

Health Care Seeking Behavior of the Pregnant Women during COVID 19 Pandemic

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Abstract

Background: Pregnant women are one of the vulnerable groups who are impacted negatively by coronavirus pandemic (COVID 19). Scarce researches exist about their health care seeking behavior during COVID 19 pandemic. **The aim** of this study was to assess health care seeking behavior of the pregnant women during COVID 19 pandemic. **Subjects and Method: Design:** A descriptive study design was used. **Setting:** This study was carried out at 3 antenatal clinics of Obstetric and Gynecological departments at Tanta University Hospital affiliated to Ministry of High Education, as well as El-Menshawey General Hospital and El-Mahalla Alkobra General Hospital affiliated to Ministry of Health and Population. **Subjects:** A purposive sample of 300 pregnant women who met the inclusion criteria was included in the study. **Tools of data collection:** Four tools were used for data collection: **Tool (I):** Structured interview schedule of socio-demographic characteristics, and medical and reproductive history of the studied pregnant women, **Tool (II):** Pregnant women's perception / awareness regarding infection with COVID 19 pandemic during pregnancy, **Tool (III):** Pregnant women's knowledge regarding antenatal care during COVID 19 pandemic, and **Tool (IV):** Pregnant women's health care seeking behavior during COVID-19 pandemic. **Results:** A statistically significant positive relation observed regarding knowledge, perception and health care seeking behavior of the studied pregnant women during COVID 19 pandemic ($r = 0.275$, $P = 0.000^{**}$). **Conclusion:** COVID-19 affected pregnant women health care seeking behavior both directly and indirectly on access to the timely needed appropriate high-quality care, with a statistically significant relation between their knowledge, perception and health care seeking behavior. **Recommendations:** It is important to increase pregnant women awareness regarding the significance of seeking maternal health services during the COVID 19 pandemic to decrease maternal and neonatal mortality and morbidity rates. Additionally, programs and practical actions should be integrated to improve the quality of care provided to pregnant women particularly during the critical time of COVID 19 pandemic.

Key words

Pregnant women, COVID 19 pandemic, Antenatal Care, Health care seeking behavior

Introduction

Coronavirus disease (COVID-19) is a global pandemic infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 virus).^[1,2] Many studies reported a higher rate of SARS-CoV-2 infection in pregnant women compared with similarly aged adults.^[3-5] While COVID-19 affects all countries and groups of individuals' worldwide, pregnant women face unique challenges due to the physiological and immunological changes that occur in their bodies to support and protect the developing fetuses. Pregnant women, especially those who are recently pregnant or in the third trimester and those who have gestational diabetes, pre eclampsia, medical diseases, and health discriminations are vulnerable groups to COVID-19, which can also go into the fetal cells via the placenta and affect

health and wellbeing of the pregnant women and their offspring both directly and indirectly.^[6-8]

Direct effect of COVID 19 on pregnant women involves complications as miscarriage, cesarean delivery, as well as childbirth and postnatal maternal complications, while effect of COVID 19 on the fetus include complications as intrauterine growth restriction (IUGR), preterm birth, stillbirth (12.1 compared to the national rate 4-5 per 1000 births), and congenital anomalies as neural tube defects.^[9,10]

On the other hand, indirect effect of COVID 19 is due to the changes occurred in health care, social policy, and economic circumstances. These include losing income, increased exposures to domestic violence, more childcare demands, and increased political inequalities, harmful policies in the healthcare infrastructure, decreased antenatal care visits, and change of

the healthcare delivery from face to face to virtual consultations.^[4,11-13]

Furthermore, the consequences of COVID-19 extend to affect the psychological status of pregnant women. In this regard COVID-19 is considered one of the most intense emotional experiences in pregnant women's life that contributes to a greater sense of fear, stress, panic and anxiety.^[14,15]

Pregnant women are expressing concerns about greater severity of COVID-19 disease on their infant's safety and the potential vertical transmission from an infected mother to her newborn, increased the risk of adverse neonatal outcomes, sudden changes in the antenatal healthcare (for example, modifications of scheduled appointments, restrictions on the presence of family members during childbirth and postnatal visitation), and protection methods.^(8,10-12) Thus, it is critical for pregnant women to be aware and have accurate knowledge regarding infection with COVID 19 disease, and components of antenatal care to enhance their health care seeking behavior during this period.^[16-19]

Accurate information materials can be administered to pregnant women as part of the antenatal care (ANC) package; including COVID-19 symptoms, modes of transmission, high-risk groups, and preventive measures in pregnancy.^[24-26] Good ANC, especially during COVID 19 can contribute to good health, while poor ANC can increase maternal, fetal, and neonatal mortality and morbidity rates, especially in certain cases, such as pre eclampsia and eclampsia and antepartum hemorrhage, and cases infected with COVID 19.^[20-23] So, health care seeking behavior of pregnant women is very important to identify high risk conditions during ANC. Consequently, decrease maternal, fetal, and neonatal mortality and morbidity rate.^[24-27]

Understanding pregnant women approach to healthcare seeking is also crucial to decrease adverse pregnancy outcomes and the serious effects of infection with COVID 19 during pregnancy. This can be reached through enhancement of individuals' adequate and correct risk perception, health education, and healthy practices such as safety measures (sterilization, and regular hand washing with soap and water), as well as social distancing, access to portable source of water supply, and

obtaining information regarding travel history. Health care seeking behavior refers to decisions and actions carried out by pregnant women during COVID 19 pandemic in response to any health problem.^[28-31]

