

▪ **Basic Research**

**Knowledge, Attitude and Preventive Practices toward Current  
Pandemic COVID-19 Among Pregnant Women.**

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**Abstract**

**Introduction:** Coronavirus disease is the most dangerous challenge the world has faced in our lifetime. Since pregnant women are susceptible to this pandemic with increased feto-maternal complications, so their compliance with preventive measures is of paramount importance. However, it's unclear whether pregnant women are knowledgeable and practice preventive measures against it. **Aim:** evaluate the knowledge, attitudes and preventive practices (KAP) toward COVID-19 among pregnant women seeking antenatal services in family health centers. **Methods:** A descriptive cross-sectional study, convenience sample of 350 pregnant women attended four family health centers located in the El-Mokatum District. **Data collection Tools:** 1) Pregnant Women Structured Interviewing Questionnaire; consisted of five sections regarding demographic and obstetric characteristics. In addition to knowledge, attitude and preventive practices toward COVID-19. **Results:** 50.64 % and 42.86 % of the pregnant women had satisfactory knowledge and adequate preventive practices towards COVID-19, with the total mean scores of  $15.65 \pm 3.352$  &  $28.12 \pm 6.72$  respectively. Further, the total mean attitude score was  $6.37 \pm 2.19$ . COVID-19' knowledge, attitude and preventive practices among pregnant women were associated with a range of socio-demographic and obstetric characteristics including educational level, socioeconomic status, occupation, family size, comorbidity, and parity. **Conclusion:** Almost half of the pregnant women had inadequate knowledge and preventive practices, as well as, several negative attitudes toward COVID-19 pandemic were discovered. Numerous factors were affecting on levels of KAP toward the COVID-19 pandemic. **Recommendation:** Regular health education programs for the pregnant women, should be emphasized, to improve the rate of compliance towards COVID-19 preventive measures.

**Keywords:** COVID-19, Knowledge, Attitude, Practices, Preventive Measures, Pregnant Women

## Introduction

The coronavirus (COVID-19) pandemic is a rapidly infectious disease that emerged and is the defining global health crisis of our time and the greatest challenge the world has faced. It is a highly contagious virus that spread abruptly at the speed of light outside China from December 2019 to all over the world and has since become a global public health emergency of international concern as officially declared by WHO specifically on January 30<sup>th</sup>, 2020 (Sohrabi et al., 2020). The world has now reached a tragic milestone of more than two million deaths, where the human family is suffering from an almost unbearable, burden of loss. At the writing, on February 27<sup>th</sup>, 2021 there were 114,209,481 confirmed cases reported globally, with a mortality rate of 2,643,673 (World Health Organization, 2021).

This disease belongs to a family of viruses that are zoonotic in nature but followed by continued human-to-human spread causing various symptoms ranging in severity from very mild to severe and even death. Frequent manifestations include fever, cough, myalgia, dyspnea, headache, diarrhea, and can progress to pneumonia and severe failure. Abnormal testing includes abnormalities on chest radiographic imaging, lymphopenia, leukopenia, and thrombocytopenia. In addition, increased lactate dehydrogenase and C-reactive protein levels (Rasmussen et al., 2021). This infectious disease is characterized by rapid transmission via respiratory droplet, handshake, and fecal-oral, with incubation period of 2–14 days. COVID-19 can be transmitted by asymptomatic patients, who not show any clinical manifestation and also who have normal chest computed tomography which hinders the effort to prevent the spread of COVID-19. The situation is further worsening by noticing that COVID-19 can be transmitted through the aerosols, and it can remain infectious for up to seven days on the surfaces (Degu et al., 2021 & Mustafa, 2020).

Everyone is at risk of becoming infected; However, an immunocompromised state, as seen in pregnancy with its hormonal and physiological changes could predispose a pregnant woman to increased risk of COVID-19 infection compared to their non-pregnant counterparts (Chidebe et al., 2020). Higher estrogen level-mediated upper respiratory congestion affects half of the pregnant women in the late trimester and usually presents with mild upper respiratory tract infection. These symptoms may simulate the symptoms of COVID-19 infection which adds more challenges on the way of diagnosis of COVID-19 during pregnancy (Taha et al., 2020).

The recent studies showed that COVID-19 in pregnancy was associated with significant increases in severe maternal and neonatal complications such as spontaneous abortion, preeclampsia, premature birth, fetal distress, and intrauterine growth restriction. And also, Cytokine-storm-related COVID-19 infection is more likely to predispose a pregnant woman with COVID-19 to increased morbidity and even mortality, moreover it can deteriorate brain fetal development (Musa et al., 2020). Strikingly, according to the report from the Centers for Disease Control and Prevention (CDC), pregnant women with COVID-19 are almost three times more likely to be admitted to intensive care units (ICU) and to be put on a ventilator compared with women who were not pregnant (Wan, 2020).

Egypt is among the five countries reporting the highest number of COVID-19 cases in Africa with a total of 182,424 confirmed cases and 10,688 deaths as recorded by the ministry of health and population (MOH) on February 28<sup>th</sup>, 2021 (Worldometer. coronavirus/EGYPT. 2021 & Radwan, 2020). Egypt reported its first confirmed COVID-19 case as the first reported case in Africa on 14<sup>th</sup> February 2020 (Africa news, 2021). As expected, urban centers in the Greater Cairo region, reporting the highest number of COVID-19 cases (Robert and Beschel, 2021). The National government of Egypt has taken commendable interventions to fight the COVID-19 pandemic based on the WHO recommendations thereby during the second wave including the adherence to the preventive measures such as maintaining social distancing, wearing masks, hygienic practice, and avoiding crowded places.

Noteworthy, Egypt's MOH has called on women to postpone their pregnancies because of the coronavirus. The government launched on-line education, in addition a 24-hours hotline and a smartphone application to provide general access to resources and information on COVID-19. Moreover, reduce the number of employees in workplaces by giving priority to pregnant women and employees with chronic diseases. The reiteration of these guidelines as a matter of public health and safety comes as the government attempts to avoid a second lockdown and its impact on economic and business activity such as job losses (Maat of Peace, Development, and Human Rights, 2020). Indeed, While Egypt's outlook has markedly improved compared with the daily-case numbers recorded over the summer, official statistics point to a second wave with an uptick in daily cases beginning in November and accelerating to a peak of over 1,400 per day in early January, before subsequently falling off to around 700 per day in late January (Worldometer/EGYPT. 2021).

As community health nurses have traditionally been recognized for their efforts during times of a public health crisis, nurses have critical roles and responsibilities during the COVID-19 pandemic. They will continue to be at the front line of battling the pandemic disease, assuring that the nurses today are waging war worldwide against COVID-19, where they having a public awareness role, advocating to ensure that the republic especially vulnerable groups have adequate information and communication requirements and educating them about disease transmission and how to protect themselves and others (Phillips and Catrambone, 2020 &Nissen, 2020).

Since pregnant women are considered to be high risk, so their knowledge about COVID-19 public health responses such as social distancing, frequent hand washing and use of protective equipment are critical in preventing the spread of coronavirus. Failure to apply these important public health preventive measures could leading to poor control and increase likelihood of infection. Consequently, pregnant women deserve a more sensitive approach and mutual understanding during this global pandemic (Besho et al., 2021).

