

Maternity Nurses' knowledge, Practices and Attitudes regarding the Preventive Measures of Covid 19 Pandemic

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) is a public health problem of global concern. It has a multi negative-impact and it spreads rapidly around the world. **Aim of the study:** this study was carried out to explore the maternity nurses' knowledge, practices, and attitudes regarding the preventive measures of COVID-19 pandemic. **Subjects & Method:** A convenience sample of 260 maternity nurses were recruited. Four tools were used for data collection. **Results:** the vast majority (88.5% & 97.7 respectively) of the study subjects had good knowledge and practices regarding the preventive measures of COVID-19 pandemic. Whereas 48.5% of them had positive attitudes regarding the preventive measures of COVID-19 pandemic. **Conclusion:** Based on the findings of the present study, it could be concluded that majority of the studied subjects had good knowledge and practices regarding the preventive measures of covid 19 pandemic. On the other hand, less than half of studied subjects had positive attitudes regarding the preventive measures of covid- 19 pandemic. **Recommendation:** Educational programs should be carried out for maternity nurses to achieve optimistic attitudes and maintain safe practices regarding compliance with the preventive measures of covid 19.

Keywords: Maternity nurses, knowledge, practices, attitudes, preventive measures, COVID-19 pandemic.

1. Introduction

Coronavirus disease 2019 (COVID-19) is caused by Coronaviruses which belong to the Coronaviridae family. They have a diameter of 65–125 nm and contain a single strand of Ribonucleic Acid (RNA) with lengths ranging from 26 to 32 kb. Coronaviruses comprise several types, such as alpha, beta, gamma, delta. It broadly infects vertebrates including humans, birds, bats, snakes, mice, and other wild animals. Coronaviruses are enveloped viruses that have a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry. COVID-19 caused by the novel coronavirus (SARS-CoV-2) has posed a medical emergency and a global crisis that rapidly emerged in December 2019 (Saxena, 2020).

The World Health Organization (WHO) declared the novel coronavirus (COVID-19) outbreak a global pandemic on March 11, 2020. The COVID-19 spread very quickly with more than 118,000 cases reported in 114 countries and the number of deaths reaching 4291.5 By May 25, 2020, COVID-19 cases reached 5,500,607 with 346,721 deaths (Prabhakar et al., 2020).

The virus spreads from the infected person through many modes of transmission as the portal of exit such as coughing or sneezing leaving small droplets in the air so, the person who inhales such droplets or touches the infected surfaces may also get the infection. Likewise, recent researches had reported that the coronavirus has been detected in the stool of patients and presents gastrointestinal symptoms therefore, the transmission of the virus can be through the fecal-oral route (Güner et al., 2020).

The new coronavirus shows symptoms ranging from 2 to 14 days, enabling the disease to go undetected. Reported diseases have ranged from people with little to no symptoms to people who are severely sick and dying with reported Covid-19 infections. Symptoms may include fever, cough, shortness of breath. Currently, therapeutic management is mainly supportive with great emphasis being placed on the prevention of transmission of the virus. To this end, WHO has recommended a series of preventive measures to stop the spread of the pandemic (Murphy, 2020).

Preventive measures are defined as the recent strategy to decrease the transmission of infection. These measures include early screening, diagnosis, isolation, and treatment to prevent recurrent spread. Preventive strategies are focused on the isolation of patients and the application of infection control precautions. One of the most important measures is environmental measures. These measures are aimed at reducing the risk of transmission of infection to individuals within the environment through, **firstly**, avoiding contact with an infected person, with objects, equipment, or contaminated environmental surfaces. **Secondly**, reduce direct physical contact such as shaking hands. **Thirdly**, avoid direct unprotected contact with personal secretions especially coughing, sneezing and when touching the individual should use paper tissues with bare hands. **Fourthly**, avoid direct contact and let space between persons as 2 meters. **Fifthly**, reduce contact with people in a closed environment such as hospital waiting areas beyond 15 min and at a distance of fewer than 2 meters in addition to the application of personal protective measures (Aldowyan et al., 2017; Omer et al., 2020).