Health belief model (HBM) highlighted that it can be affected by the perceived degree of impairment or disease, and the healthcare provider's perceptions. It can also be affected by past medical and obstetrics history, present signs and symptoms of pregnancy, cognitive, biological and socio-economic factors, culture, believes, norms, expectations, money, time, effort, and public media. Another study listed six main factors that included childbearing challenges; increased worry; uncertainty and fear; sense of loss; challenges accessing care; strategies for coping with the COVID 19 pandemic stress; and reflections and advice to other pregnant women and health care professionals.^[32-34]

In addition, there are various concerns about antenatal, intra-partum and postpartum care, and perceived limited sources of help to pregnant women related to COVID 19 pandemic.^[32] In this regard, lack of emotional support from family and society was associated with a high prevalence of severe to very severe depression, anxiety, and stress among Egyptian individuals. Due to the major impact of COVID 19 pandemic on pregnant women and their offspring, many questions exist regarding the importance of involving them and their families' in designing future maternity care services.^[35-37]

Nurses and other health care providers have a pivotal role in communication and counselling; providing accurate knowledge, and standardized performance to assessment and enhance health care seeking behavior of the pregnant women during the COVID 19 pandemic.^[9-38-41]

Significance of the study

Pregnant women are considered one of the vulnerable groups to COVID 19, due to the physiological and immunological changes that occur in their bodies during pregnancy. Recent, unvaccinated and or not fully vaccinated, as well as pregnant women in the third trimester are at increased risk of becoming severely ill, need in an urgent intensive care and their babies being born prematurely if they are infected with COVID 19 virus. Worldwide, numerous studies had been conducted regarding vulnerable groups

such as people with serious medical conditions, but unfortunately scarce research exists regarding health care seeking behavior of pregnant women during COVID 19 pandemic.

The aim of the study

The aim of this study was to assess health care seeking behavior of the pregnant women during COVID 19 pandemic.

Research Question

What is the health care seeking behavior of pregnant women during COVID 19 pandemic?

Operational Definition

Awareness means whether pregnant women had heard or not about COVID 19.

Subjects and Method

Subjects

Study Design: A descriptive cross-sectional research design was used to conduct this study.

Settings: This study was carried out at 3 antenatal clinics of Obstetric and Gynecological departments of Tanta University Hospital affiliated to Ministry of High Education, as well as El-Menshawy General Hospital and El-Mahalla Alkobra General Hospital affiliated to Ministry of Health and Population.

Subjects: A purposive sample of a total of (300) pregnant women was selected from the previously mentioned settings; comprised (100) women from each setting. The sample size is calculated based on power analysis by using Epi-Info software statistical package created by World Health Organization and Center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002^[12]. Sample size calculation criteria were: 95% confidence COVID 19 pandemic and 80% power of the study. **The inclusion criteria for the study subjects were as follows:** Attended at least one antenatal care visit, aged between 18-45 years, singleton pregnancy, not a health care professional and willing to participate in the study.

Tools of data collection

To achieve the aim of the present study four tools were adapted by the researchers from different national and international research studies in English language. They were translated into Arabic language and verified by an expert committee in the field of Obstetric and Gynecological Nursing and pre tested to collect the necessary data as follows:

Tool (I): Structured interview schedule of socio-demographic characteristics, and

medical and reproductive history of the studied pregnant women

This tool was developed by the researchers from recent related literatures^[4,9,11] to collect basic data about the studied pregnant women. It included **3 parts** (16) questions (1 to 16) as follows:

Part (1): Socio-demographic data: Such as age, level of education, occupation, income, marital status, residence, and religion.

Part (2): Medical history: Such as presence of any chronic disease, height, weight, and body mass index.

Part (3): Reproductive history: Such as duration of current pregnancy (gestational weeks or months), gravidity, parity, number of abortion, presence of any pregnancy complication such as gestational diabetes, pregnancy induced hypertension, hyperemesis gravidarum, overweight, threatening abortion, and fetal congenital anomalies.

Tool (II): Structured interview schedule of the studied pregnant women' perception / awareness regarding infection with COVID 19 pandemic during pregnancy

This tool was developed by the researchers after reviewing recent relevant literatures^[8,10] to collect data about perception/awareness of the studied pregnant women regarding infection with COVID 19 pandemic during pregnancy. It included 10 questions (17 to 26), such as: Is pregnant woman vulnerable to infection with the emerging coronavirus (Covid-19)? Does COVID-19 affect the health of the pregnant woman? And what is the impact of COVID 19 on the health of the pregnant woman?

Scoring system was calculated as follows: Likely aware was scored as 1 and not likely aware was scored as 0.

The total score was calculated as follows: $\geq 60\%$ positive awareness and $0 < 60\%$ negative awareness.

Tool (III): Structured interview schedule of the studied pregnant women' knowledge regarding antenatal care during COVID 19 pandemic

This tool was adapted by the researchers from **Maharlouei N. et.al., (2020)**^[42] after reviewing recent relevant literatures to collect data about knowledge of the studied pregnant women regarding antenatal care during COVID 19 pandemic. It included 31 statements and questions (27 to 57), such as: I have information

about health care during pregnancy. What are the components of health care during pregnancy? And what do you do, where do you go and who do you tell during the COVID-19 pandemic for information about health care during pregnancy?

Scoring system was as follows: Correct and complete answers were scored as (2), correct and incomplete answers were scored as (1), and incorrect answers and didn't know were scored as zero (0).

The total score was calculated as follows: High level of knowledge $\geq 70\%$, moderate level of knowledge $60 < 70\%$ and low of knowledge $< 60\%$.

