

Academic Nursing Students Awareness about Preventive Measures regarding COVID-19

1 Reham El Ashery Ashery Asker, 2 Hoda Attia Abdel Naby Raslan, 3 Mona Emad Eldien Hussien Sabbour, 4 Eman Mohammed Ahmed Mohammed

(1) Lecturer in Medical-Surgical Nursing Department, Faculty of Nursing, Fayoum University

(2) Lecturer in Medical-Surgical Nursing Department, Faculty of Nursing, Beni-Suef University

(3) Lecturer in Community Health Nursing Department, Mansora University, Faculty of Nursing

(4) Lecturer of Medical - Surgical Nursing Department, Faculty of Nursing, Beni-Suef University

Abstract

Background: Academic nursing students considered from the most groups who are at risk for COVID-19 infection. To protect them should keep them away from infection and improve their knowledge and practice about preventive measures towards COVID-19 by healthcare authorities. **The study aimed to** compare the preventive measures among academic nursing students' awareness regarding COVID-19. **Subjects and Methods: Design:** A comparative research design was used for the study. **Setting:** The study was conducted at the Faculty of Nursing, Beni-Suef and El-Fayoum Universities. **Sample:** A convenient sample of 660 including all the third academic nursing students' year in the previous setting. **Tools:** A self-administered questionnaire which consisted of three parts; (1) demographic characteristics of academic nursing students, (2) knowledge and (3) preventive measures regarding the COVID-19. **Results:** The major source of information among academic nursing students for COVID-19 was social media (70%) in Fayoum group and (74 %) in Beni-Suef group. Most of academic nursing students (95%, 93%) in Beni-Suef group and Fayoum group had satisfactory level of knowledge about COVID- 19. A statistical significant differences were observed in academic nursing students about the preventive measures regarding COVID -19 in almost tested areas ($P<0.001$). **Conclusion:** It was found that academic nursing students in both groups had satisfactory knowledge level and good practice of preventive measures regarding COVID-19. **Recommendations:** Establishing educational program through various media and faculties to help academic nursing students become more knowledgeable during the COVID-19 epidemic and its preventive measures.

Keywords: Academic nursing students, awareness, preventive measures COVID-19

Introduction:

COVID-19 among nursing students may be related to different concerns as fear of being infected and becoming seriously ill and/or fear of death. 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). Inadequate knowledge regarding the incubation period of the virus, route of transmission, treatment, and safety measures may add to their worries. Other causes of fear are the shortage of medical staff and resources, the lack of masks and protection supplies; as well as, the spread of negative news in mass

media, and social network. In that sense, excessive fear associated with COVID 19 pandemic is common. This may have harmful effects on the students' health (Ornell et al., 2020).

Signs and symptoms include respiratory symptoms as cough and shortness of breath, and fever. In more severe cases, the infection can cause severe acute respiratory distress syndrome (ARDS), pneumonia and sometimes death. Universal counsel to forestall the spread of COVID-19 involves frequency hand washing using liquor based hand rub or cleanser and water, covering the nose and mouth with a flexed elbow or disposable tissue when coughing and sneezing, and avoiding close contact with any person has a fever and cough (WHO, 2020).

Preventive measures were subsequently taken to monitor those who came into contact with the person where the others tested negative. The COVID-19 virus spreads through breathing and contact. A healthy human is at risk of exposure to potentially infectious respiratory droplets. The COVID-19 virus is mostly transmitted through droplets that are produced when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air and quickly fall on floors or surfaces (WHO 2020).

Droplet infection may be a result of the transmission of a water-like particle (usually 5-10 µm in diameter) containing the virus. Direct person-to-person transmission occurs through air droplets among peoples who are in close contact within 1 meter. Moreover, droplet infection has also been documented to indirectly spread through surfaces of fomites (Ong, et al. 2020). COVID-19 sickness is an infection disease begun by an as of late discovered coronavirus. Most people who fall sick with COVID-19 experience mild to moderate symptoms and recover without special treatment (WHO, 2020).