The success of implementation of these measures is largely dependent on the high awareness and knowledge of the population. Nursing is an essential component of health care, and nurses' knowledge about disease

directly affects patient outcomes. Similarly, during an outbreak, nurses' Knowledge, practices, and attitudes (KPA) play positive roles in improving the patients' recovery rate, reducing the length of the hospital stay and mortality, and preventing in-hospital infection and occupational exposure. To date, most studies focus on the KPA of the general public, and few have investigated the KPA of nurses. To further understand the current status of nurses' KPA towards the prevention and control of COVID-19 during the outbreak, more studies are needed. In order to decrease the spread of transmission of this virus, the nurses should be fully aware of the mode of transmission and preventive measures to break the chain of infection (Alzoubi et al., 2020).

Maternity services and maternity nurses are at risk of acquiring COVID-19 infection through providing care for women whether at outpatient or inpatient departments. Some references suggested that all healthcare providers in the labor and delivery room should wear a face mask and change it between parturient women. Also, all maternity nurses and obstetricians should wear the full personal protective equipment during the second stage of labor or at cesarean delivery such as gown, gloves, eye protection, and N95 mask. Non-adherence or poor knowledge and practices regarding infection control and prevention can lead to outbreaks in healthcare facilities. Maternity nurses should be advised to receive training regarding how to wear and take off personal protective equipment to optimize the outcomes in healthcare settings (Neuwirth et al., 2020).

Last but not least, the nurses are the backbone of health systems. A healthy and skilled workforce is the basic requirement to ensure a healthy community and this is even more important during crises such as the COVID-19 pandemic. It is also important that nurses in general and maternity nurses in specific should have good knowledge about the coronavirus infection and practice preventive measures

to protect themselves, women at the hospital, and the community at large. This level of maternity nurses' knowledge about the coronavirus pandemic could be one of the contributory factors behind exemplary control of the spread of infection. Hence the current study was carried out to assess the maternity nurses' knowledge, practices, and attitudes regarding preventive measures of COVID-19 pandemic. Such knowledge would enlighten the path to improve the quality of the services, which would ultimately lead to a decrease in the spread and the mortality from COVID-19 pandemic (Baskin & Bartlett, 2021).

2. Aim of the study

This study aims to:

Assess the maternity nurses' knowledge, practices, and attitudes regarding the preventive measures of COVID-19 pandemic.

Research questions

1. What is the level of maternity nurses' knowledge regarding the preventive measures of COVID-19 pandemic?
2. What is the level of maternity nurses' practices regarding the preventive measures of COVID-19 pandemic?
3. What are the attitudes of maternity nurses' regarding the preventive measures of COVID-19 pandemic?

3. Materials and Methods

Materials

I- Research design:

A descriptive exploratory research design was utilized in this study.

II- Setting:

The study was conducted in two hospitals as the following:

1. El-Shatby Maternity University Hospital, affiliated to Alexandria University.

2. Dar –Esmail Maternity Governmental Hospital, affiliated to the Ministry of Health.

The previously mentioned settings are chosen because they are considered the two largest maternity hospitals including a large number of maternity nurses.

III- Subjects:

A convenience sample of 260 maternity nurses who working at inpatient and outpatient departments at the previously mentioned hospitals were recruited. The sample size was determined through the utilization of Ep info program (7).

- Total population 780
- Confidence level 95%
- Margin of error 5%
- Prevalence of the problem 50%
- Minimum sample size 257
- Final sample size 260

IV-Tools:

Four tools were used to collect the necessary data in the current study:

Tool I: Maternity nurses' socio-demographic and professional data questionnaire:

This tool was developed and used by the researchers. It included data about maternity nurses' socio-demographic and professional profiles such as: age, marital status, current residence, academic degree as well as total years of experience.