### **Significance of the study**

With the extension of the second wave that appeared to be more dangerous than the first one making a global unprecedented crisis and threatening all the population groups including pregnant women (Degu et al., 2021). Currently, in Egypt, COVID-19 vaccines are under clinical trial and are not available for all citizens, further there were insufficient data on the safety of COVID-19 vaccines in pregnant women that presenting a great challenge in its control and management (Deif, 2021). Importantly, shifts in government policy regarding delayed lockdown and subsequent changes in the intensity of social distancing may have sent conflicting signals about the risks posed by the virus, leading to a lack of enforcement, low public compliance, and higher rates of infection (Africa news, 2020). Thus, raising the level of awareness and creating positive attitudes about preventive measures of the COVID-19 pandemic becoming the most important concern. Specifically, Compliance with preventive measures set by the government is of paramount importance to combat the spread of the disease. By assessing pregnant women's knowledge about the coronavirus, deeper insights into existing practices can be gained, thereby helping to identify factors that influence the pregnant women in adopting healthy practices and responsive behavior. As well as, provide more knowledge that would be used to tackle the misunderstanding, misconception that leading to identify gaps and strengthening ongoing prevention efforts.



**Aim of the study**

The study aimed to evaluate the knowledge, attitudes and preventive practices (KAP) toward COVID-19 among pregnant women seeking antenatal services in family health centers located in El-Mokatim district affiliated to the health directorate in Cairo.

**Research Questions**

- ✚ Q1 What is the score level of pregnant women' knowledge about the COVID-19 pandemic infection?
- ✚ Q2 What is the score level of preventive measure practices toward the COVID-19 among pregnant women?
- ✚ Q3 What is the mean score attitude of pregnant women toward COVID-19 pandemic infection?
- ✚ Q4 What are the factors associated with knowledge, attitude and preventive measure practices toward the COVID-19 pandemic among pregnant women?

**Subjects and Methods**

**Design:** A descriptive, cross-sectional research design was followed in the present study.

**Setting:** The study was conducted in four family health centres located in the Medical El-Mokatim District affiliated to the health directorate in Cairo namely Elmafarek health center, Elsaabeen Fadan health center, and the two Medical Center at ElAsmarat. It is considered a semi-urban setting; the antenatal clinic is held daily from Saturday to Thursday. The health centers provide primary health care services for the community members together with maternal health services.

**Sample size and type**

The sample size was estimated by using single proportion formula with the assumption of population proportion of knowledge level and attitude towards COVID-19 was 50% because there was unavailability of related evidence at the national level for this new emerging disease, at a 95% confidence interval, Z score is 1.96. margin of error (d) 5%, The final sample size for the average of 3850 pregnant women who attended antenatal clinics per month before lockdown in the previously mentioned four health centers was 350. The convenience sampling was applied for pregnant women who consented due to limited numbers of the attendants on four health centers after the opening from lockdown during first COVID-19 wave.

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**The inclusion and exclusion criteria:** Pregnant women who attended antenatal care during the study period, from various social classes, and willing to participate in the study. While women who had a verbal communication problem and complete loss of hearing were excluded.

### **Data Collection Tool:**

#### **1) *Pregnant Women Structured Interviewing Questionnaire,***

the questionnaire was developed by researchers by reviewing WHO guidelines and literature and studies in different parts of the world, and revised according to our setting. The questionnaire consisted of five sections:

- ✚ **1<sup>st</sup> section** is concerned with the independent variables of this study, demographic and obstetric characteristics included age, occupation, educational level, socioeconomic status (SES), duration of the marriage, type, and size of the family. In addition, obstetric history regarding; gestational age, gravidity, parity, abortions, pregnancy trimester, and comorbidities.

The dependent (outcome) variables of the study were assessed by the following sections:

- ✚ **2<sup>nd</sup> section** assessed pregnant women's knowledge of COVID-19, included 30 items divided into the following parts: cause, modes of transmission, risk groups, clinical and emergency symptoms, in addition to preventive measures. Further a question about the source of information. Pregnant women were asked to respond to knowledge questionnaire as either true or false, with an additional "don't know" option. Each correct answer was scored one, while incorrect or don't know responses were given a score of zero, so the total knowledge score ranged from zero to 30, with high mean scores indicating better knowledge. As well as, those who scored equal or above 18 scores ( $\geq 60\%$ ) were considered as they have satisfactory knowledge, while the total score less than 18 scores ( $< 60\%$ ) was considered unsatisfactory knowledge.

- ✚ **3<sup>rd</sup> section** assessed the pregnant women's preventive measures practices, consisted of 27 questions, included four parts about social distance, hygienic practices, the universal use of face masks, as well as healthy habits. Pregnant women were asked to respond to the questions as "all the time, sometimes or never", ranging a score from "2 to zero" 2 was given to answers that reflected adequate practice all the times, and a score of zero was given for answers that reflected inadequate practices. The overall score was calculated as mean value, ranged from zero to 54, with high scores indicating better practices. As well as those who scored above or equal to 38 scores ( $\geq 70\%$ ) were considered

as they have adequate COVID-19 preventive practices, while the total score less than 38 scores (<70%) was considered inadequate practices.

✚ **4<sup>th</sup> section** covered nine items related to challenges and barriers facing pregnant women for adherence to preventive measures against COVID-19 pandemic.

✚ **5<sup>th</sup> section** concerned with pregnant women's attitudes toward COVID-19 consisted of 12 items about the followings: severity and susceptibility of COVID-19, optimism toward the current situation, the effect of COVID-19 on maternity care, religious misconception, as well as, attitude toward public preventive measures (isolation, social distance, follow-up the coronavirus news). Women were asked to respond to the questionnaire as agree and disagree, with a value of 1 and 0 were given for each positive and negative attitude after inverting negative response, consequently, maximum positive attitudes score of 12.

### **Tool validity and reliability**

The questionnaire was first developed in English then converted to the Arabic language for clarity and back to English for consistency by non-medical experts. The content validity of the final Arabic translated version of the questionnaires was done by three medical physicians working in health centers and two experts in the community health nursing field, accordingly the modification of some items was done by paraphrasing, adding and deleting. The internal consistency was evaluated using Cronbach's alpha that was for knowledge questionnaire  $\alpha=0.8492$ , the practices was  $\alpha= 0.8175$ ; and Attitude questionnaire was  $\alpha= 0.8327$ .

### **A pilot study:**

A Pilot study was conducted among pregnant women by taking 18 clients which was 5% of the total study sample size that is excluded from the study sample to assess the clearness, applicability, and reliability of the study tools and estimate the average time needed for data collection.

### **Field Work**

The data were collected from the beginning of November 2020 to the mid of March 2021 at family health centers. After an explanation of the purpose of the study for pregnant women that attended their routine visit to the antenatal clinics and fulfills the study criteria, verbal consent was obtained then data were collected through face-to-face interviews with the participants. Necessary safety precautions of the outbreak were considering such as face masks, social distance,

hand washing before and after distributing paper questionnaire. Translation into native languages was done in cases where the respondents had lower levels of education. The time of the interview ranged from 20– 35 minutes depending on the level of understanding and cooperation of the participants.

