

Knowledge, Attitude, and Emotional Problems Regarding COVID-19 among Undergraduate Nursing Students

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Abstract

Background: Undergraduate nursing students considered from the most vulnerable group who are at risk for SARS-CoV-2 infection. To protect undergraduate nursing students' healthcare authorities should keep them away from stress and anxiety and improve their knowledge, attitude, and practice towards COVID-19. **The study aimed to** assess knowledge, attitude, and emotional problems regarding COVID-19 among undergraduate nursing students. **Methods: Design:** A descriptive, web-based-cross-sectional study was used. A convenient sample of all 280 undergraduate nursing students in the Faculty of Nursing Sohag University was included in the study from 20 June to 2 July 2020. **Tools:** A self-administered related questionnaire was designed using Google forms regarding the COVID-19 related KA, the link of the survey was sent to the respondents via Whatsapp groups and depression, anxiety, and Stress Scale (DASS). **Results:** The majority of the undergraduate nursing students were knowledgeable about COVID-19 which indicating a high level of knowledge and indicating optimistic attitudes. As regard emotional problems, the result presents that 70 % of the undergraduate nursing students suffered from a moderate level of stress, while only 11 % were normal. Regarding anxiety level, detected that 60 % of the undergraduate nursing students suffered from moderate anxiety, while 18 % of them were normal. Related to depression level, 35 % of undergraduate nursing students suffered from a moderate level of depression. **Conclusion:** more than two-thirds of undergraduates nursing students suffered from a moderate level of stress, less than two-thirds of them suffered from moderate anxiety, while around one-tenth of them were normal, and more than one third of them suffered from a moderate level of depression. **Recommendations:** the study suggested the need for additional research on predictive factors affecting people's stress in the era of COVID-19 outbreak and carried out intervention activities through various mediums to help undergraduates nursing students become more knowledgeable during the COVID-19 epidemic.

Keywords: Knowledge, attitude, emotional problems, COVID -19, students.

Introduction:

The emerging disease was named coronavirus disease 2019 (COVID-19). In the first, the 2019-nCov has spread within China and then widely spread to other countries. On March 11, 2020, the WHO has declared the outbreak of Corvid-19 as a worldwide pandemic. As of 25 May 2020, the virus infected over 5,304,772 and caused 342,029 deaths in about 216 countries around the world (WHO, 2020). Extraordinary efforts have been implemented to control the rapid spread of COVID-19 in Egypt. Its clinical presentation ranges from being an asymptomatic infection and developing into severe disease and is associated with a high mortality rate. In Egypt, there are 11,228 positive individuals and 592 deaths (Ministry of Health and Population Egypt, 2020).

According to Centers for Disease Control and Prevention (CDC) recommendations, SARS-CoV-2 transmitted from a person to another mainly through close contact (within almost 6 feet) with an infected person via respiratory droplets during coughing or sneezing or when touching a surface or an object that is contaminated with the virus and touching one's eyes, nose or mouth. In most infected patients, the SARS-CoV-2 resulting in none at all or a mild to moderate symptoms that are alleviated within a few weeks. However, it can cause severe respiratory syndrome or death, particularly in older people or patients with chronic health diseases (CDC, 2020).

Undergraduate nursing students as a part of healthcare providers as the front line in coping with the COVID-19

pandemic are more susceptible to infection. The rapid prevalence of the novel coronavirus (COVID-19) pandemic over the world was associated with a considerable level of scare, anxiety and panic among the public, in particular, HCPs as the most vulnerable group at risk for SARS-CoV-2 infection. Based on the WHO, the shortage of appropriate protective measures endangers HCPs over the world and represents a major cause of their concern (WHO, 2020).

Accordingly, availability and correct use of personal protective equipment (PPE) are essential to protect undergraduate nursing students during their coping with the COVID-19 pandemic. However, what is most important is their adherence to applying these PPE, which largely depends on their knowledge and attitudes towards COVID-19. To ensure the protection of the Undergraduate nursing students and safeguard them from COVID-19 outbreak, there is an urgent need to understand the Undergraduate nursing students' awareness of COVID-19 (Pal et al., 2020).