The most important prevention measure to control the spread of COVID-19 infection is frequent hand wash with soap and water or with an alcohol-based hand sanitizer. If hands are not visibly dirty, they should preferably be washed with alcohol-based sanitizer for 20 to 30 seconds (Siddharta, et al. 2017).

Hand wash can conserve a person from contracting this highly infectious virus and subsequently spreading it to others. Recurrent and correct hand washing is one of the most important measures that can be used to prevent infection with the COVID-19 virus. Clinicians should work to upgrade more frequent and regular hand washing by improving facilities and using proven behavior-change techniques (WHO, 2020).

Use of a surgical mask for COVID-19 patients, their caregivers, and health care workers (HCW) is well accepted. Face mask application by the healthy population in the community to decrease the risk of spread of respiratory droplets remains controversial. So the impact of public-wide mask application to control coronavirus disease should be assessed

(COVID-19) (Cheng, et al. 2020). It is controversial but progressively recommended for the public to wear a face mask to avoid the spread of the COVID-19 pandemic; however the potential of this intervention is not well-known (Eikenberry, et al. 2020). The purpose of the general public mask wearing is to decrease community transmission from infected individuals, who can be presymptomatic or asymptomatic but still spread the virus (Greenhalgh, et al. 2020).

Personal protective equipment (PPE) must be used whenever there is potentially close contact with a suspect case, particularly when the potentially infected person does not wear a surgical mask; thus doing so could reduce the spread of virus in the environment. By implementing the specific prevention and protection measures recommended in the workplace, it will be possible to help overcome COVID-19 (Cirrincione, et al. 2020).

According to Centers for Disease Control and Prevention (CDC) recommendations, COVID-19 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 (Centers for Disease Control and Prevention, 2020).

Accordingly, availability and correct use of personal protective equipment (PPE) are essential to protect academic 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 about COVID-19. To ensure the protection of the academic nursing students and safeguard them from COVID-19 outbreak, there is an urgent need to understand the academic nursing students' awareness of COVID-19 (Pal & Bhadada, 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, 2020; 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**).

Academic 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 (**Chirwa, 2020**).

Significance of the study:

Academic nursing students as a part of healthcare providers, they are in the front line in coping with the COVID-19 pandemic are more susceptible to infection, as they are most vulnerable group at risk for COVID-19 infection (**WHO, 2020**). They are needed to be knowledgeable about preventive measures to protect themselves from infection. Hence, this study aimed to compare the preventive measures on academic nursing students' awareness regarding COVID-19.

Aim of the study:

The study aimed to compare the preventive measures among academic nursing students' awareness regarding COVID-19:

Research question

1. What is the total knowledge level regarding COVID-19 among academic nursing students in both studied groups?

2. What is the preventive measures regarding COVID-19 among academic nursing students in both studied groups?
3. What is the relationship between demographic characteristics of academic nursing students in both studied groups and preventive measures regarding COVID-19?

Subjects and methods:

Research design:-

A comparative research design was used for the current study.

Settings:

The study was conducted at the Faculty of Nursing, Beni-Suef and Fayoum Universities

Subjects:

A convenient sample was used in this study which included 660 all the academic nursing students (third year) in the Faculty of Nursing, Beni-Suef and El-Fayoum Universities from both gender. 344 students were from Fayoum University and 316 students from Beni-Suef University.

Tools for data collection:

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

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

Part (2): It consisted of 8 questions of knowledge regarding COVID -19, including (definition of COVID -19, incubation period, risk people for COVID -19, sign & symptoms of COVID -19, causes, methods of transmission, diagnostic test, and treatment.

Scoring system:

A score of knowledge about COVID -19 contained 10 questions; these questions were answered on a Yes / No basis option. A correct

answer was given 1 point, and an incorrect answer was given 0 points. The total knowledge score ranged from zero to 10, with high scores indicating better knowledge of COVID-19. The knowledge score was considered satisfactory if the percentage score was more than 60% and considered unsatisfactory if it was $\leq 60\%$.

