Assessment of Knowledge, Attitudes and Self-protective measures of Postpartum Women regarding COVID 19

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Abstract:
Background: Because of the physiological changes and a resulting immune-compromised state that render postpartum women more susceptible to COVID-19. **Aim:** is to assess the levels of postpartum women's knowledge, attitudes and self-protective measures regarding COVID 19. **Methods:** Descriptive cross sectional study design at Sohag University Hospital on 350 postpartum women by using an interviewing questionnaire, assess postpartum women`s knowledge and Likert scale to assess attitudes toward COVID -19 infection& prevention. **Results:** About 52.6% of the studied women had a poor knowledge about COVID-19, about 18.6% of the studied women had a highly satisfactory practices regarding COVID-19 and about 64.6% of the studied women had a positive attitude regarding COVID-19. **Conclusion:** More than half of the women in the study have poor knowledge, close to a quarter have unsatisfactory practices and more than a third have a negative attitude on COVID-19. **Recommendations:** Promotion of intensive health educational program regarding prevention of COVID19 on at all levels.

Keywords: Attitude, COVID-19, Knowledge, Post-partum women & practices.

Introduction:

Vulnerable populations have been made subject to an unprecedented global health disaster thanks to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). During the COVID-19 pandemic, maternal and fetal outcomes have gotten worse across the globe, with an increase in maternal deaths and maternal depression, the risk of adverse maternal and neonatal complications, the use of endotracheal intubation, hospitalization in an intensive care unit, renal failure, intravascular coagulopathy, and transmission to the fetus or newborn **(Qiao,2020 & World Bank,2020) .**

The spread of the disease is mainly through droplets, respiratory secretions formed while talking, coughing, and sneezing of an infected person, and direct contact as the virus can survive on surfaces for many hours. In most of cases (about 80%), COVID-19 presents as mild disease or asymptomatic infection. However, in some cases (about 20%) especially with comorbidities **(Guo et al., 2020 & Varghese et al., 2020).**

Within two days to two weeks of viral exposure, symptoms may appear. These signs and symptoms include a fever or chill, cough, shortness of breath or difficulty breathing, exhaustion, muscle or body pains, headache, sore throat, congestion or runny nose, nausea or vomiting, diarrhea, and a total or partial loss of smell (anosmia) **(CDC, 2020& Rabin, 2020).**

The postpartum period is an important time in both mothers' and babies' lives. It is a period of adjusting to parenthood, of the newborn and young infant developing a stable relationship, and of the possibility of developing ties within the family and with the neighborhood. The WHO describes the postnatal phase as starting right away following the baby's birth and lasting up to six weeks (42 days) after birth **(WHO, 2018).**

The immediate (first 24 hours), early (days 2–7), and late (days 8–42) postnatal phases are frequently separated. In the initial period of postnatal care, attention was given to the baby's critical clinical signs as well as the mother's overall health. Early and late postnatal care is more likely to be community based and focused on maximizing maternal and newborn health and wellbeing **(National Institute for Health and Social Care Excellence, 2015 & Finlayson et al., 2020).**

The adverse effects of the COVID-19 pandemic on maternal and perinatal health are not limited to the morbidity and mortality caused directly by the disease itself. A reduction in health-care-seeking behavior, as well as reduced provision of maternity services, has been suggested as a possible cause. Most studies did not find virus in the breast milk. WHO, support breastfeeding in suspected or COVID-19 cases and recommend rooming-in of the mother **(Hethyshi,**

2020, Wang et al., 2020& Chmielewska et al., 2021).

Women are told by the nurse to wash their hands with soap and water. Self- monitor for sickness symptoms and notify medical professionals when they become ill. Avoid coming within two meters of somebody who is ill or exhibiting symptoms. Use a hand sanitizer with alcohol that has at least 60% alcohol. In both outdoor and indoor public areas, put on a face mask. When they sneeze or cough, they should cover their mouth and nose with an elbow or a tissue **(UNFPA, 2020 &WHO, 2021).**

Significant:

Postpartum women experience changes in their body that may put them at a higher risk for contracting viruses such as influenza and other respiratory infections, including COVID-19, care should be taken to protect them from illness **(Indiana State Department of Health, 2020).**

COVID-19 infection can be prevented by post-partum women adherence to preventive measures, which is largely affected by their knowledge, attitudes, and practices (KAP) towards COVID-19 in accordance with KAP theory **(Ajilore, 2017).** Moreover, different studies added that from the Lessons learned from the SARS outbreak in 2003 that knowledge and practice towards infectious diseases are associated with level of panic emotion among the population especially high risk group, which can further complicate attempts to prevent the spread of the disease **(Schwartz & Graham, 2020).** Various research studies clearly indicate the importance of improving COVID-19 knowledge via health education, which result in improvements in their practices towards COVID-19 **(Azlan, 2020).**

Postpartum mortality rate caused by COVID-19. Out of the 11758 postpartum women who were impacted by COVID, 153 people died (1.30%), and 19 of these patients died in high-income nations including the United Kingdom, United States, Italy, Switzerland, France, Sweden, Portugal, Netherlands, Ireland, Spain, Canada, and Australia (mortality rate = 0:19%) and 134 women were in middle-income countries including China, Iran, Iraq, Jordan, Peru, Turkey, India, Venezuela, Thai- land, Brazil, and Honduras (mortality rate = 8:51%) **(Karimi et al., 2021)**

Aim of the study: The study aimed to
1. Assess the levels of postpartum women's knowledge and attitudes regarding COVID 19.
2. Assess of postpartum woman's self-protective measures to prevent COVID-19.