Tool (IV): Structured interview schedule of health care seeking behavior of pregnant women during COVID 19 pandemic

This tool was adapted by the researchers from **Johnbosco M., et.al., (2020)** ^[43] to collect data related to health care seeking behavior of the studied pregnant women during COVID-19 pandemic. It included 4 parts, 27 statements and questions (58 to 85) as follows:

Part (1): Pregnant woman' health care seeking behavior regarding antenatal care during COVID-19 pandemic: It included 9 statements and questions (58 to 66), such as: I had a pregnancy follow-up and an antenatal check-up on time. How many pregnancy follow-up visits did you make in each trimester of pregnancy? And I made the tests that should be done for the pregnant woman.

Part (2): Pregnant woman' health care seeking behavior regarding prevention infection of COVID 19 pandemic during pregnancy: It included 11 statements and questions (67 to 77), such as: I wear a mask when going out. I change location or try to stay away from those who appear to have a cold or fever (coughing, sneezing, etc.) on public transport or indoors. I wash my hands more often, especially after interacting with others outside. What is the average daily washing of hands with soap/hand sanitizer prior to knowing the outbreak of COVID-19? And what is the average daily washing of hands with soap / hand sanitizer after knowing the outbreak of COVID19?

Scoring system was as follows: Always occur was scored as (3), sometimes occur was scored as (2), and never occur was scored as (1).

The total scoring was as follows: Positive health care behavior $\geq 60\%$ and negative health care behavior $< 60\%$.

Part (3): Pregnant woman's health care behavior when feeling panic and anxiety during the COVID-19 pandemic: It included question number 78, as follows: What is your source/s of information when feeling panic and anxiety during the COVID-19 pandemic?

Part (4): Factors affecting health care seeking behavior of the pregnant women during COVID-19 pandemic included items, such as: Fear of contracting the virus, delays in deciding to seek care, delays in reaching healthcare facilities and delays in receiving quality healthcare services, governmental restriction to decrease the spread of COVID 19 as: Compulsory lockdown, quarantine and national cessation of movement, role of the pregnant woman in her family, also her role in decision-making related to health care behavior during COVID 19 pandemic? And what are the sources of help when feeling panic during the pandemic?

Method

1. Official letter clarifying the purpose of the study was obtained from the Faculty of Nursing Tanta University and was submitted to the responsible authorities of the selected settings.
2. Ethical and legal considerations: Pregnant women's oral consent was taken after providing complete and detailed information about the aim and the benefits of the study, as well as the opportunity of withdrawing at any time. The researchers ensured that the nature of the study didn't cause any harm or pain for the entire sample. In addition, confidentiality and privacy were taken into consideration regarding data collection.
3. The study tools were developed by the researchers after reviewing recent related literatures. Then, they were translated into Arabic language and tested for content and construct validity by an expert committee of 5 experts in the Obstetric and Gynecological Nursing field and the recommended modifications were done before conducting the study.
4. A pilot study was carried out on 10% (30) of the studied pregnant women to test the tools of the study for feasibility, fidelity, applicability, language competency, content

validity, time needed to be fulfilled, and reliability of the study tools. Modifications were done where deemed necessary. The data obtained were excluded from the study.

5. Tools reliability examined by Alpha Cronbach's statistical test analysis was 0.73.
6. Data were collected in a period of 6 months during the morning shifts from the beginning of October 2020 to the end of April 2021. The time needed to fulfill the study tools was 20 minutes.
7. Statistical Analysis: The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 26. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient r . A Statistical significance was adopted at $P < 0.05$ for interpretation of results of tests of significance (*). Also, a highly significance was adopted at $P < 0.01$ for interpretation of results of tests of significance (**).

Results

A total number of 300 pregnant women were enrolled in this study according to the inclusion criteria. The results of this study are presented in 7 tables and 3 figures. **Table (1):** Exhibits percentage distribution of the studied pregnant women during COVID 19 pandemic according their socio-demographic-characteristics (N = 300). It was evident that 61.3% their age ranged from 18 - < 25, and 25% was 25 - < 35 years old with a total mean age 21.08 ± 4.872 years. It was also noticed that 46.3% had university education, 22% had general/technical secondary school, and 16.7% had no formal education. Additionally, 34.3% had governmental jobs, the majority 92.7% were married, and 7.4% were widow, 57% had enough monthly income, and 61.3% were rural residents. The study results also revealed that there was no statistically significant relation between socio-demographic characteristics and the studied pregnant women's knowledge and health care seeking behavior. On the other hand, a statistically significant relation ($p = 0.018^*$) existed between perception/awareness of the studied pregnant women and level of education.

Table (2): Shows percentage distribution of the studied pregnant women during COVID 19 pandemic according to their medical and reproductive history (N = 300). Concerning their medical history, it was evident that 80.7% didn't have any chronic disease, their mean height was 1.6473 ± 0.065 meter, their mean weight was 77.11 ± 12.564 kilograms, and their mean body mass index was 28.369 ± 4.071 . Regarding their reproductive history, the table reveals that 65.7% were in the first trimester of pregnancy, 69.3% were primigravida, 61.7 had no previous abortion, 42.7 had no children, and 54.7% had no pregnancy complications (# more than one answer).

Table (3): Indicates percentage distribution of the studied pregnant women during COVID-19 pandemic according to the factors affecting their health care seeking behavior, and sources of help when feeling panic (N = 300). It was noticed that (55.3%, 42.7 % and 2% respectively) stated that fear of contracting the virus leading to the delays in deciding to seek care, delays in reaching healthcare facilities and delays in receiving quality healthcare services. It also found that (38.3% and 33.3% respectively) declared that compulsory lockdown and quarantine were governmental restriction to decrease the spread of COVID 19. Moreover, 58% declared working and sharing the expenses, 76.3% had role in decision making, With regards to the studied pregnant women health care seeking behavior sources of help when feeling panic during COVID 19 pandemic, 55.7% used the internet, 66.3 got help from medical staff, 23.7% got help from relatives or friends, and 4.3% didn't ask for help (# more than one answer).

