International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Dutta I et al. Int J Reprod Contracept Obstet Gynecol. 2023 Feb;12(2):346-353
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20230030

Original Research Article

Health related behaviour changes in pregnant women during COVID-19 pandemic

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Received: 13 December 2022
Accepted: 09 January 2023

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ABSTRACT

Background: Pregnancy associated anxiety and depression is very well known for its prevalence. Pandemic like COVID-19 all the more is additive to the levels of anxiety and depression during pregnancy, especially for mothers who are concerned about feto-maternal wellbeing. This study makes an effort to analyze the health-related behavior changes and psychological impact of pregnant women after COVID-19 outbreak.
Methods: Cross sectional, questionnaire-based study conducted on pregnant ladies visiting labor room and out-patients department RIMS, Ranchi from April 2020 to September 2020.
Results: Most patients were primigravida and turned up only in third trimester. Pregnancy complications like heart disease, GDM, jaundice, PIH were present in 28% of participants. 48% participants had no family income during pandemic. The 92% women wore masks, 80% practiced social distancing, 72% practiced frequent handwashing, 72% practiced frequent handwashing during pandemic, 80% had no regular antenatal check-up. Almost 64% participants showed mild to moderate anxiety, 34% had moderate depression and 40% had moderate stress. Four percentages had severe anxiety, 2% had severe depression and 12% had severe stress. Usage of mask was inversely related to GAD7 scores, but had no correlation with EPDS scores. Rest parameters like frequent handwashing, social distancing, stressful behavior, not going out and frequent handwashing were directly related to GAD 7 and EPDS score.
Conclusions: Mental health and preventive behavior of respondents could be attributed to socio demographic, social, situational, economic status, family conditions and perception of severity of Covid19.

Keywords: Anxiety, Depression, Pandemic, Pregnancy, COVID-19

INTRODUCTION

The COVID-19 pandemic broke out in Wuhan, Hubei Province in China as per study by Nishiura et al.[1] According to study by Wu et al, pregnant women assessed after the declaration of coronavirus disease 2019 epidemic had significantly higher rates of depressive symptoms than women assessed before the epidemic declaration.[2] These women were also more likely to have thoughts of self-harm. The depressive rates were positively associated with the number of newly confirmed cases of coronavirus disease 2019, suspected infections, and deaths per day. As per Liu et al the outbreak aggravated prenatal anxiety and the associated factors could be targets for psychological care.[3]

According to Durankus et al there is limited data regarding psychological effects of outbreaks.[4] Current research and clinical routines focus on treatment and prevention of COVID-19.

First warnings as regards dealing with the psychological well-being of pregnant women came from Iran, another highly affected country in study by Mirzadeh et al who pointed out different aspects of pregnancy during COVID-

19 pandemic and underlined the necessity of psychological support for pregnant women during this crisis.[5]

According to ACOG committee opinion no. 559 depression is a common complication of pregnancy and the postpartum period.[6] As per WHO reported about 10% of pregnant women worldwide and 13% of women who have just given birth experiencing a mental disorder, primarily depression.[7]

As per study by Fisher et al, common perinatal mental disorders (CPMDs) are more prevalent in low- and lower-middle-income countries; i.e., 15.6% of women in low and lower-middle-income countries experienced a mental disorder during pregnancy and 19.8% experienced a mental disorder after childbirth.[8]

Pregnant women during times of epidemic tend to be more concerned about themselves and condition of their baby, which adds all the more to their poor mental health which is well portrayed in studies by Lee et al and Ng et al.[9-10] Similarly in one Canadian study by Davenport et al identifies a substantial increase in the likelihood of maternal depression and anxiety during the COVID-19 pandemic and highlights the strong need for heightened assessment and treatment of maternal mental health.[11]

The aim of the present study is to analyze the health-related behavior changes and psychological impact of pregnant women after COVID-19 outbreak at our tertiary center, Rajendra institute of health sciences, Ranchi, Jharkhand, which caters to health services for entire state.

METHODS

This was cross-sectional study carried out at pregnant ladies visiting labor room and outpatient's department, RIMS, Ranchi from April 2020 to September 2020.