With the absence of any definite therapy against COVID-19, it becomes imperative that people must stringently abide by advisories of social distancing and hand washing (Tang et al., 2020). WHO, and the Centers for Disease Control and Prevention, recommend specific measures to reduce the risk of infection (WHO, 2020b; CDC, 2020). These measures include staying at home as quarantine to encourage people's social distance to stop COVID-19 from spreading. Social connection is a much more significant challenge than possible

(Frank et al., 2020). When isolating from others, undergraduate nursing students tend to focus more on their thoughts, stresses, and challenges for all ages.

The outbreak of coronavirus disease, 2019 (COVID- 19), is a frightening time, the people amid a worldwide become pandemic of infectious disease, with cities and even entire countries shutting down. Widespread outbreaks are associated with psychological distress and symptoms of mental illness. It is the hardest thing to handle, fear for people about a disease can be overwhelming and cause intense emotional toll. They may feel overwhelmed by hopelessness, despair, stress, and anxiety (Bao et al., 2020). Persons who may not have experienced depression and anxiety before quarantine may feel overwhelmed by the lack of contact and physical touch. Physical touch plays a significant role in the development, physical, and mental wellbeing of all ages, but getting it during quarantine is not always possible. This lack of connection can cause anxiety and heightened feelings of depression and stress (Nelson et al., 2020).

Undergraduate nursing students play an essential role in patient care, which includes contributing to the decision-making process within the multidisciplinary health care team, giving responsibility for nursing care, prevention, health educator, and assessment of patient care. They represented a special group that was at the ages to acquire autonomy and independence of life but with limited experiences. Therefore, their perceptions and behaviors were posited to be greatly

affected by the pandemic, which needed to be explored. In this study, we conducted a cross-sectional study among undergraduates in Egypt to assess knowledge, attitude, and emotional problems regarding COVID-19 among undergraduate nursing students (Chirwa, 2020).

Significance of the study:

Knowledge and attitude towards COVID-19 are affected by people's adherence to these control measures, following the "KA66 theory". In public mental health terms, the primary psychological impact is elevating the rates of stress or anxiety. The emerging pandemic coronavirus (COVID-19) is a specific and unusual phenomenon. It can have physical but also psychological effects on people. In this context, most people experience reactions to stress, anxiety, and depression (Campbell, 2020). High levels of stress, anxiety, and depression are expected in the aftermath of stay-at-home, as isolation can contribute to or intensify psychological problems. There are, however, no academic studies exploring the psychological effect of COVID-19 on the general population in Egypt. Therefore, the current study represents the first psychological health survey impact conducted in the general population at a city in Egypt within the first month of the COVID-19 outbreak. This study aims to assess knowledge, attitude and emotional problems regarding COVID-19 among undergraduate nursing students.

Aim of the study:

The study aimed to assess knowledge, attitude, and emotional

problems regarding COVID-19 among undergraduate nursing students through:

1. Assessing the total knowledge level regarding COVID-19 among undergraduate nursing students.
2. Assessing the total attitude toward regarding COVID-19 among undergraduate nursing students.
3. Assessing the stress level regarding COVID-19 among undergraduate nursing students.
4. Assessing the anxiety level regarding COVID-19 among undergraduate nursing students.
5. Assessing the depression level regarding COVID-19 among undergraduate nursing students.
6. Investigate relationship between knowledge, attitude and DASS regarding COVID-19 among undergraduate nursing students.

Research question

1. What is the total knowledge level regarding COVID-19 among undergraduate nursing students?
2. What is the total attitude toward regarding COVID-19 among undergraduate nursing students?
3. What is the stress level regarding COVID-19 among undergraduate nursing students?
4. What is the anxiety level regarding COVID-19 among undergraduate nursing students?
5. What is the depression level regarding COVID-19 among undergraduate nursing students?

6. What is the relationship between knowledge, attitude and DASS regarding COVID-19 among undergraduate nursing students?

Subjects and methods:

Research Design:

A cross-sectional research design was used to conduct the present study. Cross-sectional studies are used to describe the prevailing characteristics that are happening in a population at a certain point in time (**Levin, 2006**).

Settings:

This study was conducted in the Faculty of Nursing at Sohag University, in Egypt.