Table (4): Illustrates distribution of the studied pregnant women according their perception/awareness regarding probability of infection with COVID 19 pandemic during pregnancy. It was noticed that (74.0% 72.0%, and 72.0%, respectively) of women had incomplete correct answer about COVID-19 affects health of the pregnant woman, pregnant woman is vulnerable to infection with the emerging Covid-19 and COVID-19 can be transmitted from a pregnant woman with the disease to her fetus during pregnancy. Meanwhile, more than half of them had incomplete correct answer about COVID-19 can be transmitted from a pregnant woman with the disease to her fetus during childbirth

Table (5): Demonstrates distribution of the studied pregnant women according their health seeking behavior regarding prevention of infection during COVID-19 pandemic. It was Revealed that more than three quarter (81.3%, 75.3 and 72.7%, respectively) of the studied women change location or try to stay away from those who appear to have a cold or fever (coughing, sneezing, etc.) on public transport or indoors, wash their hands more often, especially after interacting with others outside and their wear a mask when going out.

Table (6) and Figure (1): Display percentage distribution of the studied pregnant women according their total levels of health care seeking behavior, knowledge regarding antenatal care and perception/awareness regarding infection with COVID 19 pandemic (N = 300). It was noticed that regarding their level of health care seeking behavior, almost all (98%) of the studied pregnant women had unsatisfactory health care seeking behavior regarding antenatal care during COVID 19 pandemic, with a (total mean \pm SD = 21.99 \pm 3.818). Concerning their level of knowledge regarding antenatal care during COVID 19 pandemic, 88% of them had low level of knowledge with a (total mean \pm SD = 27.14 \pm 7.297). As regards to perception/awareness regarding infection with COVID 19 pandemic during pregnancy, 86.3% had negative perception/awareness with a (total mean \pm SD = 9.15 \pm 3.278).

Table (7) and Figures (2,3): Demonstrates percentage comparison and correlations between total level of health care seeking behavior of the studied pregnant women and their total levels of both perception/awareness regarding infection with COVID 19 pandemic and knowledge regarding antenatal care during COVID 19 pandemic (N =300). In this regard, **table (7) and figure (2):** Verifies that 84.3% of the studied pregnant women had negative perception/awareness regarding infection with COVID 19 pandemic, with no statistical significant relation (r , p = 0.089, 0.125) between their total level of health care seeking behavior of the studied pregnant women and total level of perception/awareness. Moreover, **table (7) and figures (3):** Confirms that 86.3% of the studied pregnant women had low total level of knowledge regarding antenatal care during COVID 19 pandemic, with a highly statistically significant relation (r = 0.275, p = 0.000**) between their total level of health care seeking behavior and total level of knowledge. **Table (7):** Also proves that 76% of the studied pregnant women had low level of knowledge regarding antenatal care and negative perception/awareness regarding infection with COVID19 pandemic, while 12% of them had low level of knowledge regarding antenatal care and positive perception/awareness regarding infection with COVID19 pandemic with a statistically significant relation (r = 0.139, p = 0.016*) between their total level of knowledge and total level of perception.

Table (1): Percentage distribution of the studied pregnant women during COVID 19 pandemic according their socio-demographic-characteristics (N = 300).

Socio-demographic characteristics	The studied pregnant women (N= 300)	
	N	%
Age (in years)		
▪ (< 18)		
▪ (18-< 25)	40	13.3
▪ (25-<35)	184	61.4
▪ (35-44)	75	25.0
	1	0.3
Age (in years): Range (10-40), Mean \pm SD (21.08\pm4.872)		
Educational level		
▪ No formal	50	16.7
▪ Primary	35	11.7
▪ General/technical secondary	66	22.0
▪ University	139	46.3
▪ Post studies	10	3.3
Relation between perception/awareness of the studied pregnant women and level of education: (p= 0.018*)		
Occupation		
▪ Doing a government job	103	34.3
▪ Self-employed	48	16.0
▪ Student	2	0.7
▪ Do not work (housewives)	147	49.0
Marital status		
▪ Married	278	92.7
▪ Widow	22	7.4
Monthly income of the family		
▪ More than enough	11	3.7
▪ Enough	171	57.0
▪ No income	118	39.3
Residence		
▪ Urban	116	38.7
▪ Rural	184	61.3

Table (2): Percentage distribution of the studied pregnant women during COVID 19 pandemic according to their medical and reproductive history (N = 300).

Medical and reproductive history	The studied pregnant women (N= 300)	
	N	%
Chronic disease		
▪ None	242	80.7
▪ 1	43	14.3
▪ 2	15	5.0
Height (in meters):	Range (1.50-1.81), Mean ± SD 1.6473±0.065	
Weight (in kilograms):	Range (50-105), Mean ± SD (77.11±12.564)	
Body mass index (BMI):	Range (19.53-39.04), Mean ± SD (28.369±4.071)	
Duration of pregnancy in weeks or months		
▪ First trimester	197	65.7
▪ Second trimester	103	34.3
Number of pregnancies		
▪ One	208	69.3
▪ Two	92	30.7
The number of abortions		
▪ None	185	61.7
▪ One	96	32.0
▪ Two or more times	19	6.3
The number of births		
▪ None	128	42.7
▪ One	113	37.7
▪ Two or more times	59	19.7
# Pregnancy complications		
▪ None	164	54.7
▪ Gestational diabetes	74	24.7
▪ High blood pressure during pregnancy	54	18.0
▪ Excessive weight gain	50	16.7
▪ Aborted/threatened abortion	16	5.4

More than one answer was chosen

Table (3): Percentage distribution of the studied pregnant women during COVID-19 pandemic according to the factors affecting their health care seeking behavior, and sources of help when feeling panic during COVID 19 pandemic (N = 300).