### **Ethical Considerations**

This study, approved by the Ethics Committee affiliated to the faculty of nursing, Modern for technology and information University. An official letter was given to the authority's personnel included the Medical Elmokatm district affiliated to the health directorate in Cairo and directors of the four health centers to get the official permission to carry out the study. In addition, informed consent was obtained from participants who are willing to participate in the study. Moreover, oral permission was taken from nurse supervisors in the health centers. All participants were fully informed regarding the purpose of the study, no potential risks associated with their participation, and they have the right of withdrawing from the study without penalty. The participants' privacy and confidentiality were completely protected.

### **Statistical Design**

Analysis of data was performed using Statistical Package for the Social Sciences (SPSS v.20). Descriptive analysis was carried out and frequency tables and percentages were used to present the descriptive results. Student's t and ANOVA tests were used to determine the relationship between mean knowledge score and socio-demographic variables. A value of  $P < 0.05$  was considered statistically significant.

### **Results of the Study**

**Table (1)** showed that the mean age of the pregnant women was  $28.27 \pm 4.89$  years. 28.00% didn't receive any formal education. 72.57% were housewives by occupation. 66.28 % had low socioeconomic status (SES).

**Table (2)** pointed to obstetric health characteristics; 58.00% of participants were multipara, 30.28% had comorbidity.

**Table (3):** demonstrated that 84.28 % of the participants identified that respiratory droplets is the main source of the mode of COVID-19 transmission. 63.14% of the participants had the incorrect answer that the disease could be transmitted from an asymptomatic person. Fever, dry cough, and difficulty of breathing were the most common identified symptoms 64.57%, 64.28% & 64.00% respectively.

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**Table (4):** indicated that 50.64% of the participants had satisfactory knowledge of COVID-19, with a total mean score of  $15.65 \pm 3.352$ .

**Figure (1):** presented that mass media was the main source of information which accounts for 79.14%.

**Table (5):** demonstrated that 45.43 % of the participants still practice risky cultural behaviors, such as shaking hands, hanging, and kissing. Concerning the universal use of face masks; 61.14% and 38.86% of pregnant women all the time and sometimes wear face masks in public places. While 63.71 % sometimes reuse a mask again after taking it off. Washing hands all the time (81.14 %) was the most common practiced preventive measure to avoid the infection.

**Table (6):** presented challenges and barriers for adherence of preventive measures against COVID-19 pandemic; 22.82 % and 52.28 % of the pregnant women reported that using face masks disrupt breathing either all the time or even sometimes. 42.52% mentioned that personal protective equipment, such as masks, gloves or disinfectants are costly. 51.14% reported that social distance contradicted with daily basic needs. Further 39.43% reported that fatigue and burden of household activities beside child care led to neglect some preventive measures

**Table (7):** indicated that 42.86 % of the pregnant women had adequate practices towards preventive measures of COVID-19, with a total mean score of  $28.12 \pm 6.72$ .

**Table (8):** showed that the total mean attitude scores of the participants towards the COVID-19 rate were  $6.37 \pm 2.19$ .

**Table (9):** revealed that knowledge, preventive practice measures and attitude were significantly associated with maternal higher educational level ( $P < 0.000$ ;  $P < 0.003$  and  $P < 0.000$  respectively); husband educational level ( $P < 0.000$ ), higher SES ( $P < 0.000$ ) Women's occupation ( $P < 0.001$ ;  $P < 0.040$  and  $P < 0.000$ ); sector of occupation for women ( $P < 0.027$ ;  $P < 0.024$  and  $P < 0.049$ ) and their husbands ( $P < 0.041$ ;  $P < 0.039$  and  $P < 0.000$ ). Family size was a further predictor associated significantly with maternal knowledge and preventive practices ( $P < 0.04$ ).

**Table (10):** showed that pregnant women's comorbidity was associated significantly with their knowledge, preventive practices and attitude toward COVID-19 ( $P < 0.000$ ,  $P < 0.048$  &  $P < 0.000^*$ ). Lower parity was significantly associated with higher knowledge and adequate preventive practice  $P < 0.04$ .

**Table (1): Distribution of the Pregnant Women' According to their Demographic Characteristics (n=350)**

Demographic Characteristics	N	%
<b>Age (years)</b>		
- ≤24	91	26.00
- 25–35	177	50.57
- >35	82	23.43
<b>Age mean ± SD</b>	<b>28.27 ± 4.89</b>	
<b>Educational Level</b>		
- No formal education	98	28.00
- Primary school	83	23.71
- Secondary school	117	33.43
- University	52	14.85
<b>Occupation</b>		
- Housewife	254	72.57
- Working.	96	27.43
<b>Sector of occupation(n=96)</b>		
- Governmental work	45	46.87
- Private work	27	28.13
- Day by day work	24	25.00
<b>Socioeconomic Level/income (her point of view)</b>		
- Low/Not enough	232	66.28
- Intermediate/ enough	101	28.86
- High/More than enough	17	4.87
<b>Duration of marriage (years)</b>		
- 1-5	114	32.57
- 6-10	141	40.14
- > 10	95	27.14
<b>Type of the family</b>		
- Nuclear family	217	62.00
- Extended family	133	38.00
<b>Family size</b>		
- 1 ≤ 3	102	29.14
- 4 ≤ 6	149	42.57
- > 6	99	28.28
<b>Husband educational level</b>		
- No formal education	107	30.57
- Primary school	103	29.43
- Secondary school	102	29.15
- University	38	10.85
<b>Husband's occupation</b>		
- Not working	42	12.00
- Working	308	88.00
<b>Sector of occupation (n =308)</b>		
- Governmental work	90	29.22
- Private work	124	40.26
- Day by day work	94	30.52

**Table (2): Distribution of the Pregnant Women' According to their Obstetric Variables (n=350)**

<b>Obstetric Variables</b>	<b>N</b>	<b>%</b>
<b>Gravidity</b>		
- Primary	74	21.14
- Multi	276	78.86
<b>Parity</b>		
- Nullipara	82	23.43
- Primipara	65	18.57
- Multipara	203	58.00
<b>History of abortions</b>		
- Yes	79	22.57
- No	271	77.43
<b>Pregnancy trimester</b>		
- First	109	31.14
- Second	92	26.29
- Third	149	42.57
<b>Presence of comorbidity</b>		
- No	240	68.57
- Yes	110	31.43