Subjects:

A purposive sample was used in this study where all the undergraduate nursing students (fourth year) in the Faculty of Nursing, Sohag University were asked to participate (80 students) through Google form spreadsheet, who meet the following inclusion and exclusion the age from than 22 and less than 24 years old, both sexes (male and female) and agree to participate in this study.

Tools for data collection:

After literature search and based on the most recent available information from the World Health Organization, the Center for Disease Control and Prevention (USA) and the Egypt Ministry of Health by **Zhong et al., (2020)** were modified by the researchers as follows:

Tool (1):- 1-A self-administered questionnaire was developed to collect data pertinent to this study which designed by the researchers. It consisted of three parts:

Part I: It included two questions related to the demographic characteristics of the students as age, gender and residence.

Part (2): consisted of (12) items about knowledge regarding COVID -19, (definition of COVID -19, risk factors of COVID -19, sign & symptoms of COVID -19, treatment, methods of transmission, 19, and preventive measures of COVID - 19.

Part (3): consisted of (6) items about the attitude toward COVID -19.

Scoring system:

The scoring system for the present study was designed as follows:

- Knowledge about COVID -19. It contains 12 questions; these questions were answered on a true/false basis option. A correct answer was assigned 1 point, and an incorrect answer was assigned 0 points. The total knowledge score ranged from zero to 12, with high scores indicating better knowledge of COVID-19.

- Attitude toward COVID -19. It contains 6 questions; scores were calculated based on the respondents' answers to each attitudinal statement. Total scores ranged from six to 30, with high scores indicating positive attitudes.

Tool (2):- Depression, Anxiety, and Stress Scale (DASS)

The Depression, Anxiety, and Stress Scale adopted from Lovibond and Lovibond (1995) to assess emotional problems. It contains 21 Items. Depression, Anxiety, and Stress Scale (DASS-21) is a set of three self-report scales designed to measure the symptoms of the emotional state of depression, anxiety, and stress. Divided into three subscales, each of the three DASS-21 subscales contains seven items.

Scoring system

The responses were categorized with the cutoffs adopted by Antony et al. (1998) to categorize stress, anxiety, and depression. Thus, the level of symptoms (extremely severe, severe, moderate, mild, and no symptoms) as follows.

Levels of DASS symptoms	Depression	Anxiety	Stress
Normal (no symptoms)	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33

Validity and reliability Face and content validity of the tools for clarity, comprehensiveness, appropriateness, and relevance by a board of five experts in medical and surgical nursing, psychiatric and community health nursing with more than ten years of experience in the field were assessed. The board ascertained the face and content validity of the tools. Items were evaluated for internal reliability for knowledge about covid-19, using Cronbach's α . Cronbach's alpha coefficient was 0.72, indicating internal reliability (Fetters et al., 2018). The Likert scales were assessed for internal reliability for attitude toward COVID - 19, using Cronbach's alpha coefficient was 0.81, indicating internal reliability.

Pilot study:

A pilot study was carried out on 28 student (10% of the sample) excluded from the total sample. It was done to notice any ambiguity in the tools, to ensure transparency of the items, as well as, to determine the time devoted to data collection. Clarification and estimation of the time needed for filling the study tools, and testing the feasibility of the research process needed modifications were carried out based on the results of the pilot study to develop the final form of the tools. Pilot study sample were excluded.

Ethical consideration:

Each student was informed about the aim and benefits of the study in the first part before starting the questionnaire where every student could not be starting the questionnaire without consent to participate in data collection in the

current study. Each student informed them that participation in the study was voluntary and that they had the right to withdraw from the study at any time before completing the questionnaire with no consequences, without giving any reason and that their responses would be held confidentially.

Data collection:

Before starting this study, administrative approval was taken from authorities in the setting. Permission was obtained from the dean of faculty of nursing, Sohag University. The researchers used the online Google form spreadsheet to create the research. The researchers shared a link to the students to collect data that included an online questionnaire. The online questionnaire was designed in English and translated into Arabic. The link was presented in Whats App groups. On the first page of the online questionnaire, students were informed about the background and objectives of the study. All the students' responses were gathered in an online spreadsheet to assess knowledge, attitude, and emotional problems such as depression, anxiety, and stress symptoms levels regarding COVID-19 among undergraduate nursing students. The average time spent for secondary school students completing the online questionnaire was approximately 6-8 minutes from 20 June to 2 July 2020.