Sampling method

It is estimated that about 10-35% of women around the world including India suffer from depression and anxiety during pregnancy and postpartum period. So, an average prevalence has been taken in this study to be approximately 22.5% (p)

Sample size=$z2\times p\times q/e^2$

Where z=1.96 taking 95% confidence interval

p=0.225, q=1-p=1-0.225=0.775
e=margin of error=0.0835

Hence sample size,

n=1.96×1.96×0.225×0.775/0.08×0.08=105.

At the beginning of study, we were not sure that we would get respondents upto our sample size, but to our surprise we got overwhelming response. About 250 respondents participated in study during this study period which included outbreak, peak and plateau phase of first wave of COVID-19. Hence, we have included a surplus of sample size to study varied changes in health-related behaviour during different phases of 1st wave of COVID-19.

Inclusion criteria

All pregnant women coming to OPD for antenatal check-up at RIMS and all pregnant women coming to labor room for safe confinement were included in study.

Exclusion criteria

Patients with obstetrical emergencies like obstructed labor, eclampsia, rupture uterus, antepartum/ post-partum hemorrhage, rupture uterus requiring immediate management and patients who did not provide consent for this study were excluded from the study.

Participants were handed a questionnaire mentioning age, education, monthly household income status, pre-pregnancy body mass index, gestational age, gravidity, parity and pregnancy complications. Pandemic specific questions like perception of likelihood of infection, knowledge about COVID, knowledge about maternal and child protection, health related behavior changes like preventive behavior changes like preventive behaviors, prenatal check-up behaviors and help seeking behavior. Generalized anxiety disorder scale (GAD-7) used to measure anxiety symptoms of pregnant women. Each item is scored from 0-3, with total score of 0-21 points. Cut off for mild, moderate and severe anxiety 5, 10 and 15 respectively.[12] Edinburg postnatal depression scale (EPDS) used to measure antenatal depressive symptoms of pregnant women.[13] It consists of 10 items, with total score of 0-30. Statistical analysis done with SPSS software. Quantitative and qualitative analysis deduced via %.

RESULTS

A total of 250 questionnaires were collected who met the inclusion and exclusion criteria.

Most participants were educated up to primary school. Most of them were housewives, mostly either Hindu or Muslim, residing in urban location and tribals. Most patients were primigravida and turned up only in third trimester. Pregnancy complications like heart disease, GDM, jaundice, PIH were present in 28% of participants. 48% participants had no family income during pandemic.

The 92% women wore masks, 80% practiced social distancing, 72% practiced frequent handwashing, 72% practiced frequent handwashing during pandemic, 80% had no regular antenatal check-up, most participants had no go to person in situation of anxiety.

Almost 64% participants showed mild to moderate anxiety, 34% had moderate depression and 40% had moderate stress. The 4% had severe anxiety, 2% had severe depression and 12% had severe stress.

Participants who were graduates had maximum anxiety, depression and stress. Hindu participants had maximum anxiety; Muslim participants had maximum depression. Urban and non-tribals population were more anxious, depressed and stressed. Anxiety was max in government employees, depression in housewives, stress in private job participants. Anxiety, depression and stress was inversely proportional to monthly family income. Primigravida, participants from first trimester and those with pregnancy related complications had max. anxiety, depression and stress. Most women preferred to seek help from family when distressed. Those who had perception about COVID-19, maternal and child care more anxious, depressed and stressed. Women who had regular ANC and frequent visits to health facility most anxious, depressed and stressed.

Table 1: Characteristics of pregnant women.

Characteristics	N	Percentage (%)
Education		
Illiterate	70	28
Pprimary school	80	32
Intermediate	60	24
Graduate and above	30	12
Occupation		
Housewife	200	80
Government	5	2
Private	25	10
Business	20	8
Religion		
Hindu	100	40
Muslim	40	16
Christian	100	40
Others	10	4
Residence		
Urban	160	64
Rural	90	36
Ethnicity		
Tribal	160	64
Non tribal	90	36
Income before pandemic (Per month)		
<5000	100	40
5000-10000	80	32
10000-15000	40	16
>15000	30	12
Income during pandemic (Per month)		
No income	120	48
<5000	40	16
5000-10000	60	24
10000-15000	20	8
>15000/mth	10	4
Gestational age (Weeks)		
1st trimester	30	12
2nd trimester	50	20
3rd trimester	170	68
Gravidity history		
Primi	160	64
>2	90	36
Parity		
Primiparous	160	64
Multiparous	90	36
Pregnancy complications		
Present	70	28
Absent	180	72

Table 2: Health related behavior changes of pregnant women during pandemic.