Part (3): It consisted of (8) items about the preventive measures toward COVID -19 (WHO, 2020) such as hand washing, wearing masks, wearing gloves, avoid touching their eyes, nose, and mouth with unwashed hands, put a tissue when coughing or sneezing on the mouth and nose, avoid kissing and shaking hands, use disinfectant, and social distance. All of these elements were answered by always, often, sometimes, rarely, and never by asking students about how they follow and applied these preventive measures.

Scoring system:

A score of 4 was given to always answer, 3 for often answer, 2 for sometimes answer, 1 for rarely answer, and 0 never answer. These scores were summed up for each question and the total was divided by the number of the respondents, giving a mean score and standard deviation for each question. The total scores from zero to 32 for this part were summed up and represented in percentage.

Pilot study:

A pilot study was carried out on 66 students (10% of the sample). Clarification and estimation of the time needed for filling the study tools, and testing the feasibility of the research process and no modifications were carried out. The students involved in the pilot study were included in the study.

Validity and reliability:

Face and content validity of the tools for clarity, comprehensiveness, and appropriateness was tested by a board of five experts in medical and surgical nursing and community health nursing with more than ten years of experience in the field were assessed. The internal reliability for the tool was tested using Cronbach's alpha coefficient was 0.82.

Ethical consideration:

Official approval was done and obtained through an issued letter from the Dean of Faculty of Nursing, Beni-Suef and El-Fayoum Universities to conduct this study. Each student was informed about the aim and benefits of the 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. Students were informed about the background and objectives of the study. All the students' questionnaire were gathered in the same day of distribution to assess knowledge and preventive measures reported practices regarding COVID-19 among the third year undergraduate nursing students. The average time spent for students completing the questionnaire was approximately 10-15 minutes. The study conducted at the first term of the academic year 2020-2021. The researchers collected the data through from the recruited students through their academic day.

Statistical analysis:

The data analysis was conducted using SPSS version 23, and necessary descriptive analysis of minimum, maximum, mean, frequencies, percentages, and Standard Deviation (SD) and correlation analysis were carried out to measure differences in the studied groups.

Results:

Table (1): Showed that academic nursing students were mostly aged $21 < 22$ years, both in Fayoum group (97%) and the Beni-Suef group was (90 %). Less than two-third of them was females (63%) in Fayoum group and the Beni-Suef group were (59%). As regards residence, 79 % were living in urban areas in Fayoum group and (60 %) in Beni-Suef group.

Figure (1) illustrated that the major source of information among academic nursing students for COVID-19 was social media (74%) in Fayoum group and (70 %) in Beni-Suef group.

Figure (2) showed that, the most of academic nursing students (95%, 93%) in Fayoum group and Beni-Suef group had satisfactory level of knowledge about COVID-19.

Table (2): Indicated a statistical significant difference between academic nursing students' knowledge about COVID-19 in Fayoum group and Beni-Suef group ($P<0.002$).

It was observed from **tables (3)**, the most of the academic nursing students had good preventive measures reported practices' scores in both studied groups, especially in wearing mask, wearing gloves, use disinfectant materials, put a tissue when coughing or sneezing and avoid kissing and shaking hands. No a statistical significant differences were observed in academic nursing students about the preventive measures regarding COVID -19 in some tested areas ($P<0.001$).

Table (4): Revealed that the age, gender and residence was correlated with academic nursing students and preventive measures toward COVID-19 among Fayoum group and Beni-Suef group at $p\text{-value}<0.001$.