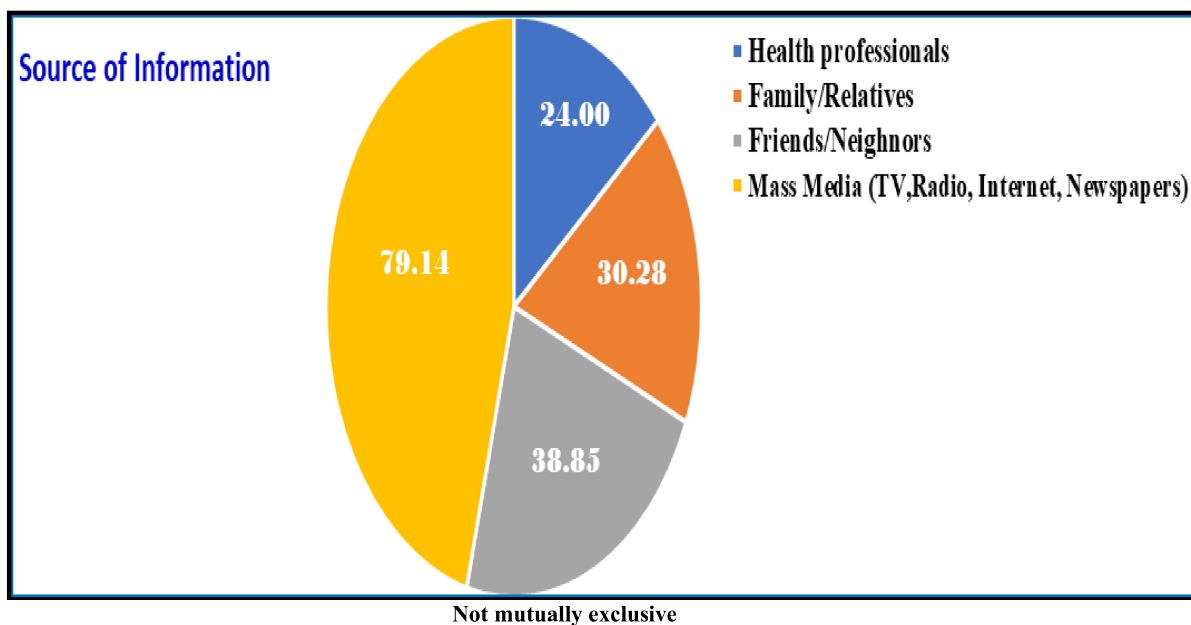
**Table (3): Distribution of the Pregnant Women' According to their Knowledge Level towards COVID-19 Pandemic (n=350)**

Knowledge items	Correct		Incorrect	
	F	%	F	%
<b>Causes of COVID-19</b>				
1. Viral infection.	205	58.57	145	41.43
<b>Mode of transmission</b>				
2. Respiratory droplets of affected person through coughing or sneezing	295	84.28	55	15.71
3. Surfaces touched by affected person or objects such as tables, doorknobs, and handrails.	217	62.00	133	38.00
4. Touching infected coins and banknotes.	113	32.28	237	67.71
5. Stool, water, and sewage (e.g., in public toilets).	51	14.57	299	85.43
6. The disease could be transmitted from an asymptomatic person.	129	36.85	221	63.14
<b>Risky groups</b>				
7. Older adults.	247	70.57	103	29.43
8. Pregnant women.	107	30.57	243	69.43
9. People with chronic illnesses such as diabetes mellites, hypertension, cardiac disease, asthmatic.	254	72.57	96	27.43
<b>Common symptoms</b>				
10. Fever.	226	64.57	127	36.28
11. Dry cough.	225	64.28	125	43.43
12. Sore throat.	180	51.43	170	48.57
13. Difficulty of breathing.	224	64.00	126	36.00
14. Headache.	181	51.71	169	48.28
15. Fatigue and Body aches.	176	50.28	174	49.71
16. Lost sense of smell.	91	26.00	259	74.00
17. Lost sense of taste.	89	25.43	261	74.57
18. Gastrointestinal disturbance (Vomiting or diarrhea).	108	30.85	242	69.14
<b>Emergency symptoms</b>				
19. Trouble breathing.	292	83.43	58	16.57
20. Constant pain or pressure in the chest.	282	80.57	68	19.43
21. Bluish lips or face.	71	20.28	279	79.71
22. Sudden confusion and inability to speak.	89	25.42	261	74.57
<b>Measures to prevent spread of the disease</b>				
23. Proper hand wash with soap & water.	291	83.14	59	16.85
24. Using hand sanitizer containing alcohol.	245	70.00	105	30.00
25. Maintaining an appropriate distance between yourself and others	216	61.71	134	38.28
26. Avoiding touching eyes, nose, and mouth with unwashed hands.	201	57.42	149	42.57
27. Putting on facemasks in public places.	280	80.00	70	20.00
28. Healthy food & drinking adequate water	152	43.42	198	56.57
29. People with minor symptoms such as cough, headache, sneezing should stay at home and self-isolate.	171	48.85	179	51.14
30. People in contact with the infected person should be isolated and quarantined for general observation for 14 days.	71	20.28	279	79.71



**Table (4): Distribution of the Pregnant Women' According to their Total Knowledge Score Level towards COVID-19 Pandemic (n=350)**

Total Knowledge	Max score	Mean $\pm$ SD	Level F (%)	
			Satisfactory	Un Satisfactory
Causes and mode of transmission	6	2.89 $\pm$ 0.712	137 (39.14%)	213 (60.85%)
Risky groups	3	1.74 $\pm$ 0.783	220 (62.86 %)	130 (37.14 %)
Clinical and emergency symptoms	13	6.38 $\pm$ 1.047	142 (40.57 %)	208 (59.43%)
Preventive measures	8	4.64 $\pm$ 0.810	210 (60.00 %)	140 (40.00 %)
<b>Total</b>	<b>30</b>	<b>15.65 <math>\pm</math> 3.352</b>	<b>176 (50.64 %)</b>	<b>174 (49.36 %)</b>

**Figure (1): Distribution of the Pregnant Women According to Source of COVID-19 Pandemic Information**

**Table (5): Distribution of the Pregnant Women' According to their Practice Level towards Preventive Measures against COVID-19 Pandemic (n=350)**

<b>Practices items</b>	<b>All the times F (%)</b>	<b>Sometimes F (%)</b>	<b>Never F (%)</b>
<b>Social distance</b>			
1. How often do you avoid social event with large number of people?	89 (25.43)	181(51.71)	80 (22.86)
2.How often do you avoid crowded places and public transport?	78 (22.28)	184(52.57)	88 (25.14)
3.How often do you practice social distancing 1 meter (2 arms') at least?	82 (23.43)	136(38.86)	132(37.71)
4.How often do you avoid or ask friends or neighbors not to visit you?	84 (24.00)	110(31.43)	156(44.57)
5.How often do you avoid cultural behaviors, such as shaking hands, hanging and kissing?	89 (25.43)	102(29.14)	159(45.43)
<b>Hygienic practices</b>			
6.How often do you wash hands frequently more than ever?	284(81.14)	64 (18.28)	2 (0.58)
7.How often do you carry a bottle of hand sanitizer?	73 (20.85)	99 (28.28)	178(50.85)
8.How often do you avoid touching your face with unwashed hands?	94 (27.71)	180(51.42)	76 (21.71)
9.How often do you clean and disinfect surfaces especially those which are regularly touched, such as door handles, faucets, and phone screens?	156 (44.57)	184(52.57)	10 (2.85)
10.How often do you wash or sterilize your hands after dealing with cash?	74 (21.14)	119(34.00)	157(44.85)
<b>Universal use of face masks</b>			
11.How often do you wear facemasks in public places continuously?	214 (61.14)	138(38.86)	0 (0.00)
12.How often do you wash or disinfect your hands before putting on a new mask?	113 (32.28)	210(60.00)	27 (7.72)
13.How often do you put the mask tightly on your face and cover the mouth, nose, and chin?	210 (60.99)	115(32.85)	25 (7.14)
14.How often do you put the part with a metallic strip is on the upper side?	169 (48.28)	148(42.29)	33 (9.43)
15.How often do you avoid touching the outer surface of the mask while wearing it?	74 (21.14)	116(33.14)	160(47.71)
16.How often do you avoid touching the outer surface of the mask while removing it?	84 (24.00)	106(30.28)	160(47.71)
17.How often do you wash or disinfect your hands after removing the mask?	100 (28.57)	173(49.43)	77 (22.00)
18.How often do you avoid reuse a mask again after taken it off?	100 (28.57)	223(63.71)	27 (7.71)
19. How often do you carry extra masks with you to switch out if necessary?	54 (15.42)	89 (25.42)	207(59.14)

