Original Article

Drivers for COVID 19 vaccine hesitancy among breastfeeding women in Eastern tribal state, India

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Abstract

Background: In the COVID-19 pandemic age, vaccination hesitancy also known as vaccine refusal is a cause for worry since it hinges on the five Cs of confidence, complacency, convenience, calculation, and shared responsibility. The current study was to pinpoint the elements that contribute to breastfeeding women's hesitation to receive the coronavirus disease-19 (COVID-19) vaccine. **Materials and Methods:** A cross-sectional observational study was carried out at the Department of Obstetrics and Gynaecology, Tertiary Care Hospital, Ranchi, Jharkhand. **Result:** Out of 365 nursing mothers, 242 (66.3%) were hesitant to get the COVID-19 vaccination. Those who chose not to receive the COVID-19 vaccination mostly belong to those aged 18 to 25 (38.1%), living in rural regions (44.9%), and belonging to non-tribal ethnic groups (41.1%). On application of logistic regression, it was found that rural areas had 3 times higher rate of vaccine hesitancy than urban residents, and that husbands' education levels up to the 12th grade had a 3.55 times higher rate and 5 times agriculture by husband's occupation, which was statistically significant (*P* value less than 0.05) The most prevalent grounds for rejection were fear of side effects (85.8%) and worry of adverse effects on newborns (83.48%). **Conclusion:** Both husband and wife, who had completed high school and were aware of the vaccination, were fearful of the COVID-19 vaccine. Concerns about the side effects and undesirable effects of vaccination on their newborns were the main reasons for refusal.

Keywords: Breastfeeding women, Covaxin, COVID-19 vaccine, Covishield, vaccine hesitancy

Introduction

Many countries around the world have been hit badly by the second wave of severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) infection, India being no exception to it. As of April 10 2021, India is the third leading country after the United States of America (USA) and Brazil in the number of identified cases of coronavirus disease-19 (COVID-19).[1] In the middle of March 2021, the second wave started, and on April 9, the highest number of cases (144,829) were identified in India.[1] The majority of people infected with the COVID-19 virus develop mild to moderate respiratory illness and recover without the need for special treatment.[2] The number of pregnant and postpartum women with severe COVID-19 disease increased during the second wave, and it appears that more such individuals required admission to intensive care.[3] Therefore, there is an unmet need to protect this group of women. Recently, the government of India approved vaccination for lactating women, but hesitancy was seen among postpartum women in taking the vaccine. Vaccine hesitancy is defined as a "delay in accepting or refusing safe vaccines despite the availability of vaccine services" by the World

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Health Organization (WHO).[4] It is caused by complex, context-specific factors that vary across time, place, and different vaccines and is influenced by issues such as complacency, convenience, confidence, and sociodemographic contexts.[5] Vaccine hesitancy may also be related to misinformation and conspiracy theories, which are often spread online, especially through social media.[6,7] In recent years, there has been a great deal of research on vaccination uptake and its behavioral drivers, and these efforts have resulted in a better understanding of the barriers and enablers of vaccination.[7] Research efforts have also generated potentially effective strategies to improve vaccine acceptance and uptake that go beyond traditional information campaigns and aim to change behaviors by improving knowledge.[4] The vaccines that are approved in India are Covishield (non-replicating viral vector vaccine) and Covaxin (inactivated virus vaccine). Both vaccines have passed necessary safety tests and the WHO's standard of efficacy. Vaccine hesitancy has been seen across India in various age groups, and the state of Jharkhand is no exception. Lack of confidence in COVID-19 vaccines poses direct and indirect health risks and could derail efforts to end the current pandemic. Concerns about unknown future effects, side effects, and a lack of trust are common reasons.[8] The many different factors that influence a person's propensity to get immunized require specific consideration. Corona virus persists like influenza infection so Corona vaccine is the only weapon to fight against the corona infection and the women who are nursing have relatively low rates of COVID-19 vaccination. Less research has been done on the reasons for acceptance and rejection. So, the present study was planned to assess drivers of hesitancy in breastfeeding women regarding COVID-19 vaccination and also evaluate the factors associated with acceptance of the COVID-19 vaccine.

