

Short Communication

Frequency of COVID-19 among Pregnant Patients at a Tertiary Care Hospital, Lahore: A Cross-Sectional Study

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Abstract

Coronavirus Disease 2019 (COVID-19) among pregnant women is a major health concern. Determining the incidence of COVID-19 among pregnant women is crucial for providing appropriate care. This study was conducted to determine the frequency of COVID-19 in pregnant females at a Tertiary care Hospital, Lahore. It was a cross-sectional study conducted among 150 pregnant females through convenient sampling from Gynecology & Obstetrics outpatient department (OPD) of tertiary care hospital, Lahore. Data was obtained through questionnaire. COVID-19 status was confirmed by nasopharyngeal swabs for real-time reverse transcription polymerase chain reaction (RT-PCR). Data was entered and analyzed using SPSS version 24.0. Chi-square test was used, with p-value <0.05 was considered significant. The frequency of COVID-19 was 4.7% among 150 pregnant females. About 130(86.7%) females were vaccinated for COVID-19, among them only 2 % were found positive (p=0.000). About 30(20.0%) females were symptomatic however only 1.3% were found positive (p=0.561). There were 23(15.3%) pregnant females who had risk factors but only 1.3% were found positive (p=0.319) for COVID-19. Education and vaccination status were significant factors for COVID-19 infection. The study concluded that the frequency of COVID-19 was 4.7% among pregnant females, with education and vaccination status being significant factors.

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Introduction

Coronavirus Disease 2019 (COVID-19) emerged as a major threat to public health due to high case fatality rate (range=0.4% to 3.6%).¹ The case fatality rate of COVID-19 infection among expectant women is exponential. COVID-19 threat during gravidity is primarily maternal. It has been estimated that expectant mother has 3 and 2.7 times more risk for intensive care

unit admission and ventilation respectively compared to non-pregnant women. Moreover, gravidity is linked with 70% amplified risk of demise from COVID-19. Other risk factors for life-threatening disease during gestation include age 35 years or above, chronic hypertension, pre-gestational diabetes and obesity.²

COVID-19 infection has been associated with maternal hyper-coagulability and pyrexia (cytokine storm), which can lead to increased infarction, placental intervillous thrombosis, and maternal hypoxia. Gravid women are more likely to suffer from hypoxia and fetal heart rate changes due to the effect of COVID-19 infection. Adverse neonatal outcomes such as preterm birth, fetal distress,



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intrauterine growth restriction and miscarriage were observed among COVID-19 positive expectant women.³

With the advent of vaccination, epidemic came to an end but still it is suspected that this virus will remain endemic especially in areas with low vaccination coverage and among high risk group. Persistent viral replication can lead to new diverse virus variants. Both waning vaccine induced protection and viral mutation can lead to break through outbreaks. Appropriate surveillance through lab tests is vital to nip the bud.⁴

Pregnancy is considered as a time of greater susceptibility hence; this study was conducted to determine the frequency of COVID-19 among pregnant women at a Tertiary care Hospital, Lahore.

Methods and Results

It was a cross-sectional study conducted among 150 pregnant females aged 18–45 years selected through non-probability purposive convenient sampling technique from Obstetrics & Gynaecology, OPD at Tertiary care Hospital, Lahore. Women with informed consent were enrolled. However, women with obstetrics emergencies and documented psychiatric disorders were excluded from the study. After obtaining ethical approval from the institute, data was collected from 15th March 2023 to 15th June 2023 through a questionnaire in native language by the researcher herself. Variables such as socio-demographic characteristics, obstetrical history, clinical history relevant to signs and symptoms of COVID-19, vaccination status and comorbidities e.g. Diabetes, Hypertension were obtained through questionnaire. Then nasopharyngeal swabs were taken by experienced healthcare personnel for realtime RT-PCR using WHO guidelines in the VTM. Samples were sent to the laboratory and PCR was performed by the researcher herself on the same day with the help of a Pathologist.

The collected data was then entered into computer software SPSS (Statistical Package for Social Sciences) 24.0 and was statistically analyzed. The qualitative and quantitative variables were presented in frequency & percentages and mean & standard deviation respectively. Chi-square test was used as test of significance, with P-value <0.05 was considered significant.