Statistical analysis:

The data obtained were reviewed, prepared for computer entry, coded, analyzed, and tabulated. Data entry and analysis were performed using the SPSS 17.0 statistical software package. Data are expressed as the mean, SD, number,

and percentage. The Manwhitiny test was used to determine significance for numeric variables and using Person's correlation for a numeric variable in the same group, $P > 0.05$ was not significant, $P < 0.05$ was significant, $P < 0.01$ was moderately significant and $P < 0.001$ was highly significant.

Results:

Out of 280 students who answered the questionnaires, 54 % were female and 46 % were male. The age of the participants ranged from 22 to 24 years old. 70% were from 22 < 23 years of age (Table 1).

Figure 1 illustrates that 64% of students were from urban areas and 36% were from rural areas.

Regarding students' sources of information about corvid-19, the results indicated that the main source of information about COVID-19 was social media (73%), followed by television (49%), which Facebook is the most frequently cited source of knowledge among social media, and followed by Whats App (Figure 2).

Table 2 shows that the most (89.60%) undergraduate nursing students had an adequate knowledge level regarding COVID-19 pandemic. The highest percentages were related to knowledge about the four statements that discussed the time between catching the novel coronavirus and beginning symptoms is 14 days, preventive measures such as avoid touching their eyes, nose, and mouth with unwashed hands, the importance of wearing masks, social distance, hand washing, avoiding touch eye, nose and ear. Total knowledge

score was among undergraduate nursing students 9.1 ± 1.5 .

Table (3) shows the findings indicating that the majority (85.00%) of the respondents had a positive attitude, while 15.00% of them had a negative attitude toward COVID-19 pandemic. Total attitude score was among undergraduate nursing students 21.0 ± 2.19 .

Figure 3 presents that 70 % of the undergraduate nursing students suffered from a moderate level of stress, while only 11 % were normal. Regarding anxiety level, detected that 60 % of the undergraduate nursing students suffered from moderate anxiety, while 18 % of them were normal. Related to depression level, 35 % of undergraduate nursing students suffered from a moderate level of depression, while 18 % of them were normal.

Table 4 reveals that the age, gender and residence was positively correlated with undergraduate nursing students' knowledge and attitude at $p\text{-value} < 0.05$.

Table 5 showed that a significant relation was noticed between sociodemographic characteristics of undergraduate nursing students and DASS at $p < 0.05$.

Table 6 revealed that the sociodemographic data was a significant negative predictor effect on DASS at $p\text{-value} = 0.002$, and knowledge was a significant negative predictor effect on DASS at $p\text{-value} = 0.008$ while attitude of students was significantly positive predictor effect on DASS level at $p\text{-value} = 0.001$.

Table (1): Percentage distribution of undergraduate nursing students according to their sociodemographic characteristics (N=280)

sociodemographic characteristics	N=280	%
1-Gender	151	54.0
- Female	129	46.0
- Male		
2-Age(years)		
• 22 < 23	196	70.00
• 23 ≥ 24	84	30.00

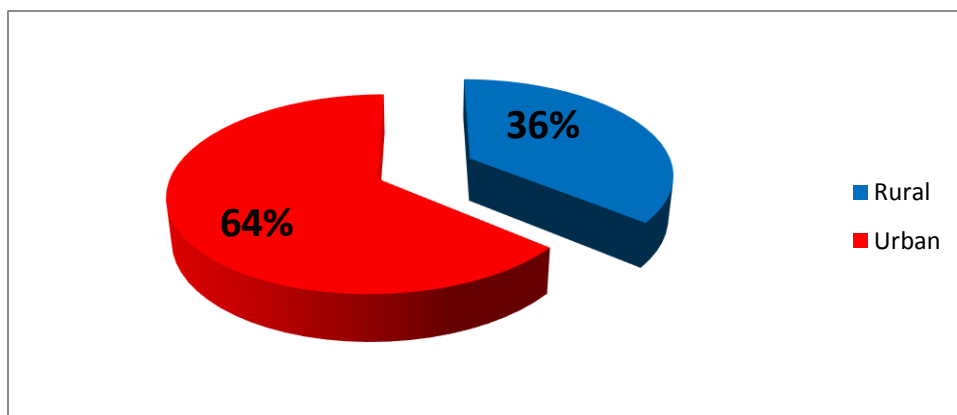


Figure (1): Percentage distribution of undergraduate nursing students according to their residence (N=280).