Behavior	N	Percentage (%)
Wearing mask outside home		
Yes	230	92
No	20	8
Social distancing from people with cough/cold		
Yes	200	80
No	50	20
Frequent hand washing		
Yes	180	72
No	70	28
Average daily handwashing with soap/sanitizer use		
Before pandemic outbreak	50	20
After pandemic outbreak	180	72
Antenatal checkup		
Regular/on time	50	20
Irregular/not on time	200	80
Help seeking behavior during panic/anxiety		
Health care worker	20	8
Family	50	20
Social media	30	12
Psychologist	0	0
None	150	60

Table 3: Psychological status of pregnant women.

Items	N	Percentage (%)
Anxiety		
Mild	80	32
Moderate	80	32
Severe	10	4
None	80	32
Depression		
Mild	60	24
Moderate	85	34
Severe	5	2
None	100	40
Stress		
Mild	70	28
Moderate	100	40
Severe	30	12
None	50	20

Table 4: Association between patient characteristic variable, behaviour characteristics status and psychological status.

Patient characteristics	Anxiety	Depression	Stress
Education			
Illiterate	5	10	15
Primary school	10	15	20
Intermediate	10	30	45
Graduate and above	80	60	90
Religion			
Hindu	55	30	35
Muslim	25	66	45
Christian	35	20	25
Others	35	35	55

Continued.

Patient characteristics	Anxiety	Depression	Stress
Residence			
Urban	65	80	60
Rural	35	20	40
Ethnicity			
Tribal	20	30	25
Non tribal	80	70	75
Occupation			
Housewife	45	70	50
Government	60	30	70
Private	30	45	90
Business	35	55	80
Family income during pandemic (Month)			
No income	90	70	86
<5000	70	60	80
5000-10000	65	65	85
10000-15000	65	55	75
15000	65	45	75
Gestational age (Week)			
1st trimester	90	90	85
2nd trimester	85	75	70
3rd trimester	65	85	90
Gravidity			
Primi	90	95	95
>2	80	85	85
Pregnancy complications			
Present	90	95	95
Absent	70	65	65
Help seeking behavior			
Health care worker	20	10	10
Family	85	85	90
Friend	65	70	75
Social media	35	30	25
Psychologist	0		
Prenatal check up			
None	85	60	80
Irregular	80	65	85
Regular	30	90	95
Perception about COVID- 19			
Yes	85	85	90
No	40	30	20
Perception about maternal and child care during pandemic			
Yes	85	90	95
No	25	35	30

Table 5: Correlation of behaviour change with GAD7 and EPDS scores.

Scale	Wearing mask (%)	Frequent handwashing/ sanitizer use (%)	Social distancing (%)	Stressful behavior (%)	Confined to home (%)	Frequent bathing (%)
GAD7						
<5	90	65	68	30	20	55
5-10	85	70	85	65	55	50
10-15	35	88	88	75	65	70
>15	25	90	90	88	85	70
EPDS						
<10	88	80	75	40	35	45
10-20	60	65	75	60	70	65
20-30	80	85	80	88	75	65
>30	70	88	85	90	80	85

Usage of mask was inversely related to GAD7 scores, but had no correlation with EPDS scores. Rest parameters like frequent handwashing, social distancing, stressful behavior, not going out and frequent handwashing were directly related to GAD 7 and EPDS score.

DISCUSSION

The current study was conducted during first wave of COVID-19 pandemic when awareness of preventive strategies against this new pandemic were in its grassroot level. Studies in respiratory epidemics like severe acute respiratory syndrome (SARS) and middle east respiratory epidemics (MERS) have found that pregnancy was associated with adverse feto-maternal complications [14-15]

As per study by Lau et al respondents were found wearing face mask in public venues (73.8%), increasing the frequency of handwashing (86.7%) and behaviors that protect others (e.g., wearing face masks when experiencing influenza-like illness (ILI, 92.4%), immediately seeking medical consultation (94.2%).[16] In our study where 92% women wore masks,80% practiced social distancing, 72% practiced frequent handwashing at the outbreak of pandemic (Table 2).This changed behavior of respondents could be attributed to the country wide awareness program by government and private bodies.