Materials and Methods

This cross-sectional observational study was conducted in the Department of Obstetrics and Gynecology at Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand between the period of July to December 2021. The participants were breastfeeding women in the postpartum ward of the Obstetrics and Gynecology department. The study was approved by the Institutional Ethics Committee memo no. 316 dated October 7 2021. The survey was done using a pretested semi-structured questionnaire, the questionnaire included basic information like socio-demographic profile, vaccine awareness, and drivers of hesitancy. A purposive consecutive sampling method was used for data collection. The participant who was willing to participate in the study was included after taking consent. The sample size was calculated by using the formula, $n = z2\ p\ (1\text{-}p)/e2$ where, n = required sample size, Z = confidence level at 95% (standard value of 1.96), Prevalence (P) =30%,(acceptability of vaccination according to the pilot study conducted at RIMS), and E = margin of error at 5% $1.96 \times 1.96 \times 0.300 \times 0.700 / 0.05 \times 0.05 = 322.56$, which is rounded off to 325. Considering a 10% loss of data, we estimated a final sample size of 365 was taken. The inclusion criteria of the study were all breastfeeding women in the postpartum ward RIMS, who were willing to participate. The exclusion criteria were: 1) Breastfeeding women who were COVID-19 positive in the past three months as per the government of India guidelines. 2) Breastfeeding women who are already vaccinated. The data were analyzed using SPSS Version 22. To test and describe the relationship between two categorical variables, the Chi-square test was used. Variables associated with COVID-19 vaccine hesitancy in a univariate analysis were then entered into a multivariate logistic regression analysis. The adjusted odds ratio (AOR) and 95% CI were used to know the odds of COVID-19 vaccine hesitancy for each significant variable. A *P* value of 0.05 was regarded as significant.

Result

We analysed the response of 365 nursing women on willingness of Covid-19 vaccination during breastfeeding. Among these, 66.3% (242) had Covid vaccine hesitancy [Figure 1]. The majority of individuals who declined the Covid vaccination were aged 18 to 25 (38.1%), lived in rural areas (44.9%), belonged to non-tribal ethnic groups (41.1%), were housewives (60.5%), had self-employed spouses (32.6%), and were from nuclear households (41.6%). Only 10.4% of participants lacked any form of literacy, while 38.4% had degrees or other credentials beyond high school [Table 1]. Vaccine hesitancy was found significant association ($P<0.005$) among Rural resident (39.5%), nuclear type of family (39.5%). Association was also found significant among higher secondary educated, business/service class both in husband (31.8%/14.2%) and wife (54.8% House wife) and 58.6% had knowledge about Covid vaccine in univariate analysis. When logistic regression was applied to vaccination hesitancy, it was found that rural areas had 3 times higher rate of vaccine hesitancy than urban residents, and that husbands' education levels up to the 12th grade had a 3.55 times higher rate and 5 times agriculture by husband's occupation, which was statistically significant (*P*0.05) [Table 2]. Fear of side effects and fear of untoward effect to neonates were the most common reasons for refusal which were present in 207(85.8%) and 203(83.48%) respectively [Figure 2].

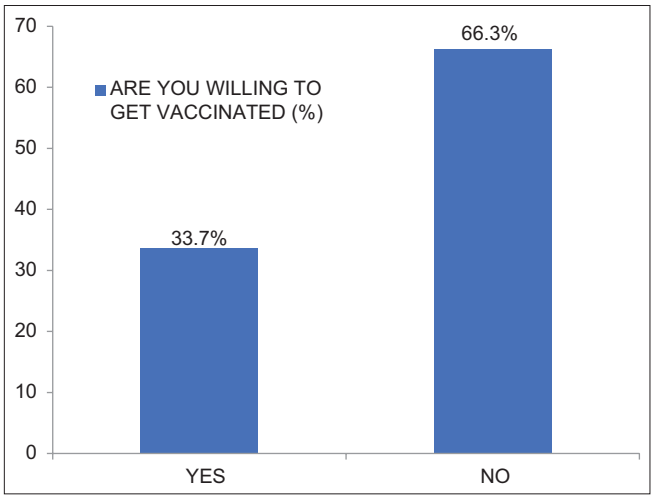

Figure 1: Vaccine Hesitancy Among Breastfeeding Women

Discussion

The vaccine may provide neonatal humoral immunity against SARS-CoV-2 in addition to maternal protection. SARS-CoV-2 IgG (Immunoglobulin G) is effectively transferred across the placenta from vaccinated women to their neonates.[9] Similarly, for 6 weeks after vaccination, SARS-CoV-2 specific IgA and IgG antibodies were secreted into breast milk.[10] However, this population subgroup has been linked to low vaccination coverage.[11] Vaccination effectiveness can only be proven if they are widely accepted and used. Vaccination effectiveness can only be demonstrated if it is widely accepted and used.

