

Perceptions, Generalized Anxiety and Fears of Pregnant women about Corona Virus infection in the heart of Pandemic

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Abstract

Background: The current uncertainties and alarming situation of COVID-19 pandemic may cause anxiety, mental distress and fears among pregnant women, who otherwise may have been progressing well. Till date, there is no robust empirical evidence, how the COVID-19 pandemic might have influenced the generalized anxiety and fears among pregnant women.

Objective: To determine the perceptions, anxiety and fears of current COVID-19 pandemic among pregnant women during antenatal and immediate postpartum period.

Setting: Pregnant women attending antenatal outpatient department, or women who recently delivered at the Department of Obstetrics & Gynecology Unit II, Ruth Pfau KM Civil Hospital and Holy Family Hospital, Karachi were included in the study.

Methods: A pre-designed, validated questionnaire was used by medical doctors through a face-to-face interview to collect the desired information. Associations were determined using parametric tests and a p-value ≤ 0.05 was considered as statistically significant.

Results: A total of 286 pregnant women with a mean age of 26.47 ± 4.81 years were enrolled in the study. The mean gestational age of women was 33.04 ± 7.54 weeks. Majority of women 67.8% (n=194) perceived that COVID-19 can affect the pregnancy, it can be transmitted to newborn baby 83.2% (n=238), and can affect the child if mother has infected with this virus 84.6% (n=242). Most of the women 84.6% (n=242) were afraid of COVID-19 infection, and reported mean fear level of 5.86 ± 3.12 on a scale of 1 to 10. Women who perceived that COVID-19 can affect the child had significantly higher level of GAD scores (n=37, 15.3%, p-value 0.042). Similarly, women who were afraid of COVID-19 infection had significantly higher (n=40, 16.5%, p-value 0.046) GAD score. Women who had high GAD score (≥ 7) also had significantly higher (p-value 0.020) fear score (6.90 ± 3.23 vs 5.68 ± 3.07) compared with women who had normal GAD score (< 7).

Conclusion: High proportion of women had stronger belief that if mother have infection, child will also have it and it's likely to be transmitted from mother to child. Although there is not enough evidence to support vertical transmission of infection as yet but it is still appearing as a major stressor among pregnant women.

Background

Corona virus disease (COVID-19) is a newly emerged respiratory illness, which has spread in 210 countries of the world and declared as a pandemic by the World Health Organization (WHO). The global estimates of incidence and mortality are rapidly changing and till date nearly a quarter of a million are dead due to COVID-19 infection(1). The COVID-19 infection has cause considerably high mortality among those who were older, had comorbidities and were immune-compromised(2). Currently, we do not have

any global estimates that how many pregnant women have been affected with COVID-19 and how the infection might have influenced their pregnancy, the baby and the mother.

Pregnancy is naturally a period of immunosuppression, in order to protect fetus. Immune response is also not quite consistent during pregnancy rather varies during three trimesters of pregnancy. Women who are in early pregnancy during this pandemic might face different maternal and perinatal outcomes compared to those who are towards the end. During the current pandemic, protective measures recommended by different organizations are same for both pregnant and non-pregnant women. The virus has caused tremendous anxiety and fear about continuation of pregnancy, effects on newborn and chances of vertical transmission(3). In this context the fear of isolation in case of a positive result for COVID-19 is also an important question and concern among pregnant women(3). These concerns are relevant, if one looks at the maternal and perinatal outcome of previous influenza outbreak. In the previous epidemic of Severe Acute Respiratory Distress Syndrome (SARS), the case fatality rate was as high as 25% without risk of vertical transmission in newborns (4).

Pregnant women worries and concerns are fairly legitimate because any of their own suffering, can negatively influence the fetus as well. There are increased chances of miscarriage, adverse pregnancy outcomes like preterm birth, small for gestational age and intrauterine demise. A meta-analysis of studies looking at fetal outcome during previous influenza pandemic, found an increased rate of preterm delivery(5). For the current pandemic, we have very limited evidence available as yet and that too is in the form of case series and reports with small sample sizes. In a series of 09 pregnant women with diagnosed COVID-19, fetal distress was observed in two cases and all nine live births had good perinatal outcomes(6). Women may delay going to hospital in order to avoid exposure to themselves and family members, resulting in further intra partum complications.