Research questions:
1. What are the levels of knowledge and attitudes of postpartum woman regarding COVID-19?
2. What are reported self-protective measures of postpartum woman to prevent COVID-19?

Patients and Methods:

Methodology of the current study was discussed under four designs (technical, operational, administrative, and statistical design).

Technical Design:

Research Design: Descriptive cross sectional study design was used to achieve the aim of this study.

Setting: This study was conducted at Sohag University Hospital in the Obstetrics and Gynecology department. This hospital is one of the most important settings serves all cases from urban and rural areas at Sohag city. This department included two units A & B .Unit A consisted of four rooms. Each room had six beds. Unit B consisted of five rooms each room had also six beds .In each unit there was bathrooms, there was a hall for waiting outside rooms and to complete the service of examination, there was another room for performing ultrasonography for women.

Sample: Current study was conducted on 350 postpartum women. The sample was calculated according to the following equation:

$$n = [DEFF*Np\ (1-p)] / [(d^2/Z^2_{1-\alpha/2}*(N-1) + p*(1-p)]$$

DEFF (Design effect) = 1
N (population) = 4200
p (Hypothesized %) = 50%+/-5
d (tolerated margin of error) = 0.05
Z (level of confidence) = 1.96
α (Alpha)= 0.05

$n = [1*100*50\%+/-5\ (1-50\%+/-5)/ [(0.05)^2/ (1.96)^2 1-0.05*(100-1) + 50\%+/-5\ (1-50\%+/-5)]$

n= 350 postpartum women

Tools of the study:

Data collection was obtained by using the following four parts:

Part I: An interviewing questionnaire

It included: **Personal data which included:** name, age, residence, occupation and level of education. **Obstetrical history which included:** Number of gravidity, Number of parity, abortion, Number of abortion, and living children (male and female). **Current pregnancy data included:** weeks of gestation / Weeks ,Follow up during pregnancy with spread of COVID-19 and Current medical problem with pregnancy (Gestational diabetes, PIH ,Heart disease, Polyhydramnios , Olighydramnios , Anemia , Placenta previa , Abruption placenta ,P.R.O.M or Others**). Current labor data included:** Mode of delivery (vaginal, C.S, Vaginal with episiotomy, Vaginal with instrumental) and any complication during labor **(This tool is developed by the researcher).**

Part II: It included (six questions) to assess postpartum women`s knowledge **(Mohamed et al, 2020).**which consisted of **six closed** ended questions about COVID-19. Included (definition of COVID -19, signs and symptoms, mode of transmission , factors increase risk, risk group for COVID -19 and finally for protective measures against COVID-19).

Scoring system of Knowledge:

The total score of knowledge consisted of (34) points (derived from six questions). Each correct answer took one mark, incorrect and do not know answers took zero. The score of each item summed up and then converted into a percent score. It was categorized as follows**:**

- **Poor knowledge** <60% of total knowledge score (20 score).
- **Fair knowledge** 60-75% of total knowledge score (21-25 score).
- **Good knowledge** > 75% of total knowledge score (>25 score).

Part III: Likert scale it consisted of (7) questions to assess women's attitudes toward COVID -19 infection& prevention **(Mohamed et al, 2020)**. It Included (COVID-19 can easily be prevented, COVID-19 would be finally be successfully controlled, worry to be affected with COVID-19, there was no evidence that COVID-19 transmitted to fetus from mother, there was no evidence that Although COVID-19 can cause congenital defects in fetuses, moms with the virus can nurse their infants. Taking precautions while doing so and often washing your hands will help prevent infection).

Scoring system of the attitude:

The total points of attitudes were (14) (derived from 7 questions). Each correct answer took one mark for disagree and (2) for agree. The score of each item was summed up and then converted into a percent score. It was categorized as follows**:**

- **Negative attitude** <60% of total attitude score (< 8.4 score).
- **Positive attitude** ≥ 60% of total attitude score (≥ 8.4 score).

Part IV-:

Questionnaire concerning self-protective measures regarding prevention of COVID -19 **(Mohamed et al, 2020)**, It included (7 main self-protective measures topics to reduce COVID - 19 infections among postpartum women). Each of these 7 topics had 28 items. The hand washing topic included (5 items), the mask wearing topic included (5 items), the environmental cleaning topic included (4 items), the social distance topic contained (4 items), the nutrition postpartum woman contained (4 items), rest and sleep topic included (3 items) and adherence of intake of supplementation and follow up topic contained (3 items). For each self-protective measures item; the

study subjects asked to select if they done self-protective measures rarely (done 1or 2 times per day), sometimes (done 3or 4 times per day) or usually (done more than 4 times per day).The questionnaire score as the following (1) for rarely done, (2) for sometimes done, and (3) for usually done. The total self-protective measures score was (84).