Tool II- Maternity nurses' knowledge regarding the preventive measures of COVID-19 pandemic online questionnaire:

This tool was adapted from Mohammed (2021) and used by the researchers to measure the maternity nurses' knowledge regarding the preventive measures of COVID-19 pandemic. It consisted of 16 questions.

- Maternity nurses' response was evaluated as follows:

- Incorrect answers = 0.
 - Correct but incomplete answers = 1.
 - Correct and complete answers = 2.
- The total scores for knowledge items ranged from 0-32, the total level of maternity nurses' knowledge was categorized as follows:
- Poor for the total score ranged from 0-10.
 - Fair for the total score ranged from 11-21.
 - Good for the total score ranged from 22 - 32.

Tool III- Maternity nurses' practices regarding the preventive measures of COVID-19 pandemic online questionnaire:

This tool was adapted from (Nwagbara et al., 2021) and used by the researchers to appraise the maternity nurses' practices regarding the preventive measures of COVID-19 pandemic. It covered 17 statements.

- Maternity nurses' practices were evaluated as follows:

- Incorrect answers = 0.
 - Correct but incomplete answers = 1.
 - Correct and complete answers = 2.
- The total scores for practices items ranged from 0-34, the total level of maternity nurses' practices was categorized as follows:
- Poor for the total score which was from 0-10.
 - Fair for the total score which was from 11-22.
 - Good for the total score which was from 23 -34.

Tool IV- Maternity nurses' attitude regarding the preventive measures of COVID-19 pandemic online questionnaire:

This tool was adapted from Mohammed (2021) by the researchers and used to measure the maternity nurses' attitude

regarding the preventive measures of COVID-19 pandemic. It contained 7 statements. Each one was scored on a three-point Likert likes scale ranging from 1-3.

- Agree (3).
- Neutral (2).
- Disagree (1).

For each subject, the total scores ranged from 7- 21. Accordingly, each subject attitude was categorized as follow: -

- Negative attitudes ranged from 7-11.
- Neutral attitudes ranged from 12-16.
- Positive attitudes ranged from 17-21.

Methods

The study was conducted according to the following steps:

1. Approval was obtained from the Research Ethics Committee, Faculty of Nursing, Alexandria University.
2. An official letter from the Faculty of Nursing - University of Alexandria was directed to the responsible authorities of the previously mentioned study hospitals to obtain their permission for conducting the study.
3. Tool (I) was developed by the researchers. Tools (II, III, IV) were adapted and translated into Arabic language.
4. Tools were tested for content validity by a jury of 3 experts in the related field. They are professors in the Obstetrics and Gynecology Nursing department, Alexandria University. Then the necessary modifications were done.
5. Tools' reliability were accomplished by Cronbach's alpha test and the result was highly reliable ($r = 0.96$ for tool I, $r = 0.95$ for tool II, $r = 0.90$ for tool III , $r = 0.92$ for tool IV) .
6. A pilot study was conducted on 10 % of study subjects (26 maternity nurses) from the previously mentioned hospitals (excluded from the study

subjects) to ascertain the clarity, feasibility, and applicability of the tools and to identify obstacles that might interfere with the process of data collection. After the pilot study tools were revised and the necessary modifications were done.

7. The data were collected through the online questionnaires as follows:
 - The researcher met the head of nursing and collected the phone numbers of the nursing staff members.
 - The researcher made a WhatsApp group and add all staff members.
 - The questionnaires were performed on Google platforms with a cover letter that contained the title of the research, the aim, and the researchers' name.
 - The researcher sent the link of questionnaires through the group. To reduce the missing data, the nurses were directed to fill all the items in the online questionnaires.
 - In the last step, the nurses were directed to click the submit option, and finally, the online questionnaires were sent to the drive.
8. The collected data were revised, categorized, coded, computerized, tabulated, and analyzed using a statistical package for social sciences (SPSS) version 20.