Factors affecting health care seeking behavior, and sources of help when feeling panic during COVID-19 pandemic	The studied pregnant women (N= 300)	
	N	%
Fear of contracting the virus leading to: -		
▪ The delays in deciding to seek care	166	55.3
▪ Delays in reaching healthcare facilities	128	42.7
▪ Delays in receiving quality healthcare services	6	2.0
Governmental restriction to decrease the spread of COVID 19 included:-		
▪ Compulsory quarantines	100	33.3
▪ National cessation of movements	85	28.4
▪ Compulsory lockdowns	115	38.3
Role of the pregnant woman in her family		
▪ work and share the expenses	174	58.0
▪ Don't work and only at home	126	42.0
Role of the pregnant woman in decision-making		
▪ Has no role	71	23.7
▪ Has a role	229	76.3
# Sources of help when feeling panic		
▪ Medical and nursing staff	199	66.3
▪ Relatives or friends	71	23.7
▪ The Internet	167	55.7
▪ I don't ask for help	13	4.3

More than one answer were chosen

Table (4): Distribution of the studied pregnant women according their perception / awareness regarding probability of infection with COVID 19 pandemic during pregnancy (N = 300).

Perception/Awareness Items	The studied pregnant women (n=300)					
	Incorrect		Incomplete		Complete	
	N	%	N	%	N	%
1. Pregnant woman is vulnerable to infection with the emerging Covid-19	69	23.0	216	72.0	15	5.0
2. COVID-19 affects health of the pregnant woman	67	22.3	222	74.0	11	3.7
3. COVID 19 has an impact on health of the pregnant woman	116	38.7	120	40.0	64	21.3
4. COVID-19 can be transmitted from a pregnant woman with the disease to her fetus during pregnancy	79	26.3	216	72.0	5	1.7
5. COVID-19 can be transmitted from a pregnant woman with the disease to her fetus during childbirth	149	49.7	147	49.0	4	1.3
6. COVID-19 can be transmitted from an infected mother to her baby during breastfeeding	123	41.0	0	0.0	177	59.0
7. COVID-19 can affect the health of the fetus or newborn	114	38.0	0	0.0	186	62.0
8. COVID-19 has a serious impact on the health of the fetus or newborn	144	48.0	83	27.7	73	24.3
9. A pregnant woman must make antenatal care follow up to prevent infection with the emerging corona virus	50	16.7	130	43.3	120	40.0
10.A pregnant woman must put personal protective equipment in the delivery bag she is going to take with her to the hospital during the COVID-19 pandemic	102	34.0	95	31.7	103	34.3

Table (5): Distribution of the studied pregnant women according their health care seeking behavior regarding prevention of infection during COVID-19 pandemic (N = 300).

Health seeking behavior regarding prevention of infection	The studied pregnant women (n=300)					
	Incorrect		Incomplete		Complete	
	N	%	N	%	N	%
1. I wear a mask when going out	82	27.3	0	0.0	218	72.7
2. I change location or try to stay away from those who appear to have a cold or fever (coughing, sneezing, etc.) on public transport or indoors	56	18.7	0	0.0	244	81.3
3. I wash my hands more often, especially after interacting with others outside	74	24.7	0	0.0	226	75.3
4. Average daily washing of hands with soap/hand sanitizer prior to knowing the outbreak of COVID-19	13	4.3	196	65.3	91	30.3
5. Average daily washing of hands with soap / hand sanitizer after knowing the outbreak of COVID19	5	1.7	184	61.3	111	37.0
6. Average weekly spit on the floor before the COVID-19 outbreak was known	3	1.0	95	31.7	202	67.3
7. Average Weekly Spit on the Ground after Knowing the COVID-19 Outbreak	2	0.7	96	32.0	202	67.3
8. Average weekly exit before the COVID-19 outbreak was known	127	42.3	164	54.7	9	3.0
9. Average Weekly exit after knowing the COVID-19 Outbreak	130	43.3	47	15.7	123	41.0
10. Average weekly showers before the COVID-19 outbreak was known	146	48.7	117	39.0	37	12.3
11. Average weekly shower after learning about the COVID-19 outbreak	156	52.0	107	35.7	37	12.3
Range (5-17), Mean \pm SD 11.06\pm2.337						

Table (6): Percentage distribution of the studied pregnant women according their total levels of health care seeking behavior, knowledge regarding antenatal care and perception/awareness regarding infection with COVID 19 pandemic (N = 300).

Total levels of health care seeking behavior, knowledge regarding antenatal care and perception regarding infection with COVID 19 pandemic	The studied pregnant women (N=300)	
	N	%
Health care seeking behavior		
▪ Unsatisfactory (< 70%)	294	98.0
▪ Satisfactory (\geq 70%)	6	2.0
Range (12-32), Mean \pm SD (21.99\pm3.818)		
Knowledge		
▪ Low (< 60%)	264	88.0
▪ Moderate (60%-75%)	35	11.7
▪ High (>75%)	1	0.3
Range (12-46), Mean \pm SD (27.14\pm7.297)		
Perception		
▪ Negative (< 60%)	259	86.3
▪ Positive (\geq 60%)	41	13.7
Range (2-16), Mean \pm SD (9.15\pm3.278)		

Figure (1): Percentage distribution of the studied pregnant women according their total levels of health care seeking behavior, knowledge regarding antenatal care and perception/awareness regarding infection with COVID 19 pandemic (N = 300).