Table (1): Percentage distribution of academic nursing students according to their demographic characteristics among Beni-Suef group and Fayoum group (N=660)

Demographic characteristics	Fayoum group (n=344)		Beni-Suef group (n=316)		P-value
	No	%	No	%	
-Age(years)					
- 21 < 22	334	97	284	90	0.284
- 22 ≥ 23	10	3	32	10	N.S
-Gender					
- Female	217	63	186	59	0.842
- Male	127	37	130	41	N.S
-Residence:					
- Urban	272	79	190	60	0.948
- Rural	72	21	126	40	N.S

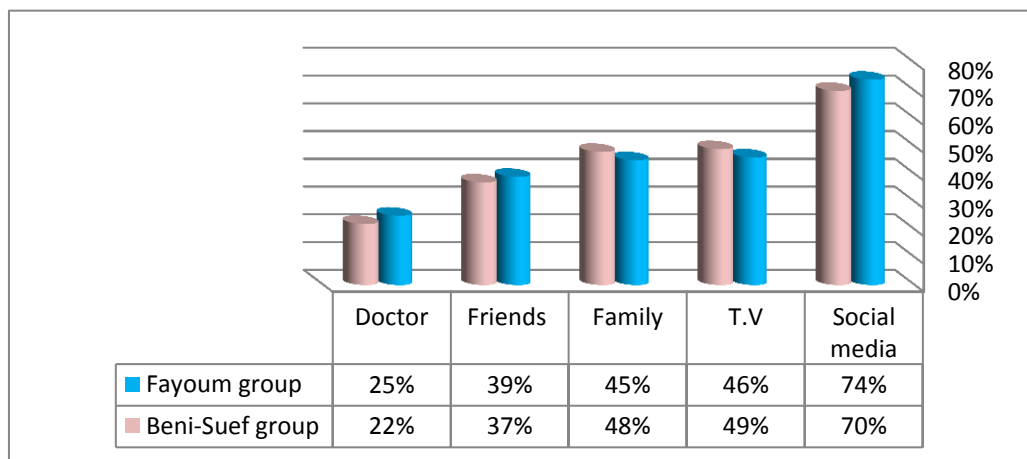


Figure (1): Percentage distribution of academic nursing students according to their source of information about COVID-19 among Beni-Suef group and Fayoum group (n=660).

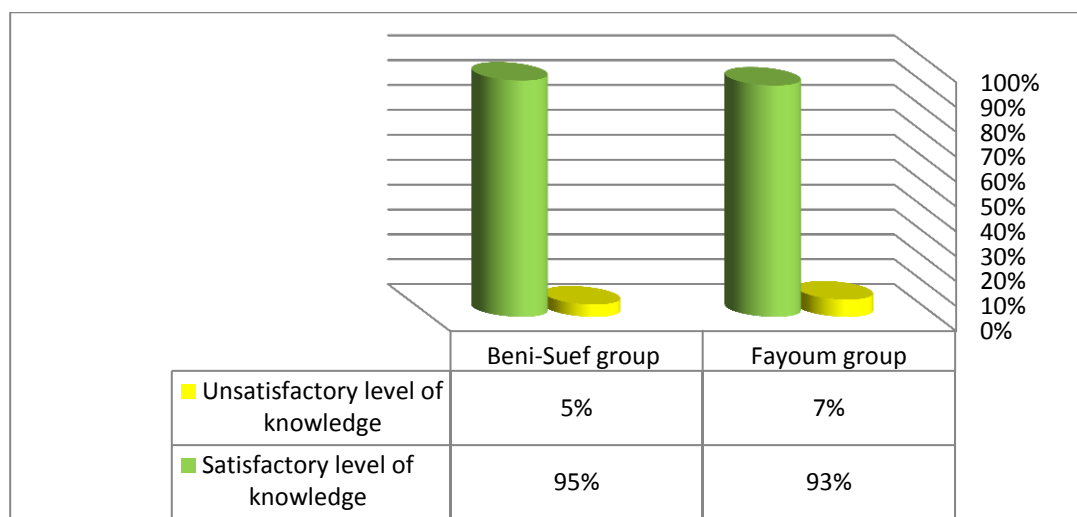


Figure (2): Percentage distribution of the total academic nursing students' knowledge level about COVID-19 among Beni-Suef group and Fayoum group (n=660)

Table (2): Percentage distribution of academic nursing students' knowledge regarding COVID-19 among Beni-Suef group and Fayoum group (n=660)