The total self-protective measures score was calculated as the following:

- **Unsatisfactory** < 60% of total self-protective measures score (< 50 score).
- **Satisfactory** 60-75% of total self-protective measures score (50-63 score)
- **Highly satisfactory** > 75% of total self-protective measures score (> 63 score).

Tools Validity:

Tools were reviewed by a panel of 3 experts in obstetric and gynecological nursing at faculty of nursing Assuit University to test the comprehensiveness, accuracy and clarity in language.

Tools Reliability:

The internal consistency of the tool scale was calculated by using Cronbach's Alpha; and it was **0.830**

Operational design:

The design involved description of the preparatory phase, pilot study and Field work.

Pilot study:

Prior to the start of the study, a pilot study was conducted on 10% (35) women to evaluate the instruments' usability and clarity. On the basis of the findings from the pilot research, the appropriate alterations were made. Women who took part in the pilot study were excluded from the larger investigation.

Field work:

Data collection of the study took about 6 months started at the beginning of December 2021, and completed by the end of May 2022. It involved the following:

Preparatory phase:

The researcher reviewed the related literature of the current study local, international, using text book, articles, and significant magazines, the tools were prepared based on this literature, they were reviewed for validation by Experts in obstetrics and gynecology.

Procedures:

1. Reviewing the available literature concerning the topic of the study.
2. An official permission was obtained from the authorized person to carry out the study.
3. The researcher met each postpartum woman separately with taking the following precautions
- Wearing a mask of both researcher and postpartum women.

- Keep a distance of 1 meter between the postpartum women and the researcher.
- Sterilization of hands and places should be done.
4. The nature and purpose of the study were explained to the clients then oral permission for voluntary participation was obtained.
5. Data collection procedure was conducted over 6months from December 2021 to May 2022. The researcher was available in the study settings 3 days per week in each study setting from 9:00am to 1: pm. Face to face interview through structured questionnaire about knowledge, attitudes and self-protective measures Of COVID-19
6. The interview questionnaire was read on the participants and full filling during 15 minutes of time.
7. Confidentiality of the data was assured.
8. After finishing the questionnaire, the researcher gave the postpartum woman oral instruction regarding COVID 19 prevention through making booklet to facilitate understanding these instructions to women. This booklet included definition of COVID 19, incubation period, mode of transmission, sign and symptoms, complication, and preventive measures against COVID 19. Researcher concentrated with women on giving them special instructions about how to protect mothers and their babies during breastfeeding and told them that COVID 19 not founded in mother`s milk and mother can make breastfeeding with follow precautions also mentioned the correct steps of hand washing with figures.

Administrative design:
Before conducting the study, official permission was obtained from the head of selected areas, the researcher explained that information obtained from women used only for the purpose of the study, the study had no actual or potential harms for women, and the researcher told women that professional help was provided when needed.

Ethical consideration
An ethical approval of the ethical committee, session No. 34, item 325, on Tuesday 26/10/2021, Faculty of Nursing, Assiut University was obtained. An official permission was obtained from obstetrics and gynecological outpatient clinic at Sohag University hospital. An oral informed consent was obtained from each woman before inclusion in the study sample and after explanation of the study aim in simple and clear manner. Clear and simple clarification of the study nature and its expected outcomes were explained.

The study followed common ethical principles in clinical research. They secured that all data collected were treated in confidentiality and anonymity. All the study women had the right to withdraw at any time from the study.

Statistical analysis:
Data entry and data analysis were done using statistical package for the social science (SPSS) version 26. Data were presented as number, percentage means and standard deviation. Chi-square test was used to show relation between variables. T-test was used to compare mean. P-value considered statistically significant when $p < 0.05$.

Result:

Table (1): Distribution of studied women according to their Socio demographic characteristics

Personal characteristics	N (350)	%
Age group:		
• < 25 year	88	25.1
• 25-34 year	203	**58.0**
• 35 year or more	59	16.9
Age mean± SD	**28.3±4.64**	
Residence:		
• Rural area	230	**65.7**
• Urban area	120	34.3
Educational level:		
• Illiterate	90	25.7
• Primary	97	27.7
• Secondary	98	**28.0**
• University	65	18.6
Occupation		
• House wife	252	**72.0**
• Employed	98	28.0

Table (2): Distribution of the studied women according to their current pregnancy and labor data

Current pregnancy and labor data	N (350)	%
weeks of gestation at delivery Mean ± SD	**38.9±0.74**	
Current medical problem with pregnancy		
• Yes	145	**41.4**
• No	205	58.6
If yes mention problem:		
• Gestational diabetes	27	**18.6**
• PIH	15	10.3
• Heart disease	9	6.2
• Polyhydramnios	5	3.4
• Olighydramnios	12	8.3
• Anemia	25	17.2
• Placenta previa	27	**18.6**
• Abruption placenta	7	4.8
• P.R.O.M	5	3.4
• Mix problem	13	8.9
Mode of delivery:		
• Normal Vaginal delivery	65	18.6
• C.S	205	**58.6**
• Vaginal with episiotomy	80	22.8