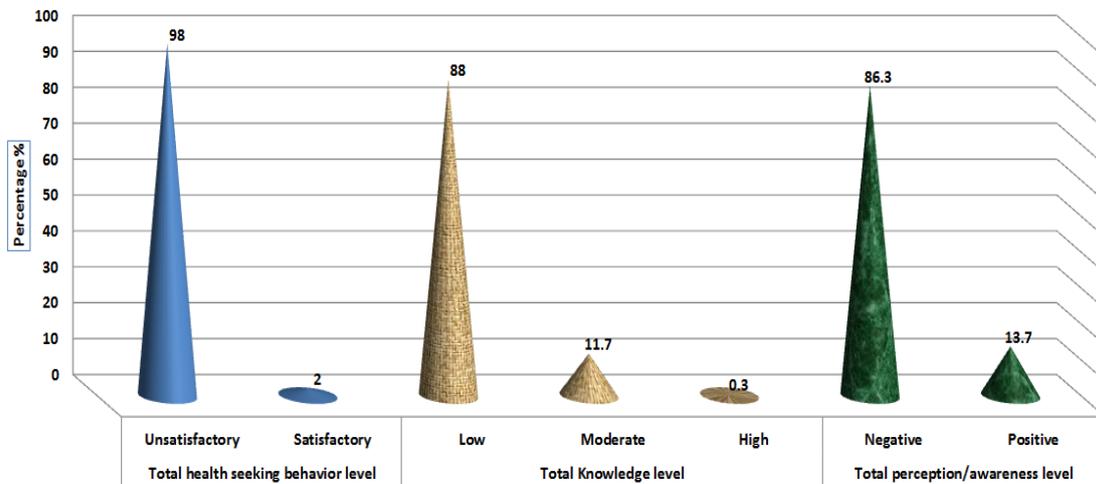


Table (7): Percentage comparison and correlations between total level of health care seeking behavior of the studied pregnant women and their total levels of both perception/awareness regarding infection with COVID 19 and knowledge regarding antenatal care during COVID 19 pandemic, as well as between total knowledge and total perception/awareness (N =300).

Total levels of both perception regarding infection and knowledge regarding antenatal care during COVID 19 pandemic	Total health care seeking behavior level (N= 300)				χ^2 P		
	Unsatisfactory (n=294)		Satisfactory (n=6)				
	N	%	N	%			
Total perception/awareness level					FE 1.00		
▪ Negative	253	84.3	6	2.0			
▪ Positive	41	13.7	0	0.0			
r , p (0.089 , 0.125)							
Total knowledge level					0.167 0.920		
▪ Low	259	86.3	5	1.7			
▪ Moderate	34	11.3	1	0.3			
▪ High	1	0.3	0	0.0			
r , p (0.275 , 0.000**)							
Total levels of perception regarding infection with COVID 19 pandemic	Total knowledge level regarding ante natal care (N= 300)					χ^2 P	
	Low (n=264)		Moderate (n=35)		High (n=1)		
	N	%	N	%	N		%
Total perception/awareness level						0.170 0.919	
▪ Negative	228	76.0	30	10.0	1		0.3
▪ Positive	36	12.0	5	1.7	0		0.0
r , p (0.139 , 0.016*)							

r: Pearson' correlation coefficient, (*) Statistically significant at level P< 0.05, (**) Highly statistically significant at level P< 0.01

Figure (2): Percentage comparison and correlations between the total level of health care seeking behavior of the studied pregnant women and their total level perception/awareness regarding infection with COVID 19 pandemic (N =300).