Generally, pregnant women exhibit some form of stress and anxiety during pregnancy, about perinatal outcome. This has resulted National Institute for Health and Care Excellence (NICE) guidelines for mental health of pregnant women during antenatal and postnatal period. Generally anxiety disorders are common psychiatric condition, with life time prevalence of around 28% in general population(7). Among others, the generalized anxiety disorder (GAD) during pregnancy is common and estimated to be around 8.5%(8), while its prevalence varies between 4.4% to 8% during postpartum period(9). Anxiety disorders in the perinatal period have been found to be associated with depression in later years of life. In these challenging times associated with COVID-19, when there are several social and environmental disruptions, the pregnant women might feel further anxious and fearful about their pregnancy, their own health and the fetus. To the best of our knowledge, there is no study published on anxiety and fear associated with COVID-19 among pregnant women and factors associated with it. Therefore, the aim of the current study was to determine the perceptions, anxiety and fears of current COVID-19 pandemic among pregnant women during antenatal and immediate postpartum period.

Methods

Study setting

This study was conducted at two major hospitals of Karachi – the capital of Sindh Province and metropolitan city of Pakistan. Ruth Pfau KM Civil Hospital is a tertiary care teaching hospital affiliated with Dow Medical College. The annual delivery rate at the unit is approximately 5000 per annum. The major turnover of patients in this setting is mainly low-middle income population of both urban as well as rural areas of province of Sindh. The second hospital included in this study was the Holy Family Hospital which is a secondary care hospital ran by The Karachi Holy Family Society, and managed by the Cardinal. The annual delivery rate at this setting is approximately 2400 deliveries per annum with a major proportion of low middle-income families of the region.

Study sample

All pregnant women who were examined in the antenatal clinics of both hospitals or in the postnatal ward within 24 hours after delivery were invited to take part in this study. A trained doctor explained them about the process of research study and expectations from them as a participant, those agreed to participate after informed verbal consent were included in the study. Pregnant women with any known psychiatric illnesses and those who had history of intrauterine demise or who gave birth to anomalous baby were excluded from this study. These subjects took part in the study, mainly during the 6th April 2020 till 20th April, 2020.

Data collection tools

After informed consent, a self-designed questionnaire with four main parts was filled by obtaining information from eligible participants through a face-to-face interview by trained medical doctors posted at Units. First part of questionnaire mainly focused on demographic details, second part explored the knowledge of pregnant women regarding COVID-19, third part dealt with the perception, challenges and response of pregnant women towards the current situation of COVID 19 pandemic, including fear about the pandemic. The last part of questionnaire utilized the GAD-7 anxiety scale to assess the anxiety levels of pregnant women. GAD questionnaire was translated into local languages for easy and clearer understanding of subjects. The information was coded and filled on excel sheet.

Statistical analysis

STATA version 14 was used for data analysis. Descriptive and Pearson Chi-Square analyses were used to determine the associations between stress and anxiety of current COVID-19 pandemic and other independent variables, including demographics, perceptions and knowledge of pregnant women regarding COVID-19, fear and practices of pregnant women towards the current situation of COVID 19 pandemic. In order to identify the mean differences between the groups, Independent t-test and ANOVA tests were performed. Significance level was set at p-value ≤ 0.05 .

Results

A total of 286 pregnant women with a mean age of 26.47 ± 4.81 years were enrolled in the study. The mean gestational age of women was 33.04 ± 7.54 weeks. Almost all, 97.2% women had heard about COVID-19, and television was the major source (55.9%) of information for it. Regarding GAD - a score of less than 7 was considered as normal and a score of equal or above 7 reflected some degree of anxiety and depression. Of the total, 14.3% (n=41) women had score 7 or more. Detailed socio-demographics of study participants are showed in Table 1.