Mix problem as (diabetes and hypertension, PIH and placenta previa, anemia and abruption placenta..etc)
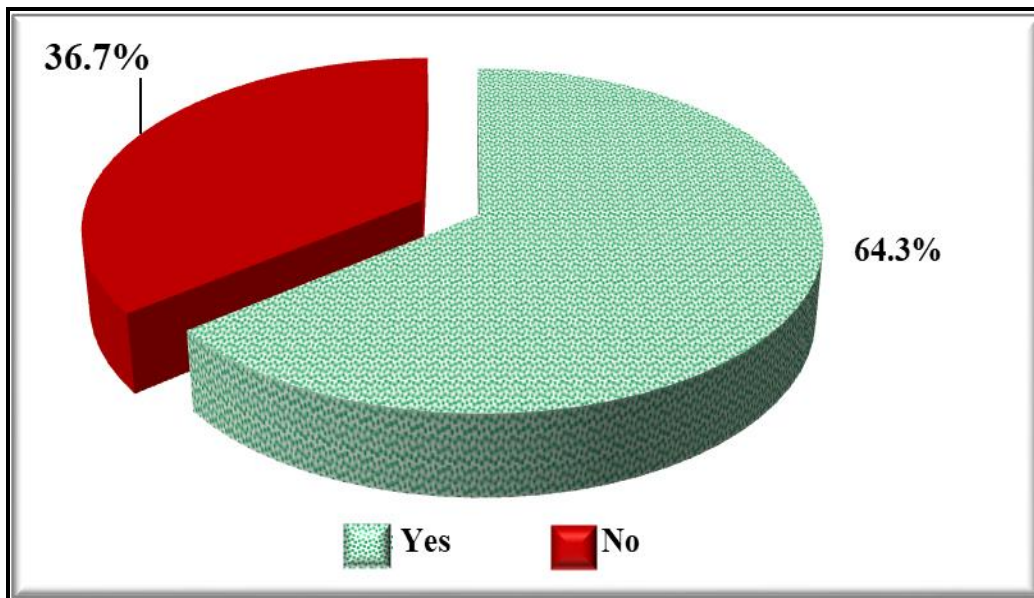

Figure (1): Ante natal visits schedule of the studied women during pregnancy with spread of COVID 19
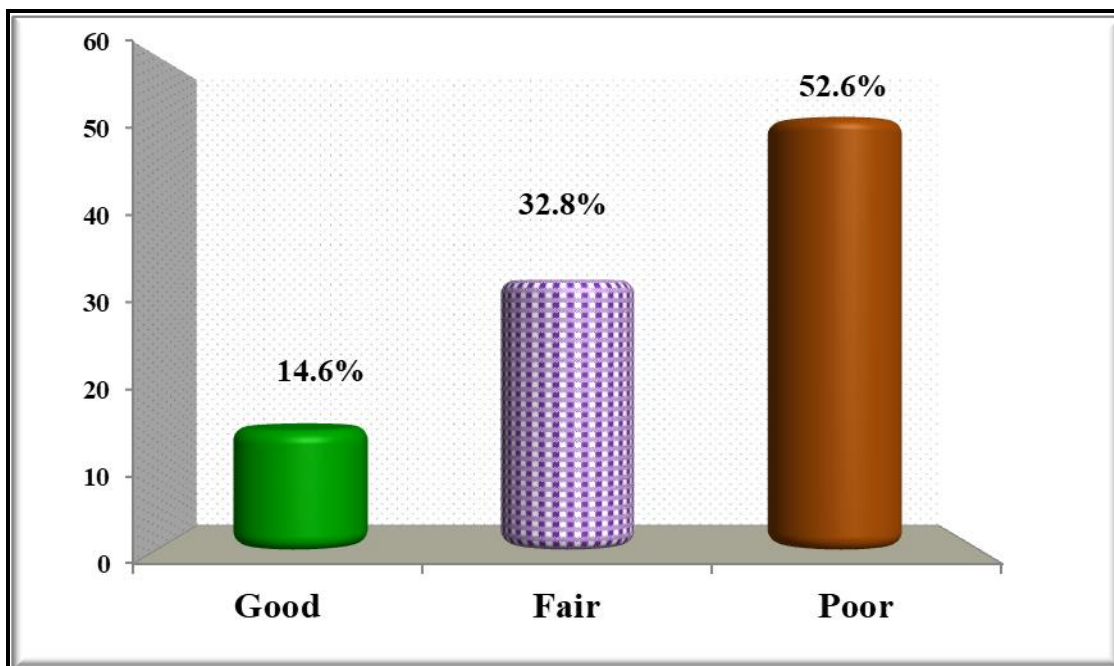
Figure (2): Total score of knowledge of the studied women about COVID-19
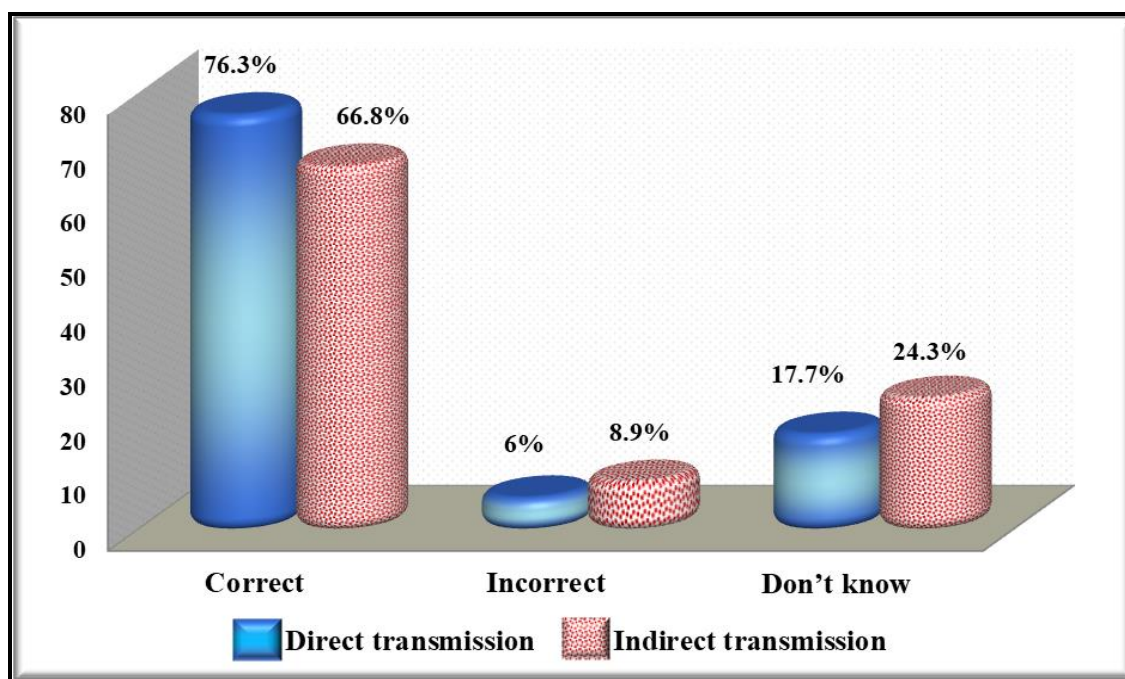