Practices items	All the times F (%)	Sometimes F (%)	Never F (%)
<b>Healthy behaviors</b>			
20.How often do you concerned to improve your health and immunity?	97 (27.71)	168(48.00)	85 (24.28)
21.How often do you eat a variety of vegetables, fruits?	82 (23.43)	191(54.57)	77 (22.00)
22.How often do you eat low-fat dairy products?	96 (27.43)	175(50.00)	79 (22.57)
23.How often do you take supplements?	91 (26.00)	166(47.43)	93 (26.57)
24.How often do you drink at least 8 glasses of fluid daily?	74 (21.14)	187(53.43)	89 (25.43)
25.How often you do physical activity such as walking, aerobics, cycling?	78 (22.28)	131(37.43)	141(40.28)
26.How often do you take adequate night sleeping hours (at least 7-8 hours) daily?	82 (23.43)	177(50.57)	91 (26.00)
27.How often do you take adequate rest daily and naps?	81 (23.14)	175(50.00)	94 (26.85)

**Table (6): Distribution of the Pregnant Women' According to their Challenges and Barriers for Adherence to The Preventive Measures against COVID-19 Pandemic (n=350)**

Challenges and Barriers Items	All the times F (%)	Sometimes F (%)	Never F (%)
1. Face masks disrupt my breathing.	80 (22.86)	183 (52.28)	87 (24.86)
2. Face masks cause me to overheat.	71 (20.28)	140 (40.00)	139(39.71)
3. Face masks cause fog up the glasses.	0 (0.00)	89 (25.43)	261(80.28)
4. Face masks cause irritation on my face skin	51 (14.57)	119 (34.00)	180(51.34)
5. Wearing face masks disrupt my appearance.	59 (16.85)	98 (28.00)	193(55.15)
6. Personal protective equipment, such as masks, gloves or disinfectants are costly.	149 (42.52)	111 (31.71)	90 (25.71)
7. Social distance affects negatively on my mood	88 (25.14)	179 (51.14)	83 (23.71)
8. Social distance contradicted with daily basic needs (shopping, transportation, going to work).	179 (51.14)	141(40.29)	30 (8.57)
9. Fatigue and burden of house hold activities beside child care led to neglect some preventive measures (such as hygienic practices).	138 (39.43)	164 (46.86)	48 (13.71)

**Table (7): Distribution of the Pregnant Women' According to their Total Preventive Practices Score toward COVID-19 Pandemic (n=350)**

Total Practice	Max score	Mean $\pm$ SD	Level F (%)	
			Adequate	In adequate
Social distance	10	4.45 $\pm$ 1.79	98 (28.00%)	252 (72.00 %)
Hygienic practices.	10	5.74 $\pm$ 1.98	176 (50.28 %)	174 (49.72 %)
Universal use of face masks.	18	10.16 $\pm$ 2.96	168 (48.00%)	182 (52.00 %)
Healthy life style/ behaviors	16	7.80 $\pm$ 3.78	160 (46.00%)	190 (54.00)
<b>Total preventive practices</b>	<b>54</b>	<b>28.12<math>\pm</math>6.72</b>	<b>150 (42.86%)</b>	<b>200 (57.14%)</b>

**Table (8): Distribution of the Pregnant Women' According to their Attitude toward COVID-19 Pandemic (n=350)**

Attitude Items	Agree F (%)	Disagree F (%)
1. COVID-19 can cause serious symptoms/illness	152(43.43)	198(57.57)
2. COVID-19 is just like common cold/influenzas	200(57.14)	150(43.86)
3. Pregnant women are at an increased risk for severe illness from COVID-19 compared with general people.	110(31.43)	240 (68.57)
4. I consider myself at risk of COVID-19.	161(46.00)	189(54.00)
5. I'm scared about myself and my newborn being infected with COVID-19.	151(43.14)	199(57.86)
6. I think COVID-19 will finally be successfully controlled?	279(79.71)	71 (20.29)
7. I'm satisfied about government response against COVID-19.	261(74.57)	89 (25.43)
8. Stress regarding being infected with COVID-19 leads to reduce or discontinue routine prenatal care.	137(39.14)	213(60.86)
9. Social distance makes me feel safer.	164(46.86)	186 (53.14)
10. I follow the news about COVID-19.	147(42.00)	203 (58.00)
11. COVID-19 is a punishment of the God.	131(37.43)	219 (62.57)
12. Everything is not useful only praying to Allah /God can save us, so we can lift social distance orders and other preventive measures.	135(38.57)	215 (61.43)
<b>Mean <math>\pm</math> SD</b>	<b>6.37 <math>\pm</math>2.19</b>	

**Table (9): Correlation of Demographic Characteristics of the Pregnant Women with their Total knowledge, Practices and Attitude Scores of COVID-19 Pandemic**