Majority of women 67.8% (n=194) perceived that COVID-19 can affect the pregnancy, it can be transmitted to newborn baby 83.2% (n=238), and can affect the child if mother has infected with this virus 84.6% (n=242). Most of the women 84.6% (n=242) were afraid of COVID-19 infection, and reported mean fear level of 5.86 ± 3.12 on a scale of 1 to 10. Overall high proportion of women reported practicing preventive measures against the COVID-19 i.e. 97.6% women reported that they had been washing their hands frequently, about 82% women covered their faces and 93.7% women avoided gatherings. (Table 2)

Pregnant women's perceptions and fears about COVID-19 and their relationship with high GAD score (≥ 7) are shown in table 3. Women who perceived that COVID-19 can affect the child had significantly higher level of GAD scores (n=37, 15.3%, p-value 0.042). Similarly, women who were afraid of COVID-19 infection had significantly higher (n=40, 16.5%, p-value 0.046) GAD score. Women who had high GAD score (≥ 7) also had significantly higher (p-value 0.020) fear score (6.90 ± 3.23 vs 5.68 ± 3.07) compared with women who had normal GAD score (< 7). Knowledge of women that they may be imposed a quarantine if they found positive, did not have any effect on GAD score (Table 3). Preventive practices such as hand washing, covering face and avoiding gatherings were prevalent among most women and were unrelated with GAD score (Table 3).

Perceptions, fears and practices of pregnant women, when related to "feeling afraid that something awful might happen", shown that significant proportion (n=38, 19.5%, p-value 0.014) of women felt on several days of week that their pregnancy might get affected and they also felt on nearly all days or more than half days of the week that they are on significantly (n=38, 23.3.0%, p-value 0.009) higher risk of disease (Table 4). Pregnant women who had fear of contracting Corona virus infection were significantly feeling more afraid that something awful might happen on nearly all days or more than half days of the week compared to women who had no fear of contracting Corona virus infection (20.7% vs 9.7%, p-value 0.002). Other COVID-19 related fears and preventive practices were unrelated with "feeling afraid that something awful might happen" (Table 4)

Discussion

This study shows that six out of ten pregnant women think that they are at increased risk of COVID-19 infection. Furthermore, more than eight out of ten women perceive that if mother has infection then child can also get infected, and the virus can transmit from mother to the baby. Despite that nearly all women had good preventive practices including hand washing, covering their faces and avoid gathering, most women were still afraid of the COVID-19 infection. Their perceptions that COVID-19 can affect pregnancy

and they are at higher risk of infection were significantly associated with the fear that something awful might happen. The fear of acquiring infection was also significantly linked with the fear of unknown on most days of the week for these pregnant women.

Although, anxiety disorders are common in perinatal period, whereas depression is much more common in postpartum period(10). This study was an effort to examine, how this global phenomenon of COVID-19 influence anxiety and fears among pregnant women right at the heart of the pandemic. Nearly 14% of the pregnant women had GAD score ≥ 7 in this study which is fairly higher than the previously known rates of between 4.4% to 10% in perinatal period and postpartum period, respectively(11). Anxiety during pregnancy is associated with preterm delivery and low birth weight. A meta-analysis of more than 17,000 pregnant women reported a significant increase in preterm birth among women with anxiety disorder (pooled RR=1.50, 95% CI=1.33-1.70). Whereas, low birth weight, among 5000 pregnant women was also found to be increased (pooled RR=1.76, 95% CI=1.32-2.33)(12). Increased anxiety is not only associated with preterm labor and low birth weight, it is also known to affect the fetal neurological development. This has been attributed to the decreased levels of fetal brain derived neurotrophic factor, impacting the neuro development of fetus (13).

Increased risk of infection and transmission of COVID-19 infection from mothers to baby appeared to be the major factors linked with high GAD scores. This fear of acquiring infection among mothers and high GAD scores are ultimately linked with fear of unknown among these women among most days of week. Though there is no robust evidence to support that the infection transmit from mothers to babies, however, limited conflicting evidence exist both against the vertical transmission (14) and also in favor that neonate may be infected in-utero with the virus(15). More robust evidence is needed to make definitive conclusions about mother to fetus transmission of Corona virus.