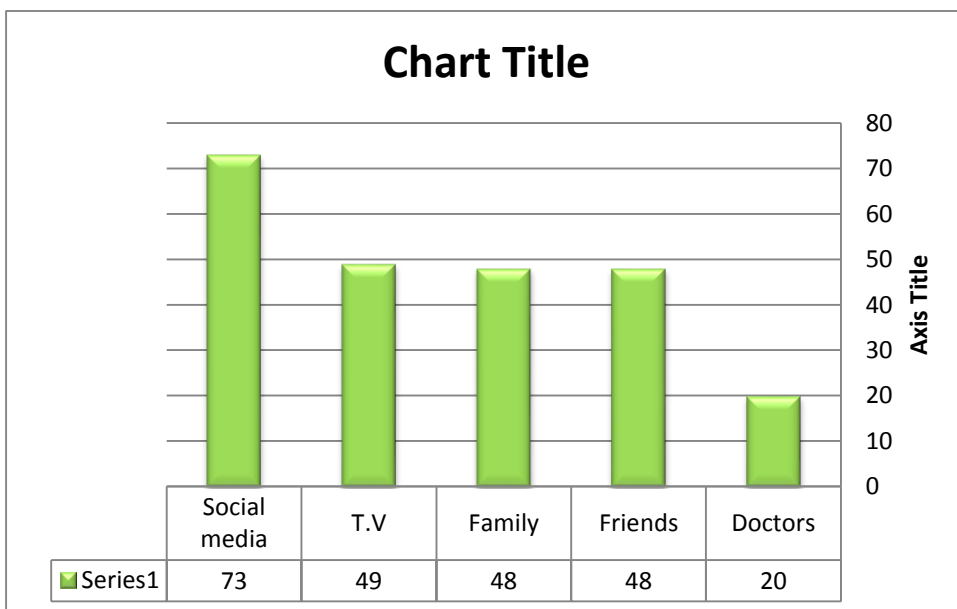


Figure (2): Percentage distribution of undergraduate nursing students according to their source of information about COVID-19 (N=280).

Table (2): Distribution of undergraduate nursing students' knowledge regarding COVID-19 (N=280)

Knowledge topics	No.	%
K1. COVID-19 is an infectious disease caused by a novel coronavirus in Wuhan, China		
- Yes	225	80.4
- No	55	19.6
K2. The time between catching the novel coronavirus and beginning symptoms is 14 days		
- Yes	246	88.0
- No	34	12.0
K3. Social distance means stay more than 1 m (3 feet) away from a person who is sick		
- Yes	280	100
- No	0	0.0
K4. Holding breath for more than 10 s is a test for COVID-19		
- Yes	224	80.0
- No	56	20.0
K5. The virus incubation period is from 1–3 days		
- Yes	280	100
- No	0	0.0
K6. COVID-19 is transmitted from a viral-infected person to a non-infected another person by coughing, touching and shaking hands		
- Yes	280	100
- No	0	0
K7. The disease symptoms are similar to seasonal influenza symptoms		
- Yes	280	100
- No	0	0.0
K8. The coronavirus spreads when you breathe in the respiratory droplets that are coughed out or exhaled by an infected person.		
- Yes	196	70.0
- No	84	30.0
K9. People should avoid touching their eyes, nose, and mouth with unwashed hands and after touching objects and surfaces where coronavirus is present.		
- Yes	238	85.0
- No	42	15.0
K10. Young has good immunity and does not need to take precautions to protect against coronavirus.		
- Yes	213	76.0
- No	67	24.0
K11. At present, there is no vaccine or effective treatment for coronavirus disease		
- Yes	112	40.0
- No	168	60.0
K29.Reg K12 regular hand wash or cleaning them with an alcohol-based hand rub and wearing a mask wearing and healthy food and drinking water protect against COVID-19	80.0 20.0	
	266	95.0
	14	5.0
- Knowledge score	9.1± 1.5	9.1± 1.5