Ethical Considerations:

For each recruited subject the following issues were considered:

1. Questionnaires were sent through the online google form and the submission of the form was considered as approval for participation.
2. Confidentiality of the collected data was maintained.

4. Results:

Demographic characteristics of the nurses were displayed in Table 1. More than two-thirds of studied nurses (69.2%) were married,

and near half of them (50.8%) aged from 20 to 29 years old. In general, 41.9 % of nurses were having a secondary school of nursing diploma, 57.3 % of them worked in inpatient unit , 78 % of them lived in an urban area and 40 % of them had less than 5 years of work experience.

Figure (1) showed that social media and TV were the most commonly reported sources for information about COVID-19 (40.8% & 35.4%), respectively. Unexpectedly, the work experience was the least source (6.9%) for information.

Table (2) showed the distribution of the studied nurses according to total levels of knowledge, attitude, and practice regarding preventive measures of COVID-19 pandemics. It was found that almost all of them (88.5% & 97.7%) had good knowledge and practice about preventive measures of Covid 19 respectively, with a mean percentage score of 76.13% for their knowledge and 84.94% for their practice. Also, nearly half of them (51.5 %) had neutral attitude towards preventive measures of Covid 19.

Tables (3) pointed there was a highly statistically significant relation between the total nurses' knowledge mean score and their demographic characteristics including age, marital status, educational level, and years of experience ($F=6.832$ $p=0.001^*$, $F=4.209$ $p=0.006^*$, $F=3.765$ $p=0.003^*$ and $F=9.901$ $p=0.000^*$ respectively).

The findings presented in Table (4) showed that there was a highly statistically relation between total mean score of nurses practices and their demographic characteristics including age, marital status, educational level, place of residence, and years of experience. ($F=8.228$ $p=0.000^*$, $F=8.970$ $p=0.000^*$, $F=4.343$ $p=0.001^*$, $t=5.032$ $p=0.026^*$ and $F=11.493$ $p=0.000^*$ respectively).

The findings presented in table (5) showed that there was a highly statistically relation between total mean score of nurses' attitudes and their demographic characteristics including age, educational

level, and years of experience ($F=25.877$ $p=0.000^*$, $F=7.939$ $p=0.000^*$ and $F=19.137$ $p=0.000^*$ respectively). Furthermore, there was no statistically significant relation between the studied nurses' attitude mean score and marital status, working place and residence place towards preventive measures of Covid 19.

Table (6) revealed a correlation matrix between the studied nurses' mean scores of knowledge, practices, and attitudes towards preventive measures of Covid 19. A significant relation was found between the level of knowledge and practices among the studied nurses ($r =0.134$, $P=0.031$). Furthermore, a statistically significant relation was observed between the level of practices and attitudes ($r =0.314$, $P=0.000$) among them.

Table (1): Frequency & percentage distribution of the studied nurses according to their demographic characteristics:

Nurses' characteristics	Total N=260	
	No.	%
Age (years)		
• 20-	132	50.8
• 30-	63	24.2
• ≥ 40	65	25.0
Marital status		
• Single	57	21.9
• Married	180	69.2
• Divorced	15	5.8
• Widowed	8	3.1
Educational level		
• Secondary School of Nursing diploma	109	41.9
• Technical Institute of Nursing diploma	89	34.2
• Bachelor degree	62	23.8
Working unit		
• Inpatient	149	57.3
• Outpatient	111	42.7
Place of residence		
• Urban	203	78.1
• Rural	57	21.9
Years of experience		
• <5	104	40.0
• 5-	101	38.8
• ≥ 10	55	21.2