Figure (3): Knowledge of the studied women regarding mode of transmission of COVID-19
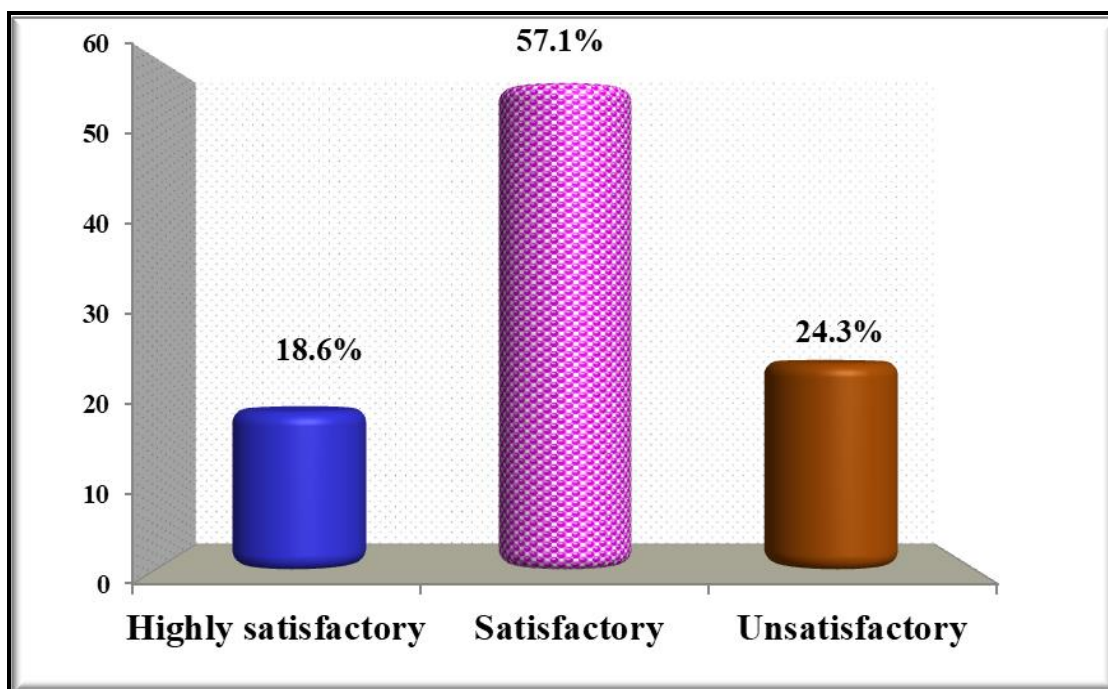
Figure (4): Total score of practices (self- protective measures) of the studied women regarding COVID-19
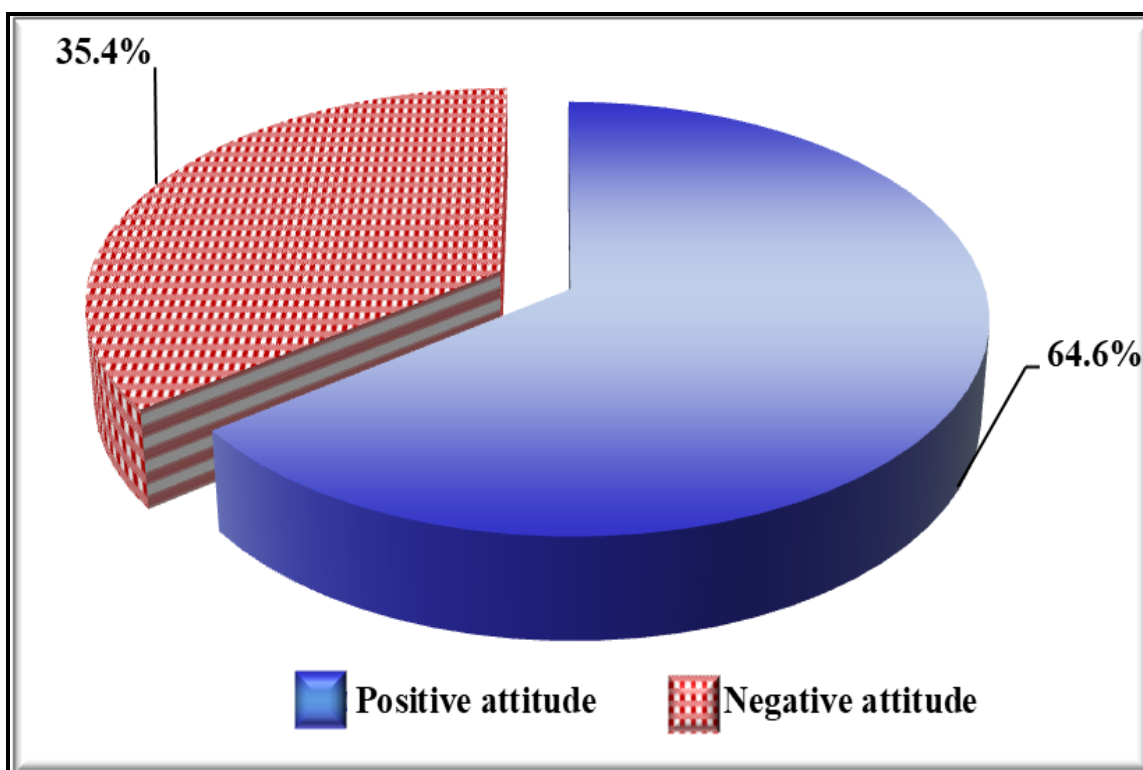