This study has its own strengths and limitations. First of all, till date there is very limited empirical evidence about stress, anxiety and fears among pregnant women during this COVID-19 pandemic. To the best of our knowledge, this is the first primary research study assessing perceptions, anxiety and fears of pregnant women right in the middle of pandemic. Though, health professionals from other parts of the world have expressed their worries and concerned regarding anxiety and stress of pregnant women during this pandemic, and its possible impact on pregnancy outcomes (18), the current study's main focus was to assess fears and anxiety among pregnant women. However, it would be interesting to see in follow-up studies, how these GAD scores and fears are linked with maternal and neonatal outcomes. Although, our study has a reasonable sample size, however, most women in the study were mainly from low and middle income families and that limits the generalizability of our findings. Pregnant women of more affluent families with better educational status might have different behavioral or mental response to current crisis, which our study couldn't examine. Despite limitations, till date there is no robust empirical evidence on perceptions, anxiety and fears among pregnant women due to COVID-19 pandemic.

Conclusions

Our findings suggest that a very high proportion of women have stronger belief that if mother have infection, child will also have it and it's likely to be transmitted from mother to child. As there is not enough evidence to support vertical transmission of infection as yet but it is still appearing as a major stressor among pregnant women. Adequate counseling and reassurance of these pregnant women remains the only option in the current scenario which might reduce their anxiety and fears and lead to better pregnancy outcomes.

List Of Abbreviations

COVID: Corona Virus Disease

WHO: World Health Organization

SARS: Severe Acute Respiratory Distress Syndrome

NICE: National Institute for Health and Care Excellence

GAD: Generalized Anxiety Disorder

ANOVA: Analysis of Variance

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Review Board, Dow University of Health Sciences (IRB #.[IRB-1681/DUHS/Approval/2020/](#)). Participants were enrolled after receiving written informed consent. All procedure followed were in accordance with the ethical standards.

Consent for publication

Not applicable

Availability of data and materials

All data generated or analysed during this study are included in this published article

Competing interests

None

Funding

None

Authors' contributions

NH prepared the proposal, executed it and shared write up with KS. KS conceived the idea, designed questionnaire, SZ given statistical input, interpretation of results and result write up. MS, RS and SI collected the hospital data. MS was responsible for data entry.

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Tables

Table 1: Socio-demographics and maternal characteristics of study women (n=286)

Characteristics			
Age in years			
	Mean \pm SD	26.47 \pm 4.81	
	Range	16 - 40	
Gestation age in weeks			
	Mean \pm SD	33.04 \pm 7.54	
	Range	5 - 40	
		n	%
Abortion (n=270)			
	None	218	80.7%
	One	27	10.0%
	\geq Two	25	9.3%
Parity			
	0	90	31.5%
	1	73	25.5%
	2-3	88	30.8%
	\geq 4	35	12.2%
Education level			
	No education	62	21.7%
	Primary	22	7.7%
	Secondary	129	45.1%
	Higher	73	25.5%
Employment status			
	Housewife	276	96.5%
	Working	10	3.5%
Are you here for your routine checkup?			
	Yes	168	58.7%
	No	118	41.3%
Are you here for delivery?			
	Yes	129	45.1%
	No	157	54.9%
Heard about Corona Virus Disease			
	Yes	278	97.2%
	No	8	2.8%
Where did you hear about?			
	Family members	28	9.8%
	Television	160	55.9%
	Social media	40	14.0%
	Friends	2	0.7%
	All/ any one of above	56	19.6%

Table 2: Perceptions, fears and practices of pregnant women about COVID-19 (n=286)