Among 150 pregnant females, 67(44.7%) participants

were 18–25 years of age with mean age of 26.55 ± 4.8 years, 123(82%) were literate, only 8(5.3%) were working women. Majority of the participants, 103 (68.7%) were multiparous with mean gestational age of $6.38 + 2.260$ months.

As far as the vaccination status was concerned, the majority of 130 (86.7%) had been vaccinated for COVID-19. Among them, 85 (65.4%) were fully vaccinated and 45(34.6%) were partially vaccinated; whereas 120 (80.0%) females were asymptomatic and 30 (20.0%) were symptomatic.

Among symptomatic gravid women, the majority of 23(76.7%) had cough, followed by, sore throat 14 (46.7%), fever 4 (13.3%), shortness of breath 2 (6.7%) and chest pain 2 (6.7%). Risk factors such as diabetes, hypertension

Table 1: Association between socio-demographic and other characteristics and COVID-19 status in pregnant females (n=150)

Variables	COVID-19 Status		p-value	
	Negative	Positive		
Age	< 25 Years	65	2	0.380
	> 25 Years	97.0%	3.0%	
Education	Illiterate	78	5	<0.001*
	Literate	94.0%	6.0%	
Family Monthly Income	≤ Rs. 25,000	21	6	0.406
	> Rs. 25,000	77.8%	22.2%	
Parity	Primiparous	122	1	0.501
	Multiparous	99.2%	0.8%	
Vaccination for COVID-19	Yes	59	4	<0.001*
	No	93.7%	6.3%	
Clinical Presentation	Asymptomatic	84	3	0.561
	Symptomatic	96.6%	3.4%	
Risk Factors	Yes	44	3	0.319
	No	93.6%	6.4%	
		99	4	
		96.1%	3.9%	
		127	3	
		84.7%	2.0%	
		16	4	
		10.6%	2.7%	
		115	5	
		76.6%	3.4%	
		28	2	
		18.7%	1.3%	
		21	2	
		14.0%	1.3%	
		122	5	
		81.3%	3.4%	

* Significant p-value

and obesity were found in just 23 (15.3%).

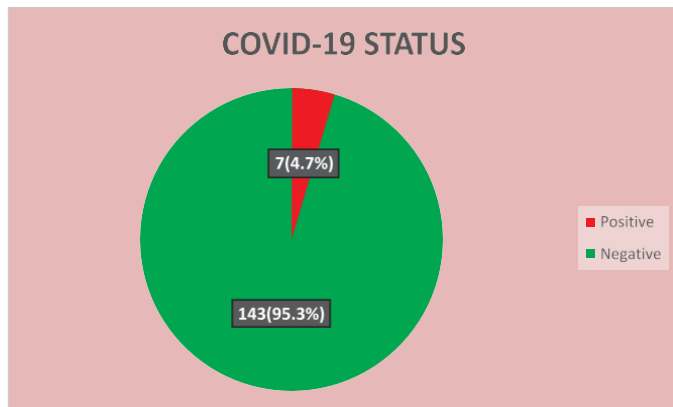


Figure 1: Frequency distribution of pregnant females according to COVID-19 status (n=150)

Discussion

As the COVID-19 pandemic is over, the incidence of COVID-19 among gravid women became a neglected aspect. Determining the incidence was essential in order to offer appropriate care through vaccination and preventive measures. Therefore, the current study was conducted to assess the frequency of COVID-19 in pregnant females visiting a Tertiary Care Hospital, Lahore.