Figure (5): Total score of attitude of the studied women regarding COVID-19

Table (3): Relation between total score of women's practices regarding COVID-19 and their personal characteristics and obstetric history

Item	Total score of practices about covid-19						Chi-square	
	Highly satisfactory (65)		Satisfactory (200)		Unsatisfactory (85)			
	N	%	N	%	N	%	X^2	p-value
Age group:								
• < 25 year	11	16.9	49	24.5	28	32.9	5.7	0.223
• 25-34 year	42	64.6	119	59.5	42	49.5		
• 35 year or more	12	18.5	32	16.0	15	17.6		
Residence:								
• Rural area	30	46.2	136	68.0	64	75.3	14.9	**0.001****
• Urban area	35	53.8	64	32.0	21	24.7		
Educational level:								
• Illiterate	18	27.7	57	28.5	15	17.6		
• Primary	14	21.5	60	30.0	23	27.1	19.1	**0.004****
• Secondary	27	41.6	40	20.0	31	36.5		
• University	6	9.2	43	21.5	16	18.8		
Occupation								
• House wife	40	61.5	143	71.5	69	81.2	7.1	**0.029***
• Employed	25	38.5	57	28.5	16	18.8		
Gravidity								
• Primigravida	20	30.8	51	25.5	27	31.8		
• Multigraviada	32	49.2	110	55.0	42	49.4	1.6	0.808
• Grand multigravida ≥5	13	20.0	39	19.5	16	18.8		
Parity								
• Primipara	24	36.9	62	31.0	32	37.6	5.3	0.254
• Multipara	33	50.8	125	62.5	44	51.8		
• Grand multipara ≥5	8	12.3	13	6.5	9	10.6		
History of abortion:								
• Yes	23	35.4	74	37.0	25	29.4	1.5	0.467
• No	42	64.6	126	63.0	60	70.6		

(*)Statistical significant difference   *(**) Highly statistical significant difference*

Table (4): Relation between total score of knowledge and total practice and attitude score about COVID-19