Perceptions about COVID	n	%
Corona Virus can affect pregnancy?		
Yes	194	67.8%
No	34	11.9%
Don't know	58	20.3%
If mother has infection, then Corona Virus can affect the child?		
Yes	242	84.6%
No	16	5.6%
Don't know	28	9.8%
Do you think you are at increased risk of this disease?		
Yes	163	57.0%
No	103	36.0%
Don't know	20	7.0%
Do you think virus can be transmitted to newborn baby?		
Yes	238	83.2%
No	17	5.9%
Don't know	31	10.8%
Fears about COVID		
Do you want to deliver early because of this Corona Pandemic?		
Yes	50	17.5%
No	236	82.5%
Have you called your family members to be with you during delivery?		
Yes	67	23.4%
No	219	76.6%
Were your family members present at the time of previous delivery? (n=222)		
Yes	196	88.3%
No	26	11.7%
Are you aware that quarantine may be imposed if you found to be positive with Corona Virus?		
Yes	165	57.7%
No	121	42.3%
Are you afraid of Corona Virus infection		
Yes	242	84.6%
No	41	14.3%
Don't know	3	1.0%
On a scale of 1 to 10 what is your fear level		
Mean \pm SD	5.86 \pm 3.12	
Preventive Practices		
Have you been washing your hands frequently		
Yes	279	97.6%
No	7	2.4%
Did you cover your face during last 6 weeks i.e. Beginning of this disease		
Yes	234	81.8%
No	52	18.2%
Did you avoid gatherings?		
Yes	268	93.7%

Table 3: Perceptions, fears and practices of pregnant women about COVID and relationship with Generalized Anxiety Disorder (n=286)

Perceptions about COVID	GAD-7 Scale		p-value
	Score <7 n (%)	Score ≥7 n (%)	
Corona Virus can affect pregnancy?			
Yes	165 (85.1)	29 (14.9)	0.573
No	28 (82.4)	6 (17.6)	
Don't know	52 (89.7)	6 (10.3)	
If mother has infection, then Corona Virus can affect the child?			
Yes	205 (84.7)	37 (15.3)	0.042
No	12 (75.0)	4 (25.0)	
Don't know	28 (100.0)	-	
Do you think you are at increased risk of this disease?			
Yes	135 (82.8)	28 (17.2)	0.287
No	92 (89.3)	11 (10.7)	
Don't know	18 (90.0)	2 (10.0)	
Do you think virus can be transmitted to newborn baby?			
Yes	202 (84.9)	36 (15.1)	0.684
No	15 (88.2)	2 (11.8)	
Don't know	28 (90.3)	3 (9.7)	
Fears around COVID			
	n (%)	n (%)	p-value
Do you want to deliver early because of this Corona Pandemic?			
Yes	40 (80.0)	10 (20.0)	0.208
No	205 (86.9)	31 (13.1)	
Have you called your family members to be with you during delivery?			
Yes	61 (91.0)	6 (9.0)	0.151
No	184 (84.0)	35 (16.0)	
Were your family members present at the time of previous delivery?			
Yes	170 (86.7)	26 (13.3)	0.421
No	24 (92.3)	2 (7.7)	
Are you aware that quarantine may be imposed if you found to be positive with Corona Virus?			
Yes	142 (86.1)	23 (13.9)	0.823
No	103 (85.1)	18 (14.9)	
Are you afraid of Corona Virus infection			
Yes	202 (83.5)	40 (16.5)	0.046
No	40 (97.6)	1 (2.4)	
Don't know	3 (100.0)	-	
	Mean ± SD	Mean ± SD	p-value*
On a scale of 1 to 10 what is your fear level			
	5.68 ± 3.07	6.90 ± 3.23	0.020
Preventive Practices against COVID			
	n (%)	n (%)	p-value
Have you been washing your hands frequently			
Yes	239 (85.7)	40 (14.3)	0.997
No	6 (85.7)	1 (14.3)	
Did you cover your face during last 6 weeks i.e. Beginning of this disease			
Yes	200 (85.5)	34 (14.5)	0.842

No	45 (86.5)	7 (13.5)	
Did you avoid gatherings?			
Yes	228 (85.1)	40 (14.9)	0.272
No	17 (94.4)	1 (5.6)	

p-value calculated using Chi-square or Fisher's Exact test

p-value* calculated using Independent t-test

Table 4: Perceptions, fears and practices of pregnant women about COVID pandemic and fear of unknown (n=286)