Breastfeeding mothers who refused vaccination were more likely to be between the ages of 18 and 25 and to live in rural areas, according to our findings, and attitudes toward the COVID-19 vaccine among hesitant lactating mothers differed significantly in several areas. The COVID-19 vaccine was met with strong scepticism among lactating women, with 66.3% refusing to receive it [Figure 1]. This is nearly identical to previous studies, which found low acceptance rates of 57% in Oliver J *et al.*[12] Breastfeeding women who were hesitant to get vaccinated were primarily concerned about vaccine safety, particularly the unknown potential long-term effects of COVID-19 vaccination for themselves and their children. Sazalma I *et al.* and Skirrow H *et al.*[13,14] found similar findings.

In univariate logistic regression, vaccine hesitancy is associated with educational status, residence, occupation of the woman and husband, and family type [Table 1]. In our study, however, Hindu women were less willing to receive the COVID-19 vaccine than women of other religions. The reasons for this are unknown, but they could be related to a lack of knowledge about vaccine availability and safety.

According to the multivariate analysis, lactating mothers with knowledge of the COVID-19 vaccine had fifteen times more vaccine hesitancy [Table 2]. The reasons for this are unknown, but it could be due to false information about the COVID-19

Table 1: Profile of breastfeeding women (*n*=365).

Profile	No	Yes	*P*
Age (years)			0.69
18–25	139 (38.1%)	69 (18.9%)	
26–35	99 (27.1%)	50 (13.7%)	
36–45	4 (1.1%)	4 (1.1%)	
Address			0.001*
Rural	164 (44.9%)	62 (17%)	
Urban	78 (21.4%)	61 (16.7%)	
Ehinicity			0.24
Nontribal	150 (41.1%)	66 (18.1%)	
Tribal	92 (25.2%)	57 (15.6%)	
Education status of women			0.02*
Illiterate	38 (10.4%)	26 (7.1%)	
Primary	67 (18.4%)	35 (9.6%)	
Secondary	59 (16.2%)	32 (8.8%)	
College	78 (21.4%)	30 (8.2%)	
Education status of husband			<0.001*
Illiterate	16 (4.4%)	8 (2.2%)	
Primary	36 (9.9%)	34 (9.3%)	
Secondary	50 (13.7%)	42 (11.5%)	
College	140 (38.4%)	39 (10.7%)	
Occupation of women			0.034*
Housewife	221 (60.5%)	103 (28.2%)	
Labor	8 (2.2%)	10 (2.7%)	
Agriculture	9 (2.5%)	1 (0.3%)	
Business	1 (0.3%)	2 (0.5%)	
Service	3 (0.8%)	7 (%)	
Occupation of husband			<0.001*
Unemployed	1 (0.3%)	3 (0.8%)	
Labor	39 (10.7%)	24 (6.6%)	
Agriculture	28 (7.7%)	37 (10.1%)	
Business	119 (32.6%)	26 (7.1%)	
Service	55 (15.1%)	33 (9%)	
Type of family			0.01*
Joint	90 (24.7%)	61 (16.7%)	
Nuclear	152 (41.6%)	62 (17%)	

*Significant

Table 2: Binary logistic regression analysis of vaccine hesitancy among breastfeeding women (*N*=365).