Maternal Socio-demographic Characteristics	Knowledge Score Mean $\pm$ SD	f/t	P - Value	Practice Score Mean $\pm$ SD	f/t	P - Value	Attitude Score Mean $\pm$ SD	f/t	P - Value
<b>Age (years)</b>									
- $\leq$ 24	15.63 $\pm$ 3.54	0.1	0.903	27.89 $\pm$ 6.64	0.	0.775	6.37 $\pm$ 2.20	2.1	0.091
- 25–35	15.69 $\pm$ 3.36	01	NS	28.20 $\pm$ 6.73	25	NS	6.52 $\pm$ 2.34	21	NS
- $>$ 35	15.64 $\pm$ 3.24			28.25 $\pm$ 6.78	4		6.24 $\pm$ 2.04		
<b>Educational level</b>									
-No formal education	12.84 $\pm$ 3.39	81.	<	22.20 $\pm$ 6.86	4.	<	5.23 $\pm$ 1.72	42.	<
- Primary school	13.61 $\pm$ 3.38	95	<b>0.000</b>	22.29 $\pm$ 6.93	58	<b>0.003</b>	5.47 $\pm$ 2.14	10	<b>0.000</b>
- Secondary school	17.46 $\pm$ 3.37		*	33.70 $\pm$ 7.37	3	*	6.80 $\pm$ 2.30	7	*
- University	18.71 $\pm$ 2.28			34.31 $\pm$ 5.75			8.04 $\pm$ 2.62		
<b>Occupation</b>									
- Housewife	14.84 $\pm$ 4.17	-	<	27.39 $\pm$ 6.64	-	<	5.70 $\pm$ 2.48	-	<
- Working	16.46 $\pm$ 2.52	3.3 65	<b>0.001</b> *	28.85 $\pm$ 6.80	1.7 06	<b>0.040</b> *	7.05 $\pm$ 1.90	6.2 03	<b>0.000</b> *
<b>Sector of occupation</b>									
-Governmental work	17.07 $\pm$ 3.59		<	30.04 $\pm$ 6.89	3.	<	7.17 $\pm$ 2.26	3.1	<
- Private work	16.96 $\pm$ 3.28	3.7	<b>0.027</b>	29.77 $\pm$ 6.78	83	<b>0.024</b>	7.10 $\pm$ 2.18	01	<b>0.049</b>
- Day by day work	15.34 $\pm$ 3.18	415	*	26.38 $\pm$ 6.67	6	*	6.81 $\pm$ 2.15	76	*
<b>Socioeconomic level</b>									
- Low	11.79 $\pm$ 4.21	473	<	26.43 $\pm$ 7.31	14	<	5.32 $\pm$ 1.82	13.	<
- Intermediate	16.15 $\pm$ 3.67	.9	<b>0.000</b>	28.58 $\pm$ 6.94	.1	<b>0.000</b>	6.84 $\pm$ 2.34	66	<b>0.000</b>
- High	19.03 $\pm$ 3.13		*	29.31 $\pm$ 5.91	52	*	6.97 $\pm$ 2.42		*
<b>Duration of marriage</b>									
- 1-5 years	15.00 $\pm$ 3.68	0.0	0.961	28.29 $\pm$ 6.80	0.	0.815	6.52 $\pm$ 2.31	2.0	0.120
- 6-10 years	15.97 $\pm$ 3.65	38	NS	28.21 $\pm$ 6.74	20	2	6.33 $\pm$ 2.19	00	NS
- 10 years	16.00 $\pm$ 3.69			27.87 $\pm$ 6.62	4	NS	6.22 $\pm$ 2.08		
<b>Family size</b>									
- 1 - 3	16.09 $\pm$ 3.32	3.1	<	28.53 $\pm$ 6.85	3.	<	6.60 $\pm$ 2.23	2.6	0.117
- 4 - 6	15.82 $\pm$ 3.40	25	<b>0.044</b>	28.43 $\pm$ 6.74	46	<b>0.040</b>	6.32 $\pm$ 2.17	54	NS
- $>$ 6	15.05 $\pm$ 3.31		*	27.42 $\pm$ 6.57	9	*	6.41 $\pm$ 2.18		
<b>Type of the family</b>									
- Nuclear family	15.66 $\pm$ 3.42	0.0	0.948	28.27 $\pm$ 6.77	0.	0.264	6.40 $\pm$ 2.24	0.2	0.606
- Extended family	15.64 $\pm$ 3.28	041	9NS	27.97 $\pm$ 6.68	63 0	4 NS	6.34 $\pm$ 2.14	65	NS
<b>Husband educational level</b>									
-No formal education	13.80 $\pm$ 3.39	39.	<	23.39 $\pm$ 3.42	16	<	5.82 $\pm$ 2.21	33.	<
- Primary school	13.77 $\pm$ 3.46	443	<b>0.000</b>	23.81 $\pm$ 3.38	5.	<b>0.000</b>	5.80 $\pm$ 2.20	12	<b>0.000</b>
- Secondary school	17.59 $\pm$ 3.57	36	*	32.11 $\pm$ 3.47	65	*	7.00 $\pm$ 2.26	2	*
- University	17.44 $\pm$ 2.99			33.19 $\pm$ 3.12			6.86 $\pm$ 2.13		
<b>Husband's occupation</b>									
- Not working	15.34 $\pm$ 3.02	-	0.152	27.93 $\pm$ 6.65	-	0.296	6.33 $\pm$ 2.07	-	0.314
- Working.	15.96 $\pm$ 3.69	1.0 259	99 NS	28.32 $\pm$ 6.79	0.5 33	9 NS	6.42 $\pm$ 2.31	0.4 82	NS
<b>Sector of occupation</b>									
- Governmental work	16.21 $\pm$ 3.68	3.1	<	29.00 $\pm$ 6.85	3.	<	6.68 $\pm$ 2.23	13.	<
- Private work	16.10 $\pm$ 3.77	989	<b>0.041</b>	28.68 $\pm$ 6.81	25	<b>0.039</b>	6.58 $\pm$ 2.21	00	<b>0.000</b>
- Day by day work	15.59 $\pm$ 3.59		*	27.25 $\pm$ 6.69	0	<b>8*</b>	6.01 $\pm$ 2.15	0	*

\* “Statistically significant”

NS “non-Significance”

f “ANOVA tests”

T “Student’s test”

**Table (10): Correlation of Obstetric Variables of the Pregnant Women with their Total knowledge, Practices and Attitude Scores of COVID-Pandemic**

Maternal Obstetric Variables	Knowledge Score Mean ±SD	f/t	P-Value	Practice Score Mean± SD	f/t	P-Value	Attitude Score Mean±SD	f/t	P-Value
<b>Gravidity</b>									
- Primary	15.76±3.28	0.1	0.672	28.25±6.77	0.39	0.397	6.49±2.25	0.8	0.556
- Multi	15.54±3.42	78	5 NS	27.98±6.67	79	9 NS	6.24±2.13	54	NS
<b>Parity</b>									
- Nullipara	15.90±3.32	3.1	<	28.27±6.71	3.61	<	6.51±2.30	0.1	0.999
- Primipara	16.10±3.37	15	<b>0.045</b>	28.47±6.62	70	<b>0.049</b>	6.39±2.19	76	NS
- Multipara	14.97±3.36		*	27.63±6.83		*	6.21±2.09		
<b>Abortions</b>									
- Yes	15.75±3.02	0.1	0.655	28.16±6.61	0.00	0.497	6.30±2.17	0.4	0.310
- No	15.56±3.98	99	8 NS	28.08±6.84	57	7 NS	6.42±2.21	95	NS
<b>Pregnancy trimester</b>									
- First	15.79±3.34	0.1	0.886	28.19±6.69	0.06	0.936	6.61±2.22	.14	0.787
- Second	15.66±3.04	20	2 NS	28.23±6.70	52	8 NS	6.33±2.20	66	NS
- Third	15.52±3.70			27.94±6.78			6.17±2.6		
<b>Presence of comorbidity</b>									
- No	14.77±3.71	11.	<	27.30±6.75	-	<	5.91±1.97	5.6	<
- Yes	16.54±3.00	69	<b>0.000</b> *	28.93±6.69	1.66 6	<b>0.048</b> *	6.83±2.41	98	<b>0.000</b> *

\* “Statistically significant”  
f “ANOVA tests”

NS “non-Significance”  
T “Student’s test”

## Discussion

This study is among the first few studies that aimed to provide an insight on the level of the KAP regarding COVID-19 among pregnant mothers from Egypt. Regarding demographic characteristics, results of the current study revealed that around one-third of the participants had secondary education. Also, more than two-thirds were housewives and had low socio-economic status. Similar demographic characteristics of the pregnant women were found in similar studies about COVID-19 conducted in a low-resource African setting and in Ethiopia (Nwafor et al., 2020 & Fikadu et al., 2020).