Item	Total score of knowledge about covid-19						Chi-square	
	Good(51)		Fair(115)		Poor(184)			
	N	%	N	%			X^2	p-value
Total practice:								
• Highly satisfactory	4	7.8	14	12.2	47	25.5	39.3	**0.001****
• Satisfactory	19	37.3	75	65.2	106	57.7		
• Unsatisfactory	28	54.9	26	22.6	31	16.8		
Total attitude:								
• Positive	34	66.7	89	77.4	103	56.0	14.3	**0.001****
• Negative	17	33.3	26	22.6	81	44.0		

Table (1): It shows regarding personal characteristics of the studied women, it is illustrated that 58% of the studied women had an age group from (25-34) years with a mean and SD of 28.3±4.64. Concerning residence 65.7% of them were from rural areas. As regard educational level 28% of studied women had a secondary level of education. About 72% of studied women were housewives.

Table (2): It clarifies current pregnancy and labor data of the studied women, it shows that the mean and

SD of weeks of gestation at delivery was 38.9±0.74. About 41.4% of the studied women had a medical problem with pregnancy; Gestational Diabetes Mellitus and Placenta previa represents 18.6% of the problems. Regarding mode of delivery 58.6% of the studied women delivered by C.S.

Figure (1): It demonstrates that 36.7% of the studied women their ante natal visits schedule during pregnancy were affected by spread of COVID-19.

Figure (2): It demonstrates total score of knowledge of the studied women about COVID-19; it shows that 52.6% of the studied women had a poor knowledge about COVID-19.

Figure (3): It clarifies knowledge of the studied women regarding mode of transmission of COVID-19, it was found that 76.3% and 66.8% of the studied women know correctly direct and indirect mode of transmission respectively.

Figure (4): It reveals that 18.6% of the studied women had a highly satisfactory practices regarding COVID-19.

Figure (5): It clarifies that 64.6% of the studied women had a positive attitude and 35.4% had a negative attitude regarding COVID-19.

Table (3): It shows that there were statistically significant difference between total score of practices about COVID-19 and residence, educational level and occupation with p-value were 0.001, 0.004, and 0.029 respectively.

Table (4): It demonstrates the statistically significant difference between the overall score for COVID-19 knowledge and the entire practice and attitude score with p–value 0.001 for both.

Discussion:

Post-partum women is considered high-risk group and deserve our great attention because of the physiological changes during pregnancy and an associated immunocompromized state that make them more susceptible to virus. Good knowledge is a prerequisite for overall practice of preventive measures aimed to reduce the disease burden, forming positive attitude and promoting positive practice to disease **(Argaw et al., 2021).**

The study aimed to assess the levels of postpartum women's knowledge and attitudes regarding COVID 19 and assess of postpartum woman's self-protective measures to prevent COVID-19.

The findings of the present study revealed more than half of the studied women had a poor knowledge about COVID-19. The study findings were consistent with **Chen et al., (2022),** who conducted their study about "prevalence and risk factors associated with postpartum depression during the covid-19 pandemic" and showed that about three quarter of the studied women had poor knowledge about COVID-19. Also this finding was similar to **Abdulla et al., (2021)**, who carried out their study about "knowledge and practice of pregnant and postpartum Iraqi women about COVID-19 preventive measures" they founded that the score of knowledge level were found inadequate in about three quarters of the participant and adequate in about one quarter. The study findings disagreed with **Wulandari et al., (2022),** who illustrated at their study about

"postpartum care behavior improvement during COVID-19 Pandemic in Indonesia using Mobile-Health interactive message" that more than two-thirds of the participants had adequate knowledge of COVID-19. These may be because in the present study the majority of studied women have low educational level or they haven't any educational program about the COVID-19 before.

Concerning knowledge of the studied women about mode of transmission of COVID-19, the findings demonstrated that more than three quarters and more than two thirds of studied women know correctly direct and indirect mode of transmission respectively. The study findings accordance with **Argaw et al., (2021)**, who indicated that about three quarters of participants know direct and indirect mode and methods of transmission COVID-19. The study findings agreed with **Adhikari et al., (2020),** who reported that about most of the studied sample aware about direct and indirect mode and methods of transmission COVID-19.

Regarding total scores of practices (self- protective measures) the results clarified that less than one quarter of the studied women had a highly satisfactory practices regarding COVID-19. This study finding was similar to **Aduloju et al., (2021),** who showed that most of the studied women had good practices of the preventive measures. On the other hand **Izhar et al., (2021)**, showed that more than two thirds of the studied women had poor level of practices concerning COVID-19. Also **Abdulla et al., (2021)**, mentioned that about two thirds of the participants were presented with poor practice while less than one third with good practices. Moreover the presented findings disagreed with **Brislane et al., (2021)**,who revealed that more than one thirds of the study participants had good practices of preventive measures of COVID-19 infection and about two thirds of the studied women had poor practices. The possible reason for difference between the present study and other studies may be because the scoring system of our present study was different from other studies concerning self- protective measures regarding COVID-19.