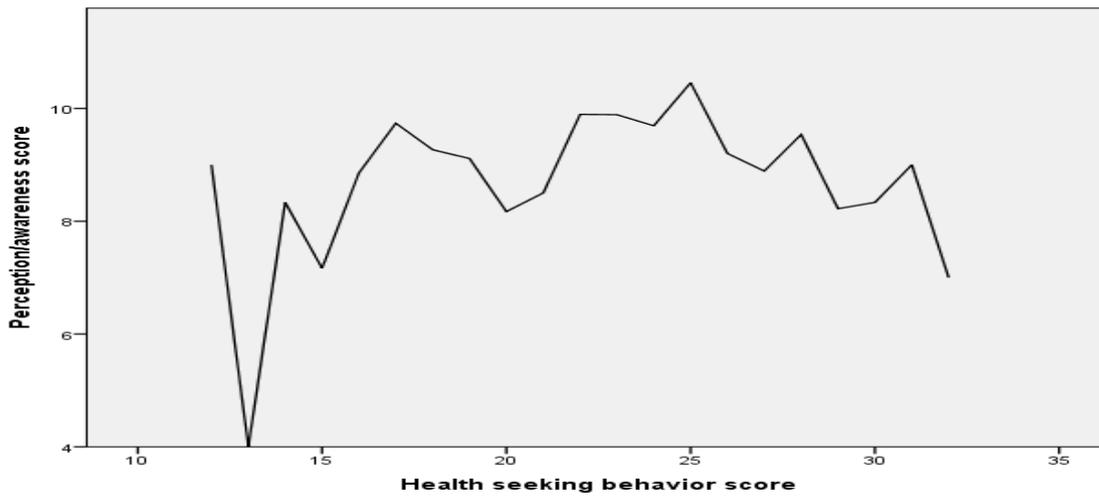
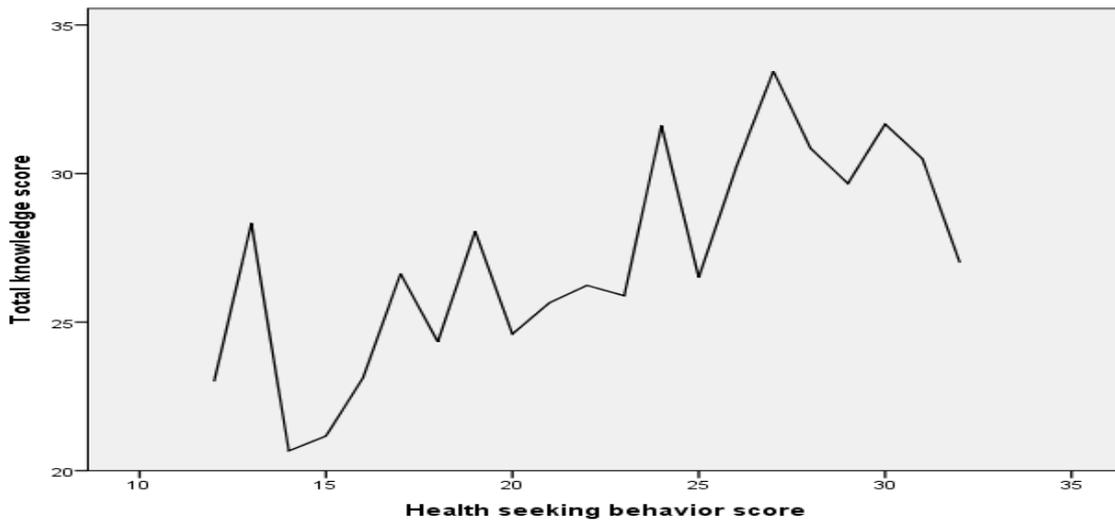


Figure (3): Percentage comparison and correlations between the total level of health care seeking behavior of the studied pregnant women and their level of knowledge regarding antenatal care during COVID 19 pandemic (N =300).



Discussion

Pregnant women are one of the vulnerable groups who are impacted negatively by coronavirus pandemic. Scarce researches exist regarding their health care seeking behavior during COVID 19 pandemic. So, the aim of this study was to assess health care seeking behavior of the pregnant women during COVID 19 pandemic. Results of the present study revealed that regarding socio-demographic characteristics of the studied pregnant women during COVID 19 pandemic, more than two thirds of the studied pregnant women their age ranged from (18-< 25) years and the age of one quarter of them ranged from (25-<35) years old with a total mean age (21.08±4.872) years. It was also noticed that nearly one half of them had university education, slightly more than one fifth had general/technical secondary school, and nearly one half were housewives, slightly more than one third had governmental jobs, the majority were married, slightly more than one half had enough family income, and nearly two thirds were rural residents.

These results are consistent with **Huaman Y., et al., 2021** ^[19] who displayed that 84.5% women aged between 18 and 34 years, 79% were housewives, 71.9% had high school education, and 60% a cohabiting marital status. Additionally, **Mortazavi F., et al., 2021** ^[16] stated that the women' aged <30 years, employed, and with a low family income. Moreover, **Nicomedes C., et al., 2021** ^[15] highlighted that the mean age of the studied subjects was 31.3 years, and they were a geographically diverse.

Kotlar B., et al., 2021 ^[9] also indicated that approximately 46% were employed in critical sectors, while 19% and 13%, respectively, were employed in locked-down sectors.

Concerning the medical history of the studied pregnant women, this study showed that slightly more than four fifths were healthy (didn't have any chronic disease), their mean height was (1.6473±0.065) meter, their mean weight was (77.11±12.564) kilograms, and their mean body mass index was (28.369±4.071). This result agrees with **Huaman Y., et al., 2021** ^[19] who stated that pre-gestational body mass index assessment showed that 36.7% were normal weight, 38.1% were overweight, and 30.3% were obese pregnant women.

With regards to reproductive history of the studied pregnant women, the present study revealed that nearly two thirds were in the first trimester of pregnancy, slightly more than two thirds were primigravida, nearly two thirds had no previous abortion, and no children, and slightly more than one half of them had normal pregnancy course (no complications). This result agrees with, **Nicomedes C., Avila R., 2021** ^[15] who evidenced that 37% of the studied subjects were nulliparous. On the other hand, regarding gestational age, the present study is contradicted with **Afshar Y., et al., 2020** ^[22], as well as with **Huaman Y., et al., 2021** ^[19] who displayed that the average gestational age at enrollment was (24.1 weeks and 36 weeks respectively). This result was incongruent **Maharlouei N., 2020**, ^[42] who indicated that Median gestational age of participant sample was also 29

(7–40) weeks, and the mean was 27.8 (± 8.1) weeks.

In relation to the factors affecting the studied pregnant women health seeking behavior, the present study illustrated that slightly more than one half stated that fear of contracting the virus leading to the delays in deciding to seek care, delays in reaching healthcare facilities and delays in receiving quality healthcare services. It also found that nearly two fifths declared that compulsory lockdown and quarantine were governmental restriction to decrease the spread of COVID 19. Moreover, 58% declared working and sharing the expenses, 76.3% had role in decision making,

In this regard, **Liu G., et al., 2019**^[26] and **David O., et al., 2021**^[44] were consistent with the present study as they demonstrated that majority of the study participants were considered the fear from contracting the virus an important factor affecting the health care seeking behavior during COVID 19 including; the delays related to reaching health facilities due to restrictions that were put in place to curb the spread of the COVID-19 pandemic, and delays related to the experience of pregnant women at healthcare facilities which impacted the pregnant women's decision to go for regular antenatal care visits at the health facilities.