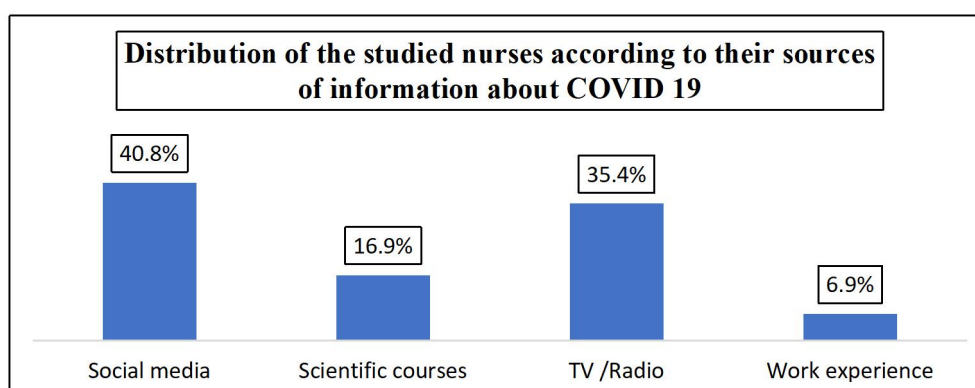


Figure (1): Percentage distribution of the studied nurses according to their source of information about COVID -19 pandemic:

Table (2): Distribution of the studied nurses' total levels of knowledge, attitude and practice regarding preventive measures of Covid 19:

Items	Total N=260		Mean Scores		Mean Percentage Score
	No.	%	Min- Max	Mean \pm SD	
Nurses' knowledge about preventive measures of Covid 19					
▪ Poor	0	0.0			
▪ Fair	30	11.5	18-30	24.36 \pm 2.547	76.13%
▪ Good	230	88.5			
Nurses' practice about preventive measures of Covid 19					
▪ Poor	0	0.0			
▪ Fair	6	2.3	19-34	28.88 \pm 2.895	84.94%
▪ Good	254	97.7			
Nurses' attitude towards preventive measures of Covid 19					
▪ Negative	0	0.0			
▪ Neutral	134	51.5	13-31	16.85 \pm 2.494	80.24%
▪ Positive	126	48.5			

Table (3): Relation between the studied nurses' knowledge total mean score and their demographic characteristics:

Nurses' characteristics	Mean Score of Knowledge Mean \pm S. D	Test of Significance
Age (years)		
▪ 20-	24.70 \pm 2.417	
▪ 30-	23.35 \pm 2.437	F=6.832
▪ \geq 40	24.63 \pm 2.684	P=0.001*
Marital status		
▪ Single	25.23 \pm 2.543	
▪ Married	24.02 \pm 2.472	F=4.209
▪ Divorced	24.33 \pm 2.498	P=0.006*
▪ Widowed	25.75 \pm 2.866	
Educational level		
▪ Secondary School diploma	24.33 \pm 2.875	
▪ Technical Institute diploma	24.23 \pm 3.464	F=3.765
▪ Bachelor degree	25.06 \pm 2.167	P=0.003*
Working unit		
▪ Inpatient	24.31 \pm 2.441	t=0.129
▪ Outpatient	24.42 \pm 2.692	P=0.720
Place of residence		
▪ Urban	24.38 \pm 2.543	t=0.100
▪ Rural	24.26 \pm 2.581	P=0.752
Years of experience		
▪ <5	24.99 \pm 2.601	
▪ 5-	23.51 \pm 2.091	F=9.901
▪ \geq 10	24.71 \pm 2.807	P=0.000*

F ANOVA test t Student T Test * Statistically significant at ≤ 0.05 insignificant > 0.05

Table (4): Relation between the studied nurses' practice total mean score and their demographic characteristics:

Nurses' characteristics	Mean Score of practice Mean \pm S. D	Test of Significance
Age (years)		
▪ 20-	28.19 \pm 3.241	F=8.228 P=0.000*
▪ 30-	29.76 \pm 1.932	
▪ \geq 40	29.42 \pm 2.597	
Marital status		
▪ Single	27.40 \pm 3.731	F=8.970 P=0.000*
▪ Married	29.23 \pm 2.449	
▪ Divorced	28.80 \pm 1.935	
▪ Widowed	31.63 \pm 2.875	
Educational level		
▪ Secondary School diploma	27.92 \pm 1.033	F=4.343 P=0.001*
▪ Technical Institute diploma	27.56 \pm 4.041	
▪ Bachelor degree	30.07 \pm 1.310	
Working unit		
▪ Inpatient	28.68 \pm 3.059	t=1.655
▪ Outpatient	29.14 \pm 2.649	P=0.199
Place of residence		
▪ Urban	29.09 \pm 2.920	t=5.032
▪ Rural	28.12 \pm 2.693	P=0.026*
Years of experience		
▪ <5	27.87 \pm 3.368	F=11.493 P=0.000*
▪ 5-	29.60 \pm 1.970	
▪ \geq 10	29.45 \pm 2.840	

F ANOVA test t Student T Test * Statistically significant at ≤ 0.05 insignificant > 0.05

Table (5): Relation between the studied nurses' attitude total mean score and their demographic characteristics:

Nurses' characteristics	Mean Score of attitudes Mean \pm S. D	Test of Significance
Age (years)		
▪ 20-	16.09 \pm 2.352	F=25.877 P=0.000*
▪ 30-	16.68 \pm 2.481	
▪ \geq 40	18.57 \pm 1.912	
Marital status		
▪ Single	16.51 \pm 2.421	F=0.856 P=0.465
▪ Married	16.89 \pm 2.472	
▪ Divorced	17.27 \pm 2.987	
▪ Widowed	17.75 \pm 2.605	
Educational level		
▪ Secondary School diploma	15.63 \pm 2.552	F=7.939 P=0.000*
▪ Technical Institute diploma	15.71 \pm 1.155	
▪ Bachelor degree	17.83 \pm 1.584	
Working unit		
▪ Inpatient	16.81 \pm 2.410	t=0.131
▪ Outpatient	16.92 \pm 2.612	P=0.717
Place of residence		
▪ Urban	16.85 \pm 2.537	t=0.006
▪ Rural	16.88 \pm 2.353	P=0.936
Years of experience		
▪ <5	16.01 \pm 2.317	F=19.137 P=0.000*
▪ 5-	16.87 \pm 2.509	
▪ \geq 10	18.42 \pm 2.016	

F ANOVA test t Student T Test * Statistically significant at ≤ 0.05 insignificant > 0.05

Table (6): Correlation Matrix between the studied nurses' knowledge, practices and attitudes mean scores towards preventive measures of covid 19:

Correlation Matrix of mean scores		Knowledge	Practices	Attitudes
Knowledge	R			
	P			
Practices	R	0.134		
	P	0.031*		
Attitudes	R	0.045	0.314	
	P	0.473	0.000*	

R Pearson correlation Coefficient * Statistically significant at ≤ 0.05 insignificant > 0.05

5. Discussion

The COVID-19 is an emerging infectious disease that has a significant threat to community health. Infection control and preventive measures reduce the spread of the serious threats of COVID-19, which is affected by health care workers knowledge, attitudes, and practices. Infection Prevention and Control recommendations can only be set after recognizing how health care workers perceive COVID-19 and translate their knowledge into practice to minimize the risk of infection (World Health Organization [WHO], 2020). Thus, the current study was carried out to assess the maternity nurses' knowledge, practices, and attitudes regarding preventive measures of COVID-19 pandemic.

The current study indicated that most studied samples were knowledgeable about COVID-19. They achieved a mean of 76.13% in the knowledge survey. This finding is in line with other studies that had shown satisfactory levels of knowledge about COVID-19 (Al-Hanawi et al., 2020; Al-Mohrej et al., 2016; Aldowyan et al., 2017). This may be due to the characteristics of the sample, as more than one - third had a secondary school of nursing diploma, with three fifth of them their level of experience was less than 5 years, and the near half of the nurses aged from 20 to 29 years old.