In addition total scores of attitude of studied women regarding COVID-19the study findings clarified that more than half of the studied women had a positive attitude regarding COVID-19. The study findings supported by **Kamal et al., (2020),** who made it clear that the majority of respondents (three quarter) had a positive view. Regarding attitude of the studied women regarding COVID-19, the study findings showed that about half, more than two thirds, and more than three quarters disagreed that COVID-19 will finally be successfully controlled; worry to be affected with COVID-19 and frequent hand washing

will reduce COVID-19 infection respectively. The study findings supported by **Brislane et al., (2021),** who mentioned that more than two thirds of the studied women agreed with COVID-19, will eventually be successfully controlled. Moreover the study findings were incongruent with **Kaur et al.,(2021),** who carried out their study about "A Cross-Sectional analysis to evaluate knowledge, attitude and practices among pregnant women during COVID-19 Pandemic" they revealed that more than one third of women greed on "Do you think you can have COVID-19?".

The results illustrated that there were positive relations between total practices about COVID-19 and residence, educational level and occupation these may due to pregnant who had high socio demographic characteristics seek to apply practices related to COVID-19. The study findings were consistent with **Hoque et al., (2021),** who revealed that mother's level of education, occupation were significantly associated with the practice towards COVID-19 infection prevention. The study findings were compatible with **Awad et al., (2020)**, who revealed at their study about "COVID-19: Pregnant Women's Knowledge, Perceptions & Fears. First National Data from Lebanon" and that a high practices level about COVID-19 was high enough when the pregnant woman had an older age, was employed, was paid a higher monthly salary, had a higher educational level.

On the other hand **Izhar et al., (2021)**, observed that there was no correlation between total practices and residence**.** Also **Kamal et al., (2020),** who illustrated that no significant association was found between education and practices.

The finding of the present study showed a statistically significant difference regarding total score of knowledge about COVID-19 and total practice and attitude score. These study findings compatible with **Hoque et al., (2021),** who showed that knowledge was significantly positively correlated with practice. In the same line **West et al.,(2021),** who observed that there was an association between good knowledge and good levels of attitude and practice**.** The findings incongruent with **Setyowati et al., (2022),** who displayed in Iran and they founded that the knowledge negatively associated with protective practices, but this relationship was not statistically significant. These may due to knowledge in the current study help women to know the best skills and practices that prevent occurrence of COVD I9 infection and improve the postpartum attitude.

Regarding personal characteristics and medical history, the finding illustrated that about two thirds of studied women had an age group from (25-34) years with a mean and SD of 28.3±4.64. Concerning residence more than two thirds were from rural areas.

More than a quarter of the study's female participants had at least a secondary education. In the study, the majority of the women were stay-at-home mothers. These finding supported by **Hoque et al., (2021),** who carried out their study about "Knowledge, Attitude and practice toward COVID-19 of pregnant and postpartum women at primary health care facility" and showed that the mean age was 26.71 (SD=6.81) years and mostly were between ages 20 to 39 years, , more over half of them were unemployed, and about 75 percent had only completed high school (matriculation). Additionally, **Septiasari & Viandika., (2021),** who investigated "The link between covid-19 knowledge and worry of pregnant women during covid-19 pandemic," found that the majority of pregnant women were between the ages of 20 and 35. According to their level of education, more than half of them are housewives and nearly half have only completed elementary school.

The current study clears that the mean and SD of weeks of gestation at delivery was 38.9±0.74, more than one third of studied women had a medical problem with pregnancy; Diabetes Mellitus and anemia involved less than one quarter of the problem. Regarding mode of delivery about two thirds of studied women delivered by C.S. The present findings supported by **Karimi et al., (2021),** who carried out their study about "Effect of COVID-19 on mortality of pregnant and postpartum women" who showed that more than one third of studied women had diabetes mellitus (DM), and gestational DM.

According to the ante natal visits schedule of the studied women with spread of COVID 19, the findings demonstrated that more than two thirds of studied women their ante natal visits schedule were affected by spread of COVID-19. The study's findings are in line with those of **Al-Hanawi et al. (2020),** who conducted research on "Knowledge, Attitude, and Practice Toward COVID-19 Among the Public" in the Kingdom of Saudi Arabia. They reported that about two thirds of the sample's follow-up schedule was impacted by the spread of COVID-19 and that the times of follow-up decreased. However, **Argaw et al study's from 2021**, "Assessment of Knowledge and Associated Factors towards Prevention of COVID-19 among Pregnant Women," showed that the majority of the women in the study didn't skip any doctor's appointments out of concern for contracting COVID-19. These could be brought on by the pregnant study participants' fears of contracting an infection at the clinic or hospital.

Conclusion:

More than half of the women in the study have poor knowledge, close to a quarter have unsatisfactory

practices (self-protective measures), and more than a third have a negative attitude on COVID-19.

Recommendations:
- Promotion of intensive health educational program regarding prevention of COVID19 on at all levels, integrating it with post natal and child health service and focusing on low socioeconomic status mothers.
- Post natal heath care should have plan to communicate online with postpartum women.

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