Variables	*P*	AOR	95% Confidence Interval	
			Lower	Upper
Age (years) reference (36–45)				
18–25	0.362	0.419	0.065	2.718
26–35	0.322	0.389	0.06	2.526
Address reference (urban)				
Rural	0.000*	3.471	1.861	6.475
Ethnicity reference (non-tribal)				
Tribal	0.051	3.843	0.992	14.88
Education status of women reference (college)				
Illiterate	0.721	0.796	0.227	2.79
Primary	0.863	0.914	0.327	2.549
Secondary	0.696	1.182	0.511	2.733
Educational status of husband reference (college)				
Illiterate	0.303	2.227	0.485	10.24
Primary	0.07	2.947	0.917	9.474
Secondary	0.004*	3.556	1.494	8.46
Occupation of women reference (service)				
Housewife	0.067	0.233	0.049	1.105
Agriculture	0.002*	0.013	0.001	0.206
Labor	0.382	0.406	0.054	3.056
Business	0.939	1.124	0.056	22.568
Occupation of husband reference (service)				
Unemployment	0.126	7.187	0.573	90.091
Agriculture	0.004*	5.108	1.705	15.305
Labor	0.626	0.77	0.269	2.202
Business	0.018*	0.422	0.206	0.865
Type of family reference (joint family)				
Nuclear	0.081	0.55	0.281	1.076
Any comorbidities reference (no)				
Yes	0.996	1.004	0.228	4.423
Knowledge about covid-19 vaccine reference (no)				
Yes	0.001*	15.116	3.259	70.115

*Significant

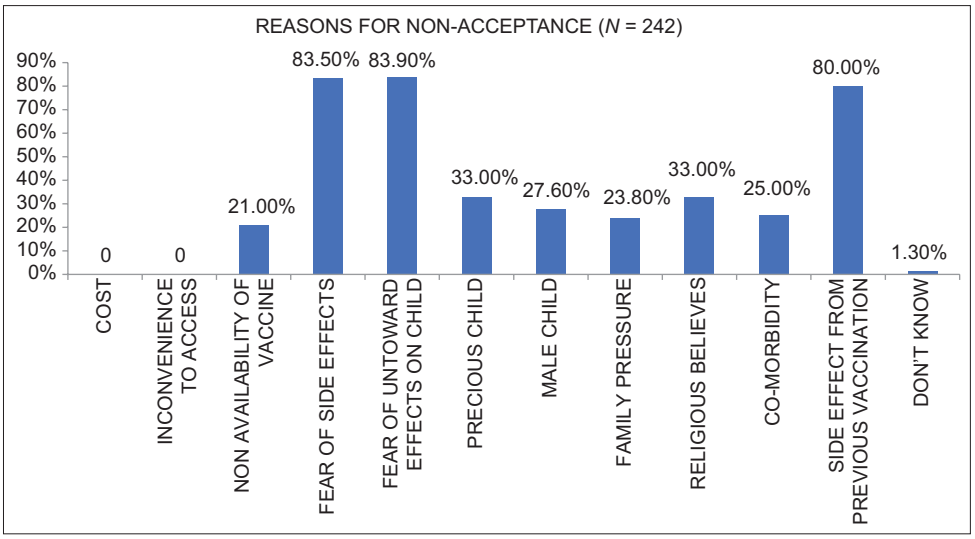

Figure 2: Reasons for Non-Acceptance of COVID-19 Vaccine Among Breastfeeding Women

vaccine. Similar findings were found in a study done by Dhalaria P *et al.* which shows that gender plays a significant role in coverage and hesitancy and female gender was inversely associated with coverage.[15] Agricultural men with secondary education (up to the 12th grade) are hesitant to vaccinate their nursing mothers (wives), which may be related to changing attitudes and concerns about vaccine safety. Multivariate analysis also revealed that rural residents are three times more reluctant to receive vaccines than urban residents, it may be due to rural dwellers are more likely than urban dwellers to receive misleading information. Mothers with COVID-19 infection spread the virus to their infants through tiny droplets and vaccines will protect both the mother and the breastfeeding child but the acceptance rate is very low, and the main reason for this is fear of the side effects [Figure 2]. To increase awareness primary care physicians' role will be very important as they are the first point of contact with them. So, the role is very critical for primary health care providers to begin providing health education to communities about the benefits of COVID-19 vaccination as soon as possible to increase their willingness to receive COVID-19 vaccination.

Study limitation

The limitation of the study was that we were unable to determine a cause-and-effect relationship between vaccination and hesitancy in this hospital-based cross-sectional study. Secondly, because this study was not conducted at the community level, we must be cautious about generalizing our findings to the entire population.

