safety procedures during the pandemic. All students followed the pandemic precautions, including downloading Smartphone (Tawakala) application for a health passport. In addition, 50.21 % maintained social distancing, 87% preferred a well-ventilated environment, and 41.63 % indicated they used gloves plus all students had face masks on in public places. There were 25.32 % of the students who knew someone who tested positive for COVID 19, and 62.23 % of the students felt worried about getting infected. All vaccinated students also felt safe attending college classes after vaccinations. Of students that quarantined at home, 84.98% reported being safe, while 70.39 % felt bored, as presented in Table 2.

Table 2
COVID 19 Pandemic from the perspective of nursing students

Questions	N	Percentage
How frequently do you watch COVID 19 Pandemic news?		
1. Sometimes	78	33.48 %
2. Often	66	28.33 %
3. Always	89	38.19 %
Do you follow the updates regarding COVID 19 pandemic in Saudi Arabia?		
1. Yes	233	100%
2. No	0	0
Do you follow COVID 19 pandemic developments in other countries?		
1. Yes	64	27.47 %
2. No	169	72.53 %
Did you feel worry of contracting COVID 19 from other?		
1. Yes		
2. No	145	62. 23 %
	88	37.77 %
Did anyone of people you know was positive for COVID 19 pandemic?		
1. Yes	59	25. 32 %
2. No	174	74.68 %
Do you believe you followed COVID 19 precautions during the pandemic?		
1. Yes	233	100%
2. No	0	0
*Which of the following COVID 19 precautions did you take? you could select multiple choices.		
1. Hand washing	97	41.63 %
2. cleaning your items after coming from outside or shopping	16	6.86 %
3. Face mask	233	100 %
4.Gloves	97	41.63 %
5.Social distancing	117	50.21 %
6. Follow updated rules for the pandemic	213	91.41 %
7. ventilate the environment	205	87.98 %
Saudi Arabia implemented many COVID 19 Pandemic regulations, do you think this was successful?		
1. Yes	213	91.42 %
2. No	0	0
3. Not sure	20	8.58 %
How do you evaluate regulation of COVID 19 pandemic quarantine?		
1. Right choice		
2. To some extent is good	201	86.27 %
3. Wrong choice	12	5.15 %

	20	8.58 %
*How did you feel about home quarantine as a reason of COVID 19 pandemic? You could select multiple choices.		
1.Bored	164	70.39 %
2.Worried	20	8.58 %
3.Angry	47	20.17 %
4.Safe	198	84.98%
5.Other	0	0
Do you think * nursing College took enough precautions against COVID 19?		
1.Yes	196	84.12 %
2.No	0	0
3.Undecided	37	15.88 %
Being nursing student you had to attend to college for lab practice, did you feel safe in the college nursing labs?		
1.Yes	175	75.11 %
2.No	58	24.89 %
3.Undecided	0	0
Did you download (Tawaklna) Application?		
1. Yes	233	100 %
2.No	0	0

*Multiple answers allowed

Students' level of stress was measured using PSS. The average scale of PSS in students was 31.69 ± 6.91 , which means the stress was moderate. The results indicated that students aged 18 to 22 had higher stress levels than those older at 32.94. The females had higher stress levels; however, this could be because female participants were higher than the males, which is 32.92. The first-year and second-year students had higher stress levels than those studying third and fourth-year levels with PSS scores of 32.67, 15.29, 15.29. It was determined that gender, age, and students' level had an impact on their feelings towards the pandemic and stress levels. Variables showed that students' stress levels were raised by watching the news and worrying about being infected.

The Stress Scale was used to measure the stress levels of nursing students during the pandemic in the last month, as presented in Table 3.

Table 3
Stress Scale score and demographic variables

Variables		Perceived stress scale	Test and significance
Age	18 to 22	32.94	t= 1.583
	23 and above	29.71	P= .000*
Gender	Female	32.92	t= 3.793
	Male	29.57	p= .000*
Study level	2 nd	32.67	KW.3.665
	3 rd	15.29	
	4 th	15.29	P=.301
	5 th	15.26	
	6 th	15.26	
	7 th	15.45	
	8 th	15.45	
Perceived stress scale score total = 31.69			

KW, Kruskal-Wallis

Discussion

The findings of this study showed that the students felt stressed during the pandemic. The students expressed their worries because the pandemic precautions were new for them. The stress level of the students in this study was moderate at 31.69 ± 6.91 , but the stress levels were higher in the beginners and younger students. This is similar to Turan et al. 2019 [17] study, where anxiety was more significant in the young population. The finding of Turan et al. 2019 [17] is consistent with the study by Huanga et al. 2020 [18], where the younger population had more anxiety and worry than others who were older. In this study, nursing students also had issues with their safety and contracting the infection, which could be due to lack of knowledge of the pandemic. AL Sharif 2020 [19] conducted a study in a major metropolitan hospital in Saudi Arabia to measure the anxiety of the pandemic outbreak. The results showed that having adequate knowledge of COVID lowered the level of stress among the nursing population. The sudden onset of the pandemic and the unpreparedness of students created stress from such a tragedy. Lack of knowledge and adaptation methods could raise stress levels among nursing students. In a study by Chan et al. 2009 [20], it was found that baccalaureate nursing students dealt pretty well with new clinical experiences and their accompanying stress because they had adequate information on what to expect. They also had better strategies for dealing with stress in critical situations.

In this current study, watching television and COVID 19 news also contributed to raising the stress levels among nursing students by 38.19%. The new and unexpected development of the pandemic and related provisions in the world created and contributed to high-stress levels. In this study, females had more fear and stress than males, maybe because females are more emotional. This is a significant factor that shows what is already known of gender gap for depression and anxiety [21]. A systematic review compared six studies of health care workers' levels of stress and fear during COVID 19 pandemic, and it showed that females experienced stress more than males. The results showed a prevalence of 20.9% for males and 29.1% for females [22].

However, in this study, female participants were more than males, which could have created a bias in comparisons. The students in this study feared the infection transmission as 25.32% of them knew someone who had the COVID-19. However, this is a low percentage in comparison with those who didn't know family or friends that contracted the virus. This could mean students and their families were following the safety precautions which kept them safe. In addition, listening to pandemic news has contributed to rising stress levels among students' $P < .05$. Listening to pandemic news can be distressing, which can create stressful ideas and thoughts^[23]. Students have high levels of boredom; however, they felt safe quarantined in their homes. The cancellation of schools and their activities generated less involvement of students with their colleagues and fewer school activities, which boosted the levels of boredom^[24]. The students felt boredom which is a negative effect associated with pandemic quarantine. However, they felt it kept them safe from contracting the infection.

Limitations

Students' views in this research do not represent all nursing students. Only one dependent variable was used in this study. Females respondents were more than males, which could have created a bias in some comparisons between the two groups.

Conclusions

The findings of this study indicated that nursing students had moderate stress levels. The sudden onset of the pandemic created psychological challenges for the students and raised questions about their preparedness for the pandemic. This study confirmed the need for nursing students to learn a variety of stress adaption mechanisms. Incorporating new futuristic teaching and learning methods for adapting to a crisis is needed. In addition, there is a need to identify the vulnerable groups in the community and raise their awareness of mental challenges accompanied by a similar crisis.

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Authors' contribution

The first author collected data, and the second author analysed data and prepared the manuscript. The third author edited and organised the manuscript.

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