Table (3): Distribution of undergraduate nursing students' attitudes toward COVID-19 (N=280)

Attitude topics	Attitude	
	No.	%
A1. feel anxious when you think of coronavirus disease / COVID-19		
- Yes	222	79.3
- No	58	20.7
A2. . Do you hope the outbreak to stop quickly so you can return to collage soon?		
- Yes	280	100.0
- No	0	0.0
A3. regular hand washing, maintaining social distancing and use of masks can protect		
- Yes	280	100.0
- No	0	0.0
A4. Lockdown will help control the coronavirus disease / COVID-19 in Egypt.		
- Yes	280	100.0
- No	0	0.0
A5. To protect me from COVID-19 exposure, I should stay home if I am sick		
- Yes	280	100.0
- No	0	0.0
A6. Egypt's strict measures can help win the battle against COVID-19.		
- Yes	199	71.0
- No	81	29.0
- Attitude score 21.0 ± 2.19		

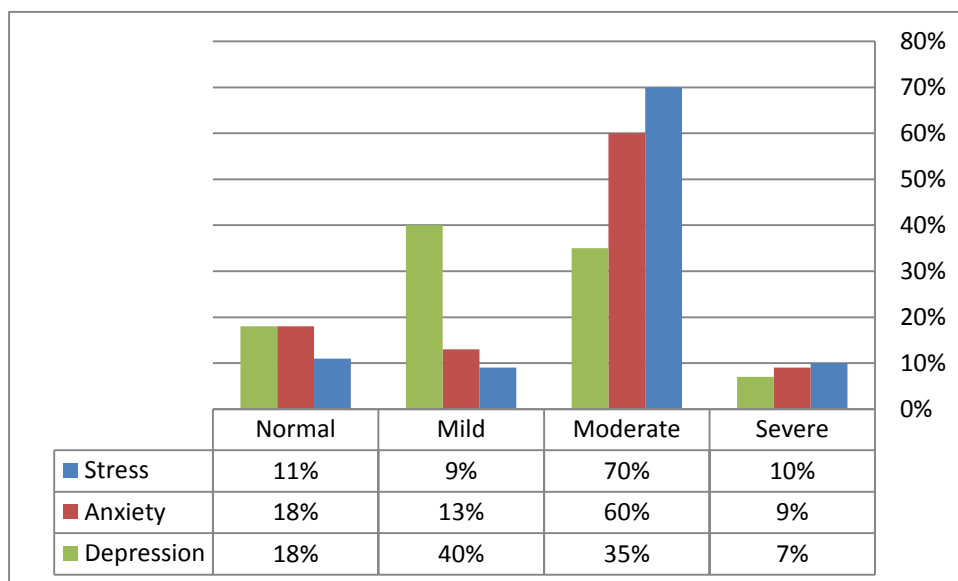
**Figure (3):** Percentage distribution of undergraduate nursing students regarding total stress, anxiety and depression level (N=280)

Table (4): Relation between knowledge, attitude and sociodemographic characteristics of undergraduate nursing students (N=280)

sociodemographic characteristics	knowledge	Attitude	T-test	P-value
	N=280	%		
1-Gender				
- Female	151	54.0	3.525	0.001
- Male	129	46.0		
2-Age(years)				
• 22 < 23	196	70.00	6.201	0.002
• 23 ≥ 24	84	30.00		
Residence:			4.534	0.001
- Rural	101	36.00		
- Urban	179	64.00		

Table (5): Relation between sociodemographic characteristics of undergraduate nursing students and DASS (N=280)

sociodemographic characteristics	DASS		T-test	P-value
	N=280	%		
1-Gender				
- Female	151	54.0	41.21	<0.001*
- Male	129	46.0		
2-Age(years)				
• 22 < 23	196	70.00	16.201	<0.001*
• 23 ≥ 24	84	30.00		
3-Residence:			7.53	0.008*
- Rural	101	36.00		
- Urban	179	64.00		

(*) Statistically significant at $p < 0.05$

Table (6): Best Fitting Multiple Linear Regression Model for sociodemographic characteristics undergraduate nursing students' knowledge, attitude, scores and DASS regarding COVID -19 (N=280).