With regards to the studied pregnant women health care seeking behavior sources of help when feeling panic during COVID 19 pandemic, more than one answer were included and specified that slightly more than one half (55.7%) used the internet, slightly more than three thirds (66.3) got help

from medical staff, slightly more than one fifth (23.7%) got help from relatives or friends, and 4.3% didn't ask for help.

These findings were corresponded with **Ratih M., and Nurya V., 2021**^[45], who pointed out that the television news bulletins remain the most widely used source of information. Some people use twitter or other social media as a source of convincing information on corona virus's pandemic among pregnant women. Meanwhile, this agrees with **Ilesanmi O., et al., 2020**^[34] who stated that calling the COVID-19 help number (58.3%) was the frequently reported practice. On the other hand, **Kolker S., et al., 2021**^[27] disagreed with the present result. They specified that pregnant women lacked the social support due to COVID-19 pandemic restrictions and had a profound sense of loss of what they thought their pregnancy and postpartum period should have been. This discrepancy from the researcher point of view may stem from availability of different sources regarding help about COVID-19.

As regard health seeking behavior regarding prevention of infection during COVID-19 pandemic, the present study shows that more than three quarter of the studied women had correct and complete answers regarding preventive behavior during COVID-19 pandemic. This findings were supported by **Johnbosco M., et al., 2020**^[43] who posed that most of the participants had adequate knowledge of preventive measures against COVID-19 infection but the practice of these preventive measures were poor among the participants.

Owing to the studied pregnant women total level of health care seeking behavior, this study identified that almost all them had unsatisfactory health care seeking behavior care during COVID 19 pandemic, with a (total mean \pm SD = 21.99 \pm 3.818). **David O., et al., 2021** ^[44] were consistent with the present study as they documented that majority of the study participants didn't take antenatal visits.

On the other hand, **Islam M., and Masud M., 2018** ^[36] disagreed with this study. They pointed out that 65% mothers received at least one prenatal care visit, and only 18.0% received the WHO recommended optimal level of four or more ANC visits. **Ilesanmi O., et al., 2020** ^[34] added that going to the hospital (95%) was the frequently reported practices.

Concerning their total level of knowledge regarding antenatal health care seeking during COVID 19 pandemic, the present study revealed that most of the studied pregnant women had low level of knowledge with a (total mean \pm SD = 27.14 \pm 7.297). On the other hand, these results were relatively in line with **Ratih M., and Nurya V., 2021** ^[45], who stated that most pregnant women had a low level of knowledge about Covid-19, while a little number of them had sufficient and good of knowledge level.

In relation to perception/awareness regarding of COVID 19 pandemic, this study indicated the majority of the studied pregnant women had negative perception/awareness regarding probability of infection with COVID 19 during pregnancy with a (total mean

\pm SD = 9.15 \pm 3.278). Regarding, correlations between the total level of health care seeking behavior of the studied pregnant women and total level of perception/awareness regarding infection with COVID 19 during pregnancy, the present study demonstrated that slightly more than four fifths had negative perception, with no statistical significant relation (r, p = 0.089, 0.125).

This result disagrees with **Karavadra B., et al., 2020** ^[30] findings, which revealed that the main areas of concern of pregnant women were mode of coronavirus transmission, use of antenatal virtual clinics and their acceptability to patients, the presence of a birthing partner, and the way in which information is communicated about services, as well as barriers to accessing healthcare for pregnant women during COVID-19.

Somayyeh K., et al., 2022 ^[46] reported that there was a positive and significant correlation between perception, self-care practices and knowledge regarding controllability of the COVID-19 during prenatal period. Moreover, the present study in line with **Yohannes F., et al.,** ^[47], who notice that COVID-19 preventive measure practices and knowledge were low among pregnant women aged ≥ 35 and need to be counseled on practices of preventing COVID-19 by their healthcare providers.

Relating to correlations between the total level of health care seeking behavior and total level of knowledge, regarding antenatal care during COVID 19 pandemic, this study confirmed that the majority had low level of knowledge, with a highly statistical

significant relation ($r, P = 0.275, 0.000^{**}$). In the same line, **Ratih M., and Nurya V., 2021** ^[45] illustrated that most of the pregnant women have a low level of knowledge and indicate there is a significant correlation between knowledge and practices of pregnant women during the Covid-19 pandemic. In this regard, **Gupta R., et al., 2015** ^[48] addressed that the majority of the study respondents had Good perception about early ANC services (before 16 weeks), While their knowledge about adequate antenatal visits was poor.

On the other hand, **Degu A., et al., 2021** ^[37] demonstrated that almost all of the respondents (100%) mentioned that they had ever heard about COVID-19. The primary source of information was mass media, health worker, social media and others (like friends and colleagues). In addition, our study showed that the majority of respondents had a good knowledge about COVID-19.

Conclusion: This study revealed a statistically significant relation between the studied pregnant women' knowledge, perception and their health care seeking behavior during COVID 19 pandemic.

Recommendations: It is important to increase pregnant women awareness regarding the significance of seeking maternal health services during the COVID 19 pandemic. Consequently, to decrease maternal and neonatal mortality and morbidity rates. Additionally, programs and practical actions should be integrated to improve the quality of care provided to pregnant women particularly during

the critical time of COVID 19 pandemic.

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