Knowledge items	Fayoum group (n=344)		Beni-Suef group (n=316)		P-value/x ²
	No	%	No	%	
Definition of COVID -19	316	92	310	98	N.S
Incubation period	299	87	281	89	N.S
Risk people for COVID -19	330	96	297	94	N.S
Sign & symptoms of COVID -19	340	99	310	98	N.S
Causes	344	100	316	100	N.S
Methods of transmission	340	99	310	98	N.S
Diagnostic test	334	97	310	98	N.S
Treatment	306	89	284	90	N.S

Table (3): Percentage distribution of academic nursing students regarding preventive measures reported practices toward COVID-19 among Beni-Suef group and Fayoum group (n=660)

Preventive measures	Fayoum group (n=344)		Beni-Suef group (n=316)		P-value
	No	%	No	%	
Hand washing	334	97	300	95	N.S
Wearing masks	299	87	303	96	<0.001*
Wearing gloves	230	67	297	94	<0.001*
Avoid kissing and shaking hands	309	90	306	97	<0.001*
Use disinfectant	268	78	284	90	<0.001*
Social distance	320	93	291	92	N.S
Avoid touching their eyes nose, and mouth with unwashed hands	320	93	300	95	N.S
Put a tissue when coughing or sneezing on the mouth and nose	327	95	297	94	N.S

Table (4): Relationship between demographic characteristics of academic nursing students and practice of preventive measures toward COVID-19 among Beni-Suef group and Fayoum group (n=660)

Preventive measures	Test	Fayoum group (n=344)			Beni - Suef group (n=316)		
		Age	Gender	Residence	Age	Gender	Residence
Hand washing	r	0.146	.003	0.067	0.086	0.256	0.409
	P	0.003	.959	0.183	0.516	0.048	0.001
Wearing masks	r	0.228	.003	0.138	0.474	0.564	0.255
	P	0.000	.947	0.006	0.000	0.000	0.000
Wearing gloves	r	0.137	0.132	0.162	0.246	0.382	0.307
	P	0.006	0.008	0.001	0.058	0.000	0.001
Social distance	r	0.160	.094	.088	0.330	.706	.604
	P	0.001	.059	.079	0.010	0.001	0.001
Use disinfectant	r	0.122	0.120	0.178	0.374	.442	.345
	P	0.017	0.017	0.000	0.001	0.001	0.001
Avoid kissing and shaking hands	r	.082	0.151	.092	0.146	.003	0.067
	P	.111	0.002	.067	0.003	.959	0.183
Avoid touching their eyes nose, and mouth with unwashed hands	r	0.054	0.162	0.151	0.228	.003	0.138
	P	.272	0.001	0.002	0.000	.947	0.006
Put a tissue when coughing or sneezing on the mouth and nose	r	.200	0.064	.049	0.137	0.132	0.162
	P	.003	.200	.330	0.006	0.008	0.001

Statistically significant at $p < 0.001$

Discussion:

The coronavirus disease 2019 (COVID-19) was announced by the World Health Organization (WHO, 2020). COVID-19 has reached Egypt on 14 February 2020. Until now, in Egypt, WHO and US Centers for Disease Control and Prevention (CDC) have advised on preventing further spread of COVID-19 (Fagbule, 2019). They recommend avoiding contact with individuals who are symptomatic, and taking hand hygiene measures, including frequent hand washing and the use of personal protective equipment (PPE).

The present study revealed that age of the academic nursing students ranged from 21 to 22. These findings are found to be similar with the results of Logunov et al. (2020) who reported that enrolled academic nursing students were their age between 18-26 years.

Concerning gender, it was noticed that less than two-third of academic nursing students was females in Beni-Suef group and in Fayoum group. These results are agreed with the study conducted by (Dafni and Maddalena, 2020) who reported in their study in Italy that females were more than half of the participants in their study.