Conclusion

COVID-19 vaccination apprehension was high in both husband and wife, who had completed high school and had knowledge of the vaccination. The main reasons for refusal were concerns about the side effects and unfavorable effects of vaccination on their newborns. The volume of disparate falsehoods about COVID-19 grows by the day, and it is the media's primary responsibility to play a reasonable and professional role during the ongoing health crisis. Because conspiracy theories provide ammunition for vaccine denialists, prompt intervention is critical. Health officials must take strict measures to ensure that the public receives accurate and honest information. Health officials must demonstrate that they are listening to and responding to the public's questions and concerns.

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Conflicts of interest

There are no conflicts of interest.

References

1. Worldometer. COVID-19 corona virus pandemic. (2021; published online April 10.). Accessed: April 12, 2022: https://www.worldometers.info/coronavirus/.
2. Kadiwar S, Smith JJ, Ledot S, Johnson M, Bianchi P, Singh N, *et al.* Were pregnant women more affected by COVID-19 in the second wave of the pandemic? Lancet 2021;397:1539-40.
3. MacDonald NE, SAGE working group on vaccine hesitancy. Vaccine hesitancy: Definition, scope and determinants. Vaccine 2015;33:4161-4.
4. Larson HJ, Jarrett C, Eckersberger E, Smith DM, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature, 2007-2012. Vaccine 2014;32:2150-9.
5. Mills M, Rahal C, Brazel D, *et al.*: COVID-19 vaccine deployment: Behaviour, ethics, misinformation and policy strategies. https://royalsociety.org. The Royal Society, 21 OCTOBER 2020.
6. Bobby Duffy: Coronavirus: Vaccine misinformation and the role of social media. The Policy Institute. 2020.
7. Behavioural considerations for acceptance and uptake of COVID-19 vaccines: WHO technical advisory group

on behavioural insights and sciences for health, meeting report, 15 October 2020. (15 October 2020). Available from: https://apps.who.int/iris/handle/10665/337335. [Last accessed 2022 April 12].

8. Razai MS, Chaudhry UAR, Doerholt K, Bauld L, Majeed A. Covid-19 vaccination hesitancy. BMJ 2021;373:n1138.
9. Nir O, Schwartz A, Toussia-Cohen S, Leibovitch L, Strauss T, Asraf K, *et al.* Maternal-neonatal transfer of SARS-CoV-2 immunoglobulin G antibodies among parturient women treated with BNT162b2 messenger RNA vaccine during pregnancy. Am J Obstet Gynecol MFM 2022;4:100492.
10. Perl SH, Uzan-Yulzari A, Klainer H, Asiskovich L, Youngster M, Rinott E, *et al.* SARS-CoV-2-Specific antibodies in breast milk after COVID-19 vaccination of breastfeeding women. JAMA 2021;325:2013-4.
11. Blakeway H, Prasad S, Kalafat E, Heath PT, Ladhani SN, Le Doare K, *et al.* COVID-19 vaccination during pregnancy: coverage and safety. Am J Obstet Gynecol 2022;226:236. e1-236.e14. doi:10.1016/j.ajog.2021.08.007.
12. Oliver J, Kaufman J, Bagot K, Bradfield Z, Homer C, Gibney KB, *et al.* Drivers of COVID-19 vaccine hesitancy among women of childbearing age in Victoria, Australia: A descriptive qualitative study. Vaccine ×2022;12:100240. doi: 10.1016/j.jvacx.2022.100240.
13. Szalma I, Bitó T. Attitudes toward COVID-19 vaccination of pregnant and lactating women in Hungary. J Perinat Med 2023;51:531-7.
14. Skirrow H, Barnett S, Bell S, Riaposova L, Mounier-Jack S, Kampmann B, *et al.* Women's views on accepting COVID-19 vaccination during and after pregnancy, and for their babies: A multi-methods study in the UK. BMC Pregnancy Childbirth 2022;22:33. doi: 10.1186/s12884-021-04321-3.
15. Dhalaria P, Arora H, Singh AK, Mathur M, S AK. COVID-19 vaccine hesitancy and vaccination coverage in India: An Exploratory Analysis. Vaccines (Basel) 2022;10:739. doi: 10.3390/vaccines10050739.