To acquire appropriate outcomes, a group of 150 pregnant females was included in the study and found that a majority of the pregnant females were in reproductive age group (18–35 years) while only nine females were above 35 years old and the mean age of the pregnant females was 26.55±4.8 year. A similar study carried out by Mushtaq and coworkers (2020) reported that the mean age of the pregnant female was 29.0±4.3 years.⁵ Another study conducted by San-Juana and associates (2020) reported that the mean age of the pregnant female was 32±7 years.⁶

The role of education can never be underestimated as it helps people to get timely vaccination. It was very encouraging to know that a significant majority (82.0%) of pregnant females were literate, while only 18.0% were illiterate females. The findings of our study were comparable but exhibited better scenario than a study performed by Izhar and partners (2021) who showed that 26.6% of pregnant females were illiterate while the remaining significant majority was of literate females.⁷ In our study, only 5.3% of pregnant females were working women, while Dawood and his assistant (2021) confirmed in their study that 65.0% of respondents

were working women.⁸

It was found during the study that the majority of the pregnant females (68.7%) were multiparous and 31.3% were primiparous. Knight and fellows (2020) also confirmed in their study that the majority (62.0%) of the pregnant females were multiparous.⁹ The study further indicated that mainstream of the pregnant females (55.3%) had gestational age more than 6 months, followed by 4–6 months (30.7%) and 1–3 months (14.0%). Izhar and partners (2021) also showed comparable results that most of the pregnant females (39.4%) had gestational age more than 6 months, followed by 4–6 months (39.3%) and 1–3 months (21.4%).⁷

During the study vaccination status of the pregnant female was also assessed. The study disclosed that 130 (86.7%) were vaccinated and among them 85(65.4%) were fully vaccinated. The findings of our study exhibited much better scenario than the study performed by Dawood and his assistant (2021) who explained that only 17.0% of pregnant females were fully vaccinated.⁸

As far as clinical presentation is concerned, the study indicated that most of the pregnant females 120 (80%) were asymptomatic and only 30 pregnant females were symptomatic. Likewise, Ullah and researchers (2020) asserted in their study that the majority of the pregnant females (67.7%) were asymptomatic and only 32.3% of pregnant females were symptomatic.¹⁰ Another recent study carried out by Cardona-Pérez and companions (2021) confirmed that a significant majority (86.0%) of pregnant females were asymptomatic.¹¹ A study conducted by Dawood and his assistant (2021) reported that among pregnant females who were symptomatic, 72.0% had nasal congestion, followed by, cough (64.0%), headache (59.0%) and also change in taste/smell (54%).⁸ Among symptomatic pregnant females, the majority (76.7%) had cough. Likewise, San-Juana and associates (2020) reported that among symptomatic pregnant females, majority (96.9%) had cough.⁶

Our study confirmed that 15.3% of pregnant females had risk factors such as diabetes, hypertension and obesity but the study done by Knight and fellows (2020) confirmed that 34.0% of patients had diabetes and 69.0% had obesity as risk factors.⁹

When the COVID-19 status among respondents was evaluated, the study confirmed that 7(4.7%) pregnant

females were found positive for COVID-19 infection. The findings of our study are better than the studies carried out by Ullah et al. (2020)¹⁰ and Cardona-Pérez et al. (2021)¹¹ who confirmed that the frequency of COVID-19 among pregnant females was 10.2% and 29.0%, respectively.

During the study association of COVID-19 status with vaccination status, clinical presentation and risk factors were also assessed, significant results ($P < 0.05$) were found regarding education and vaccination status while insignificant results ($P > 0.05$) were found regarding clinical presentation and risk factors. This is in alignment with Lubeya and team (2023) which reflected that education level is significant in prevention of disease. It was further enforced by studies done in Europe with possible reasoning of less awareness and overcrowded housing.¹²

Conclusion

The study concluded that the frequency of COVID-19 was 4.7% among pregnant females. Education and vaccination status were found significant with the COVID-19 infection. Further research is needed on a large scale across country including Government and private hospitals to know the frequency of COVID-19 among pregnant females with major focus on vaccination and awareness.

Ethical Approval: The Ethical Committee, Institute of Public Health, Lahore approved this study vide letter No. 74/ERC/IPH.

Conflict of Interest: The authors declare no conflict of interest.

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Authors' Contribution

FS: Conception & design, Acquisition of data, drafting of article

RH: Conception & design, Acquisition of data

SK: Acquisition of data, analysis & interpretation of data, drafting of article

FM: Acquisition of data, analysis & interpretation of data

MMA: Acquisition of data, drafting of article

ZT: Final approval of the version to be published

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