Feeling afraid something awful might happen					
Perceptions about COVID	Not at all sure	Several days	Over half the days	Nearly every day	p-value
	n (%)	n (%)	n (%)	n (%)	
Do you think Corona Virus can affect pregnancy?					
Yes	90 (46.4)	66 (34.0)	29 (14.9)	9 (4.6)	0.014
No	11 (32.4)	14 (41.2)	5 (14.7)	4 (11.8)	
Don't know	40 (69.0)	10 (17.2)	6 (10.3)	2 (3.4)	
If your mother has infection, then Corona Virus can affect the child?					
Yes	116 (47.9)	78 (32.2)	35 (14.5)	13 (5.4)	0.300
No	6 (37.5)	5 (31.2)	3 (18.8)	2 (12.5)	
Don't know	19 (67.9)	7 (25.0)	2 (7.1)	-	
Do you think you are at increased risk of this disease?					
Yes	68 (41.7)	57 (35.0)	30 (18.4)	8 (4.9)	0.009
No	62 (60.2)	30 (29.1)	7 (6.8)	4 (3.9)	
Don't know	11 (55.0)	3 (15.0)	3 (15.0)	3 (15.0)	
Do you think virus can be transmitted to newborn baby?					
Yes	114 (47.9)	77 (32.4)	34 (14.3)	13 (5.5)	0.964
No	10 (58.8)	4 (23.5)	2 (11.8)	1 (5.9)	
Don't know	17 (54.8)	9 (29.0)	4 (12.9)	1 (3.2)	
Fears about COVID					
	n (%)	n (%)	n (%)	n (%)	p-value
Do you want to deliver early because of this Corona Pandemic?					
Yes	28 (56.0)	14 (28.0)	5 (10.0)	3 (6.0)	0.674
No	113 (47.9)	76 (32.2)	35 (14.8)	12 (5.1)	
Have you called your family members to be with you during delivery?					
Yes	44 (65.7)	12 (17.9)	8 (11.9)	3 (4.5)	0.017
No	97 (44.3)	78 (35.6)	32 (14.6)	12 (5.5)	
Were your family members present at the time of previous delivery?					

Yes	102 (52.0)	55 (28.1)	28 (14.3)	11 (5.6)	0.119
No	20 (76.9)	3 (11.5)	2 (7.7)	1 (3.8)	

Are you aware that quarantine may be imposed if you found to be positive with Corona Virus?

Yes	81 (49.1)	56 (33.9)	21 (12.7)	7 (4.2)	0.583
No	60 (49.6)	34 (28.1)	19 (15.7)	8 (6.6)	

Are you afraid of Corona Virus infection

Yes	106 (43.8)	86 (35.5)	36 (14.9)	14 (5.8)	0.002
No	33 (80.5)	4 (9.8)	3 (7.3)	1 (2.4)	
Don't know	2 (66.7)	-	1 (33.3)	-	

	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	p-value*
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On a scale of 1 to 10 what is your fear level

	5.21 ± 3.25	6.24 ± 2.63	6.50 ± 3.20	7.87 ± 2.94	0.001
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Preventive Practices	n (%)	n (%)	n (%)	n (%)	p-value
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Have you been washing your hands frequently

Yes	138 (49.5)	89 (31.9)	37 (13.3)	15 (5.4)	0.146
No	3 (42.9)	1 (14.3)	3 (42.9)	-	

Did you cover your face during last 6 weeks i.e. Beginning of this disease

Yes	113 (48.3)	74 (31.6)	34 (14.5)	13 (5.6)	0.853
No	28 (53.8)	16 (30.8)	6 (11.5)	2 (3.8)	

Did you avoid gatherings?

Yes	127 (47.4)	89 (33.2)	38 (14.2)	14 (5.2)	0.061
No	14 (77.8)	1 (5.6)	2 (11.1)	1 (5.6)	

p-value calculated using Chi-square analysis

p-value* calculated using ANOVA analysis