More than two-thirds of the studied pregnant mothers were multigravida, while more than half were multipara. This is quite similar to the study of Degu et al., 2021 that 62.7% and 40.4% of the pregnant women were multigravidas and multipara respectively. Moreover, the current study finding showed that approximately, one-third of the participants had vulnerable existing comorbidities for COVID-19. Several studies confirmed that pregnant women with associated comorbidities are more susceptible to severe COVID-19 infection and higher rates of ICU admission (Honardoost et al., 2021 & Knight et al., 2020). Consequently, pregnant women need special consideration and much more care during the antenatal phase, especially during this COVID-19 pandemic period.

Although Egypt's Ministry of Health (MOH) has adopted several awareness campaigns on social media platforms that aimed to educate the populace about the COVID-19 pandemic and the prevention measures. The current study finding showed that almost half of the pregnant women had unsatisfactory COVID-19 knowledge, with low mean scores. This could be attributed to the socio-demographic characteristics of the participants, as the majority of them had low SES with high parity, a high level of unemployment status, and low educational attainment. The finding of the current study was similar to previous Institutional and community-based studies carried out in Ethiopia found that almost half of the pregnant women had a poor level of knowledge about the COVID-19 pandemic (Degu et al., 2021 & Ayele et al., 2021). In addition, the results of a study conducted among residents of Dessie and Kombolcha City revealed that 54.11% of the participants had inadequate knowledge about COVID-19 prevention (Kassa et al., 2020). However, the level of COVID-19 knowledge in this study was relatively higher than a study done in Banha city of Egypt during the first COVID-19 wave that more than two-thirds of pregnant women had a poor knowledge level (Mohamed et al., 2020). The underlying reason for these differences could be related to the differentiation of studies setting and the period in which the studies were conducted, as this study was carried out in an urban setting and during the second COVID-19 wave for which expected a higher knowledge than during the first wave.

Approximately two-thirds of the participants didn't know that infected people can be asymptomatic and transmit viral infection which increases the risk of exposure to the disease. Expectedly, most of the pregnant women identified that respiratory droplet is the main mode of transmission of COVID-19 infection. Notably, few of them had satisfactory knowledge about other modes of virus transmission such as touching infected coins and banknotes or via stool and sewage in public toilets. Several studies confirmed that the gastrointestinal tract

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may be another potent mode of transmission, so sharing of toilets may risk for viral transmission, whereas the COVID-19 may exist in the gastrointestinal tract for a longer time than the respiratory system (Karia et al., 2020 & Xing et al., 2020). Moreover, another study found that patients with COVID-19 continued to test positive in the anal swabs, even after 14 days (Fan et al., 2020).

Surprisingly, the majority of pregnant women unaware that they among higher risk groups of coronaviruses, a matter that confirmed that this vulnerable group poorly knowledgeable with COVID-19 information related pregnancy. Another alarming finding is that, more than half of the participants had an unsatisfactory knowledge regarding common symptoms which is considered very important to help pregnant women for on-time referrals to healthcare centers or hospitals to avoid delayed diagnosis and possible complication, hence not infect unaffected individuals. Fever, dry cough, and difficulty of breathing were the most commonly identifies symptoms by the participants. This finding consistent with Egyptian and meta-analysis studies (Jafari et al., 2021 & Abdelhafiz et al., 2020). The Mass media is considered as the main source of information about COVID-19 among most of the pregnant women, in the same line with the result reported by Fikadu et al., 2021.

Among the most alarming finding in the present study is that more than half of the pregnant women didn't adequately practice preventive measures of COVID-19, this inadequate practice agreed with the study done among Egyptians (Kasemy et al., 2020). Regarding social distance, approximately three-quarters of the participants didn't practice social distance properly as they are striving for daily income and basic needs, shopping, and public transportation. This finding in line with the results of the study carried out in Ethiopia among pregnant women (W/Mariam et al., 2020). While, another Egyptian study conducted during first COVID-19 wave found that 82% of the subjects were not strictly practicing social distancing (Bakry et al., 2020).

Although, most pregnant women know the importance of using face masks in preventing COVID-19 transmission, the current study finding showed a lot of unsafe practices for universal use of face masks. Less than two-thirds of the pregnant women were committed for wearing face masks always in public places, whereas the majority of them touching the outer surface of the masks either while wearing or removing it and sometimes reuse a mask again after taking it off. The matter which is a major and potential source of viral infection rather than protection. Further, more than one-third of them sometimes or never secure the mask tightly on the face to cover the mouth and nose. These risky behaviors could



be explained by looking to the challenges facing pregnant women with using face masks (table 6), like cost, discomfort, and difficulty of breathing. Dyspnea in pregnancy is a common complaint found in up to 70% of women (Reeder et al., 2018), which may lead to difficulty in using the face mask. According to Lee et al., 2020 the face mask has relatively simple designs, which leads many people to suppose that they know how to use it. This supposition can reduce people's desire to learn the proper way of using the face mask, thereby pregnant women need a specialized educational program to improve their knowledge about how to use, disinfect, and dispose of used masks. There is no doubt that adopting healthy promoting behaviors is an important strategy for improving pregnancy outcomes, otherwise, the current study showed that more than half of the pregnant women didn't practice healthy related behaviors. This result emphasized that pregnant women should be encouraged to adopt a healthy lifestyle; healthy nutrition, adequate sleeping hours, and exercise, especially during the current pandemic crisis. Thereby it is extremely important for pregnant women to take extra care of their health, as their already reduced immunity is more susceptible to COVID-19 infection. Noteworthy, the finding of the current study showed that hand washing was the most commonly practiced preventive measure by the majority of the participants to combat the spread of the infection, which reflects the effect of intensive health awareness campaigns directed to all Egyptians as precautionary measures. This result in the line with (Kasemy et al., 2020).

Pregnant women demonstrated various positive and negative attitudes towards COVID-19 pandemic infection, less than half of the participants felt that the COVID-19 can cause severe illness, while the rest consider the virus just like cold flu, beside more than two-thirds of the pregnant women didn't appreciate risks associated with COVID-19 in pregnancy, this perception act as a barrier for taking healthy behavior and preventive actions. Based on the health belief model perceived severity act as a key driver of behavior. More than half of the participants not scared from COVID-19 infection, although this feeling is good for pregnant women's mental health, but fear is strong motive for seeking preventive measures that is based on adequate awareness. While more than one-third of the pregnant women didn't comply with routine prenatal care due to fear of getting the COVID-19 infection. According to the study in China, during first wave 64.6% of the subjects delayed or canceled their antenatal visits (Ding et al., 2021). Unfortunately, more than one-third of the pregnant women had a spiritual misconception that the COVID-19 preventive measures are not useful during this pandemic crisis and only praying to the God can save the world. As a result, they may ignore information and some principles directed by health authorities. This alarming issue shouldn't be neglected from all country sectors as the religious

leaders have an important role to clarify the power of faith in the face of COVID-19 threat besides complying with preventive measures and precautions. In the line of Poladian research proved that women more often declare strengthening their faith/spirituality in the face of the coronavirus hazard (Kowalczyk et al., 2020). Moreover, the Ethiopian study revealed that 41.7% of pregnant women believing by God are enough so they have been never practiced any form of preventive measures of COVID-19 (Ayele et al., 2021). On other hand, the majority of the pregnant women were optimistic that the virus can be successfully controlled. This positive attitude could be related to the Egyptian government's unprecedented actions from the first COVID-19 wave in taking stringent control and precautionary steps.