Also, it can be interpreted that slightly more than one- third of the studied nurses gained awareness and knowledge about the disease and its transmission, via social media

followed by approximately one -third from TV and radio to protect themselves and their families. The work experience was the least source for information. This result was supported by Abd El Fatah et al. (2020) who reported that Facebook and other platforms were the most common sources of information. Furthermore, the present study showed that there was a significant positive association found between knowledge total mean score and nurses demographic characteristics as (age, marital status, educational level, and years of experience. That is to say level of knowledge increase as age, educational level as well as years of experience increases. These findings highlight the need to continue to encourage and put emphasis on maintaining social distancing, as a means of preventing the spread of the COVID-19.

Concerning practices, the present study displayed that the majority of the studied nurses had a good satisfactory level towards practices of prevention measure of COVID-19. This finding is supported by (Tadesse et al., 2020). Who found that about two-thirds of the studied nurses had good infection prevention practice towards COVID-19. The current study showed that there was a significant positive relation found between the studied nurses practice total mean score and their demographic characteristics as (age, marital status, educational level, place of residence , and years of experience) . These findings boost the need to continue training for new staff for the preventive measures for COVID-19. This may be due to the satisfactory level of knowledge that affects their practice and the mean score of practice was increased in urban older-aged

who had experience years more than 5 with bachelor degree educational level.

Regarding attitude, the current study revealed that more than half of the studied sample had a neutral attitudes towards COVID-19. This may be due to there was a highly statistically significant relation between the total mean score of attitudes and nurses' characteristics including age, educational level, and years of experience. The mean score of practice was increased in older aged ≥ 40 who had experienced years more than 10 with bachelor degree educational level. Besides, there was no statistically significant relation between the studied nurses' attitude mean score and marital status, working place and residence place towards preventive measures of Covid 19.

The current study finding was in line with Tadesse et al. (2020) they had found that 72% of the studied nurses had a favorable attitude towards COVID-19. Huynh et al. (2020) had found that the majority of the studied healthcare workers had good knowledge and a positive attitude towards COVID-19. Bhagavathula et al. (2020) was found that positive perceptions of COVID-19 prevention and control of the studied population.

This finding is consistent with a recent study conducted in China, where the majority of participants were committed that the disease is curable and that their country will combat the disease (Zhong et al., 2020). Contrastingly, these results contrast with Blendon et al. (2004) that suggest people tend to express negative emotions, such as anxiety and panic, during a pandemic that could affect their attitude (Blendon et al., 2004). In addition, (Abd El Fatah et al., 2020) reported that most of their studied students had unsatisfactory responses to the current pandemic; however, the final year's group had a significantly higher score in nearly all questionnaire subsections than the early year's group. The majority of both groups significantly believed that there are undeclared numbers in Egypt.

The current study results showed a significant relation was found between the level of knowledge and practice among the studied nurses ($r = 0.134$, $P=0.031$). Furthermore, a statistically significant relation was observed between the level of practice and attitude ($r = 0.314$, $P=0.000$) among them. This can be interpreted by the high knowledge of COVID-19 translates into good and safe practices, which had a positive effect on an increased level of attitude without doubt during the COVID-19 pandemic.

The study findings may be useful to inform the legislators and healthcare professionals, on further the public health interventions, awareness-raising, policies, and health education programs. Also, additional education interventions are required for the novel healthcare workers. During the endemic period, it is recommended to make educational interventions and awareness campaigns about COVID-19, arranged by healthcare authorities; is through making periodic webinars for managing the health team which also include medical students.

6. Conclusion:

Based on the findings of the present study, it could be concluded that majority of the study subjects had good knowledge and practices regarding the preventive measures of covid 19 pandemic. On the other hand, less than half of studied subjects had positive attitudes regarding the preventive measures of covid- 19 pandemic.

7. Recommendations

Based on the findings of the present study, the following recommendations are suggested:

- Educational programs should be carried out for maternity nurses to achieve optimistic attitude and maintain safe practice regarding compliance with the preventive measures of covid 19.

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