In a study by Mo et al emotional representations were associated with lower likelihood of wearing face mask and hand washing.[17] Respondents of our study who were graduates had maximum anxiety (80%), depression (60%) and stress (90%) (Table 4). Respondents with higher level of education and working professionals were more depressed, anxious, stressed and reported always wearing mask, frequently washed hand, maintained social distancing,

In a study by Qian et al the prevalence rates of moderate or severe anxiety were 32.7% among Wuhan participants and 20.4% among Shanghai participants. This was somewhat in accordance with the results of our study where 32% respondents had moderate and 4% severe anxiety.[18]

In a study by Zhao et al positive association was found between low education level and depression which was not in accordance where negative association was found between level of education and depression as respondents might be more active in seeking for information about COVID-19 and adopt preventive measures.[19]

As per study by Tao et al urban area, high level of education level, high level of knowledge about diseases, female gender and older age were protective factors for good hand hygiene; of these, area was found to be associated most strongly with handwashing behavior.[20] This is somewhat in accordance with our study.

Primigravida, respondents from first trimester and those with pregnancy related complications had maximum anxiety, depression and stress (Table 4). Multigravida (even with pregnancy complications) had less anxiety, depression and stress. This present study shows that old age and higher parity was associated with lower risk of depression and anxiety which is in contrast to other studies, but lower frequency of wearing face mask.

Hindu participants had maximum anxiety (55%) Muslim participants had maximum depression (66%). Urban and non-tribal population were more anxious, depressed and stressed. Among demographic factors, urban respondents, mostly non tribal faced strict lockdown, knew someone or the other being Covid 19 positive, hospitalized or being quarantined. All these cumulative factors increased their stress, depression and anxiety levels. This is well proven in study by Raj where cumulative factors proved to be a substantial addon to their perceived susceptibility to infection which was detrimental to the mental health.[21]

We found this correlation in our study where respondents who had perception about severity of COVID-19, maternal and child care perception during pandemic and had frequent visits to health care facility for regular ANC, used preventive methods like wearing of mask.

Respondents of our study who had perception of the pandemic were more anxious, depressed and stressed (Table 4). Respondents who were optimistic about arrival of vaccine or curative medicines had lower levels of anxiety. This was in accordance to previous studies on epidemics which perceived the disease would cause permanent bodily damage or had high fatality were significantly associated with severe mental stress.

In a study by Joseph et al perceptions related to bodily damages, efficacy of frequent handwashing, non-availability of effective vaccines, high chance of having a large scale local outbreak caused increased mental distress and hence was associated with frequent handwashing.[22] As per study by Herbell et al stress in pregnancy is an exceedingly common issue that impacts the mother's mental health and the health of her baby.[23] Yet, women with a supportive network of friends and family may experience lower stress and improved mental health which is in accordance with our study. Social support has a positive impact on mental health of every individual, including pregnant women. Those respondents who had better social support had better acceptance of mask usage, frequent handwashing and social distancing. Those who had little or no social support or had no go to person in times of anxiety faced more stressful situations (Table 4).

Usage of mask was inversely related to GAD7 scores, but had no correlation with EPDS scores. Rest parameters like frequent handwashing, social distancing, stressful behavior, not going out and frequent handwashing were directly related to GAD 7 and EPDS scores, which could

be attributed to severity of preventive behavior with anxiety, depression and stress levels.

Limitations

There were several limitations in our study. Lot of mental health problems could be due to past medical history, personal history and family history which were not taken into account. Secondly, this was a cross sectional study taking into study population, those respondents who gave consent and met the inclusion criteria during the span of study period. Lastly confounding factors could not be adjusted in our study, since relationship between patient characteristic variables and psychological parameters was difficult to determine.

CONCLUSIONS

The present study revealed behavior related changes in pregnant women during first wave of COVID-19 pandemic. Mental health and preventive behavior of respondents could be attributed to socio demographic, social, situational, economic status, family conditions and perception of severity of COVID-19. Steps should be taken to promote preventive behaviors, to increase social support and to educate pregnant ladies about the risks and after effects of COVID-19. Also, administration has to be careful while imposing strict countrywide lockdown rules as it leads to detrimental effects on mental health of pregnant women.

ACKNOWLEDGEMENTS

The authors would like to thank the patients who have participated in this study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Dutta I, Horo UM. Health related behaviour changes in pregnant women during COVID-19 pandemic. Int J Reprod Contracept Obstet Gynecol 2023;12:346-53.