The current results showed that higher knowledge, positive attitude and adequate preventive practices (KAP) among pregnant women were associated significantly with higher education levels and socioeconomic status (SES), this attributed to the fact that individuals with higher educational level and SES tend to have more facilities and several accesses to information devices and have larger social networks. These results were supported by several studies (Kasemy et al., 2020 & Maharlouei et al., 2020).

The occupation was also another major identified predictor of KAP of preventive measures towards COVID-19, women who are employed have a chance for more discussions about the virus with colleagues and other people, thus, get more knowledge about it and implement the preventive measures to protect themselves and their families. Interestingly, pregnant women and husbands who had governmental work sector had higher KAP compared with other occupational sectors, this could be due to economic stability to some extent compared with private or day by day work that unfortunately did not commit to give workers a paid vacation during the lockdown as what happened in the government sector. Whereas the irregular workers were among those who lost part or all of their income. Congruent with Nigerian study (West et al., 2021). Moreover, according to the Central Agency for Public Mobilization and Statistics, more than a quarter of respondents reported losing their jobs as a result of lockdown during the first wave of COVID-19 (Maat of Peace, Development, and Human Rights. (2020). The presence of comorbidities is among the predictors of KAP, pregnant women with chronic illness were more likely to practice COVID-19 preventive measures, this might be related to pregnant women with chronic disease have the chance to get information toward COVID-19 from their health providers during their follow-up appointment. This result agrees with Fikadu et al., 2021.

Lastly, pregnant women who had low parity and smaller family size had good knowledge and practice. The potential clarification could be due to increase the number of children may negatively affect the economic status of the family thus less affordable for some preventive measures of COVID-19, like soap, alcohol-based hand sanitizer, and face masks. Moreover, increasing the number of children associated with increase women's workload and burden, make them over-exhausted which may affect their ability to comply with preventive measures. This finding is in agreement with previous studies (Ayele et al., 2021 & Nwafor et al., 2020).

### **Conclusion**

Almost half of the pregnant women had inadequate knowledge and preventive measures practices about the pandemic, as well as several negative attitudes toward COVID-19 were discovered, hence some knowledge about the pandemic in relation with pregnancy was very low and needs urgent improvement. The educational level of the pregnant women and their husbands, SES, maternal comorbidity, occupation, and even its sectors were predictors for KAP among the pregnant women. In addition, family size and maternal parity were also associated with knowledge and preventive practices towards the COVID-19 pandemic infection.

### **Recommendation**

Based on the current study findings, the researchers developed intervention guidelines in booklet format and distributed for pregnant women in the family health centers. Regular health education programs for pregnant women supported with written guidelines should be emphasized by the community health nurses in primary healthcare centers about, COVID-19 pandemic in relation with pregnancy, spread, transmission, related risk during pregnancy, as well as, possible preventive strategies to combat the consequence of the outbreak. In addition, the importance of adopting health-related behaviors during pregnancy that help to raise their immunity to fight infection, with strictly paying attention for those with poor sociodemographic characteristics with lesser income, lower education level, and limited access to the internet or online resources.

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### الملخص العربي

المعلومات، الاتجاهات والممارسات تجاه التدابير الوقائية لوباء فيروس كورونا المستجد «كوفيد 19» لدى السيدات الحوامل

**المقدمة:** تعد جائحة فيروس كورونا مشكلة صحية عامة حيث انها تشكل أخطر التحديات التي يواجهها العالم في حياتنا. وحيث ان الحمل والأمومة هي أكبر حدث في حياة المرأة، نجد ان هذه الفئة معرضات بشكل كبير لهذه العدوى الوبائية مع امكانية حدوث مضاعفات خطيرة للأم والجنين ولذلك فالامتثال للتدابير الوقائية ذات أهمية قصوى لمكافحة انتشار هذا الوباء. ومع ذلك، فانه ليس من الواضح ما إذا كانت السيدات الحوامل على دراية ووعى كافي بهذا الوباء وبالممارسات والتدابير الوقائية لمواجهة تفشي هذا الوباء. **الهدف:** تقييم المعلومات والاتجاهات والممارسات الصحية تجاه التدابير الوقائية لفيروس كورونا المستجد لدى السيدات الحوامل المترددات على عيادات متابعة الحوامل في مراكز صحة الأسرة بمنطقة المقطم الطبية التابعة لمديرية الشؤون الصحية بالقاهرة. **طرق البحث:** دراسة مقطعية وصفية، باستخدام العينة الملائمة لعدد 350 سيدة حامل المترددات على أربعة مراكز صحية بمنطقة المقطم. **ادوات جمع البيانات:** باستخدام استبيان المقابلات الشخصية للسيدات الحوامل؛ يتألف من خمسة أقسام تتعلق بالخصائص الديموغرافية والتوليدية. بالإضافة إلى المعارف والاتجاهات والممارسات الصحية تجاه فيروس كورونا.

**النتائج:** %50.64 من السيدات الحوامل لديهم مستوى مرضى من المعلومات و %42.86 لديهم مستوى كافي من الممارسات تجاه التدابير الوقائية لمواجهة فيروس كورونا، بمتوسط درجات  $3.35 \pm$  ,  $28.12 \pm 15.65$  على التوالي. وبلغ متوسط درجات الاتجاهات  $6.37 \pm 2.19$ . ارتبطت المعلومات والاتجاهات والممارسات بشكل كبير بالخصائص الديموغرافية والتوليدية للسيدات الحوامل حيث وجد دلالة إحصائية مع المستوى التعليمي للسيدات؛ وازواجهن، الحالة الاقتصادية للأسرة؛ المهنة؛ قطاع مهنة السيدات وازواجهن. الى جانب الامراض المزمنة لدى السيدات. وكذلك اظهرت نتائج الدراسة وجود علاقة ذات دلالة احصائية بين مستوى معلومات وممارسات السيدات تجاه التدابير الوقائية لفيروس كورونا مع حجم الاسرة وعدد مرات الولادة.

**الخلاصة:** ما يقرب من نصف النساء الحوامل لم يكن لديهن معرفة وممارسات كافية وصحيحة لوقاية وحماية أنفسهن من وباء كورونا المنتشر، وكذلك تم اكتشاف العديد من الاتجاهات السلبية تجاه جائحة كورونا وأوضحت الدراسة العديد من العوامل التي تؤثر على مستويات المعارف والاتجاهات والممارسات تجاه التدابير الوقائية لجائحة فيروس كورونا بين السيدات الحوامل.

**التوصيات:** بناء على نتائج الدراسة تم تصميم كتيب استرشادي وتوزيعه على السيدات الحوامل في المراكز الصحية. حيث ينبغي التأكيد على توفير برامج تثقيف صحي بشكل منتظم للسيدات الحوامل بجانب حملات التوعية التي تولتها الحكومة المصرية لمواجهة تفشي فيروس كورونا المستجد «كوفيد 19» لتحسين معدل الامتثال للتدابير الوقائية والتأكيد على المخاطر المصاحبة للوباء أثناء الحمل مع إيلاء اهتمام صارم لذوي الخصائص الاجتماعية الديموغرافية الضعيفة ذوات الدخل المادي المنخفض، ومستوى تعليمي متدني، وإمكانيات محدودة للوصول للموارد عبر الإنترنت.