Items	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value
	B	Std. Error			
Constant	1.350	.158		8.571	<0.001
sociodemographic characteristics	-.084	.031	-.321	6.201	0.002
Knowledge	-.094	.034	-.325	-2.774	0.008
Attitude	.436	.097	.524	4.475	<0.001

R-square = 0.33

Model ANOVA: F=13.057, p<0.001

Discussion:

COVID-19 broke out became a worldwide threat in just a few months. In addition to threatening people's physical health, COVID-19 brought great stress to the public even students and affected students' mental health and causes strong stress responses for them, despite, the students have appropriate and sufficient Knowledge, attitude, and practices. Here, we present the results of this study to assess knowledge, attitude, and emotional problems regarding COVID-19 among undergraduate nursing students.

The present study revealed that age of the undergraduate nursing students ranged from 22 to 24, more than one half of the participants were female and less than half were male. These results were supported by the study conducted by (Dafni and Maddalena, 2020) who mentioned in his study in Italy that females were more than half of the participants

The present study indicated that the main source of information about

COVID-19 among undergraduate nursing students was social media. These results followed the results of (Podder et al., 2019) in her cross-sectional study on awareness and knowledge of COVID-19 among senior pharmacy students. These results are also strongly supported and similar to findings in which the main source of Middle East respiratory syndrome (MERS) information was reported to be the internet and social media (Babiker et al., 2014). Similarly, a previous study mentioned that the internet was the main source of information about COVID- 19 (Dafni and Maddalena, 2020).

The present study revealed that undergraduate nursing students had an adequate knowledge level regarding COVID-19 pandemic. These results was in agreement with results of study conducted by (Yaling et al., 2020) who found that students showed a good score of knowledge which could be explained by their trainings in clinical nursing and public health. Their obligations and responsibilities to fight against this pandemic as future nursing professionals are thought to drive them

to present more positive attitudes and proactive practices during this public health emergency (**Heung et al., 2005**).

This study showed that the majority (85.00%) of the respondents had good knowledge. These results are in line with a study that revealed good knowledge and positive attitude among healthcare workers towards MERS (**Khan et al., 2014**) and also consistent with another study by Alqahtani (**Alqahtani, 2017**) among 418 health college students in

The present study revealed that almost of the undergraduate nursing students suffered from a moderate level of stress, a moderate level of depression and anxiety. This result was in the same line with study conducted by (**Haung and Zhao, 2020**) in a study conducted at the time of the COVID-19 outbreak in China found a moderate level of anxiety among nursing students compared to others. In another study in Saudi Arabia, a moderate level of anxiety about infectious disease was shown in nursing students (**Al-Rabiaah et al., 2020**).

The present study indicates that a significant relation was noticed between sociodemographic characteristics of undergraduate nursing students as age, sex and residence and DASS at $p < 0.05$. This is may be due their educational specialty that are considered from the health team and had good knowledge which reflect positive attitude

The present study indicates that sociodemographic data was a significant negative predictor effect on DASS at p -value=0.002, and knowledge was a significant negative predictor effect on DASS at p -value=0.008 while attitude of

students was significantly positive predictor effect on DASS level at p -value=0.001 and there was relationship between demographic data, knowledge, attitude, and DASS toward COVID-19 pandemic among undergraduate nursing students. This can be explained by the fact that although of the readiness of students to gain more information and practice, but they are afraid of getting infection during hospital work despite these preventive measures, it may be the cause of stress and anxiety among them.

Conclusion:

In light of the study findings, it was concluded that Most Egyptian undergraduate nursing students understood the basic information, possessed positive attitude towards the outbreak of COVID-19. More of undergraduate nursing students suffered from stress, anxiety, and depression level.

Recommendations:

Based on the findings of the current study, the following recommendations are proposed:

1. Public health trainings for undergraduate nursing students to improve their knowledge and preventative measures against COVID-19 epidemic.
2. Encourage cooperation between educational institutions, medical care providers, and health personnel to educate undergraduate students understood about COVID-19 that will help in increasing awareness, decreasing the spread of disease, prevention, and control.

3. Carrying out psychological support and intervention activities through various mediums to help undergraduate students understood become more resilient during the COVID-19 epidemic.

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