The present study indicated that the main source of information about COVID-19 among majority of academic nursing students for COVID-19 was social media in Beni-Suef group and in Fayoum group. This is indicated the importance of social media in improving knowledge especially with this virus which required lockdown to prevent infection. These results supported by the results of (Podder et al., 2019) in their cross-sectional study about awareness and knowledge of COVID-19 among senior pharmacy students. These results are also similar to findings conducted by Babiker et al., (2014) who found that the main source of Middle East respiratory syndrome (MERS) information was reported to be the internet and social media. Similarly, a previous study mentioned that the internet was the main source of information about COVID-19 (Dafni and Maddalena, 2020). Serwaa, et al. (2020) found that more than three-quarter of the studied population reported that the majority of the information about COVID-19 was obtained from the Internet. This may be related to that social media plays a vital role in the spreading of public health knowledge during the epidemic.

The present study revealed that the most of academic nursing students in Beni-Suef group and Fayoum group had satisfactory level of knowledge about COVID-19. This is may be due their educational specialty that are considered from the health team and had good knowledge which reflect positive attitude. These findings were supported by results conducted by (Elgendy, El-Gendy, and Abdelrahim, 2020) in their study "Public awareness in Egypt about COVID-19 spread in the early phase of the pandemic" who found the same. Also, in the same line with (Narayana et al. 2020) who conducted their study about "Knowledge, perceptions, and practices towards COVID-19 pandemic among the general public of India: A cross-sectional online survey", found that the respondents' mean knowledge score of COVID-19 was high which indicating that the knowledge rate was high.

These results is 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., 2015).

The present study revealed that indicated statistical significant differences between academic nursing students' knowledge about COVID-19 in Beni-Suef group and Fayoum group ($P < 0.002$). This is related to the differences in population. This is related to professionalism, specialty and they studied well about this topic.

The present study revealed that, the majority of academic nursing students had good preventive measures reported practices' scores in both studied groups, especially in wearing mask, wearing gloves, use disinfectant materials, put a tissue when coughing or sneezing and avoid kissing and shaking hands. A statistical significant differences were observed in academic nursing students about the preventive measures regarding COVID -19 in almost tested areas ($P < 0.001$). This is

reflected the having good knowledge associated with good practice.

The study findings were consistent with the findings conducted by Gunasekaran et al. (2020) who stated in their study "Prevalence and acceptance of glove wearing practice among the general population during local COVID-19 outbreak", who found that a higher proportion of the respondents were using medical-grade glove. In the same line, Ali, Hamed, and El-Korashi, (2020) who reported that the majority of respondents said that they stay at home to stop the spread of the infection and about 89% agreed to work distantly in order to preserve the work flow and employee's safety at the same time. In the same line, Krpan et al. (2020) reported that responses for distancing, relative hand washing, hand washing times, and disinfecting indicate that people largely try to keep a distance of 1.5-2 meters between themselves and others when outside and maintain appropriate hygiene.

The results of the study revealed that the age, gender and residence was correlated with academic nursing students and preventive measures toward COVID-19 among Beni-Suef group and Fayoum group at $p\text{-value} < 0.001$. Concerning gender female may be afraid from infection than by their nature, therefor, they applied the preventive measures effectively than male. These results were in similar with those of (Azlan et al. 2020) who observed that significant associations between proper hand hygiene and gender, that females, and those living in the central region, are more likely to practice good hand hygiene; and wearing of the face mask was significantly found to be associated with gender, age group, region, occupation, and income group.

Conclusion:

In light of the current study results, it was concluded that the main source of information among majority of academic nursing students was social media. They were positive about implementing prevention measures regarding COVID-19. The majority of the respondents have had a satisfactory level of knowledge about COVID-19. Statistically significant relationships were found between demographic

characteristics of academic nursing students and prevention measures towards COVID-19.

Recommendations:

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

1. Training program for academic nursing students to improve their knowledge and preventative measures against COVID-19 epidemic.
2. Cooperation should be encouraged between educational institutions, medical care providers, and health personnel to educate academic students about COVID-19 that will help improve awareness, prevention, and control.

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