COVID-19 in pregnancy: A preliminary 50-day review from India

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Abstract

Background: This retrospective review was done to gauge the preliminary experience of COVID-19 in pregnancy during first 50 days of lockdown in a tertiary care hospital of India. **Methods:** This was a single-centered study, wherein all the suspected women (as defined by ICMR guidelines) who were tested for SARS-CoV 2 infection by nasopharyngeal/oropharyngeal swabs, and rendered to RT-PCR, were included. Parallel evaluation was performed for women in both groups for sociodemographic and obstetric attributes, risk factors, clinical presentation and feto-maternal outcome. Categorical variables were presented in number and percentage. Qualitative variables were equated using Chi-Square test/Fisher's exact test. A *P* value of < 0.05 was counted as significant. **Results:** Amongst 112 suspected cases, seven (6.25%) were found to be positive for SARS COV2. Majority of COVID-19 positive women hailed from urban hotspot areas (57.7%) and were un-booked (57.1%). Most were mild cases, and symptomatic (85.7%), with fever (57.1%) being predominant feature in all suspects; no adverse effects seen on pregnancy and fetus, with uneventful postpartum period. **Conclusion:** No adverse outcome in mother and baby after acquiring SARS-COV2 infection was observed, with maximum cases being mild; fever was the predominant symptom in all suspects, with significantly higher percentage in COVID-19 positives.

Keywords: Clinical features, COVID-19 suspects, feto-maternal outcome, pregnancy, risk factors

Introduction

Coronavirus disease 2019 (COVID-19) is an evolving infectious disease with a precipitous upsurge in cases and deaths, since being originally discovered in China, in December 2019.[1-3] Even before being declared a pandemic by WHO on 11.3.2020, this disease has been knocking the public health systems, eliciting unparalleled first time processes and actions by leaderships across the world, including lock-downs for putting a ceiling on movement and shelter-in-place directives.[4-6] India was no different, following reporting of its first case of the COVID-19 on 30 January 2020, where currently nationwide lockdown is in progress. Onlookers assert that though this stringent measure has decelerated the progression of the pandemic in India to the scale of increasing twofold every 6 days, but the phased exit strategy to end it soon forced by fiscal deficit steering resumption of commercial activities, the current infection rate of coronavirus (SARS-CoV2) in India of 1.7 would surely scale heights.[5,6]

The increasing mortality rate with SARS-CoV2 necessitates recognizing and safeguarding vulnerable populations in society as a crucial constituent in its management. Gravid women are notorious to be inexplicably afflicted by respiratory ailments, with

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concomitant higher infectious morbidity and maternal mortality rates, owing to the specific cardiorespiratory and immunological changes occurring physiologically in pregnancy.[1,4,5] Also, a probable deferment in diagnosis and source control occurs in pregnant women, especially in women with only trivial upper respiratory tract symptoms like soreness and nasal congestion. With already 67,152 confirmed cases, and 2,206 deaths in the country, as on May 10 2020, number of antenatal women harboring SARS-CoV2 in India is also bound to increase with gradual un-lock-down.[7,8]

Data on COVID-19 in pregnancy so far has been very sparse, with most being small-scale reviews/isolated case reports to comprehensively fathom risks attributable to COVID-19 infection.[1,5,6,9-22] Not many accounts have been narrated in India so far too.[20] In-fact, information on in pregnancy is still in its incipient stage, with plausible repercussions of the virus on mother and fetus still rapidly evolving. Thus, a novel attempt is made to notate the 50-day experience of COVID-19 suspect/positive cases in pregnancy from one of the largest tertiary care health facilities in Northern India, with an objective to appraise the current situation, besides augmenting preparedness of the maternity services for the long haul against this relatively unknown entity. This will also promulgate awareness of SARS-COV2 behavior both in Indian pregnant women, and primary care physicians encountering more antenatal women due to movement restrictions, with respect to fetal and maternal outcome, and clinical characteristics, in order to initiate optimal control measures and effective therapeutic decisions, outlining principles of management guided by multidisciplinary approach, to prevent its adverse upshots and long-term complications.

Materials and Methods

This was a single centered retrospective study over 50 days to gauge and tabulate the preliminary experience of COVID-19 in pregnancy during lockdown from 23rd March-10th May 2020, after taking due permission and approval in writing from the Medical Superintendent of the hospital and IEC clearance for conducting the 50 day appraisal. The review was done in accordance meeting the ethical norms, in compliance with the Helsinki Declaration of 1975, as revised in 2000.

All suspect/known COVID-19 positive women who had come to the department of obstetrics & gynecology for their maternity services were included. Suspect and cases were defined as per the existing ICMR guidelines.[23] Suspected women underwent RT PCR for SARS-CoV2 by nasopharyngeal and oropharyngeal swab after taking written informed consent, as per the institutional protocol. COVID-19 positive women were managed as per MOHFW guidelines and hospital SOPs, whereas negatives were given routine antenatal, intrapartum, and postnatal management.[1,6] Parallel evaluation was performed for women in both groups with regards to sociodemographic and obstetric attributes, risk factors for acquiring COVID-19, clinical presentation and feto-maternal outcome. All data

extracted on MS EXCEL spreadsheet, which was reviewed and analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. Categorical variables were presented in number and percentage (%). Qualitative variables were rivaled using Chi-Square test/Fisher's exact test. A P value of <0.05 was counted as significant.

Results

There were total 2013 births during the 50-day study period. In all, 112 suspected/known COVID-19 positive women came to obstetrics and gynecology department of Safdarjung for maternity care. Amongst these, 7 were COVID-19 positive, whereas other 105 came out to be negative, following sampling for SARS-CoV2. Amongst these 7 with corona virus infection, 6 were symptomatic suspects who turned out to be positive on testing, whereas one was known positive referred from another hospital for safe confinement.

Analyzing the sociodemographic and maternal characteristics of study populace, most of them were young, with all COVID-19 positive females being 20-30 years in age (P value = 0.186), hailing from lower socioeconomic strata (P value-.219). Around 57.7% of SARS CoV2 positive pregnant women were residing in urban hotspot areas of Delhi NCR (p of rural vs urban = 0.338/0.518). Maximum (2/3rd) females were Hindus. Around 60 percent of suspects were un-booked with no prior antenatal visits ($P = 1$). Half of the women were primigravidae, whereas positivity of SARS-CoV2 was seen in multigravidas mainly, though difference was insignificant ($P = 0.292$). Majority (98/112) of the women presented in third trimester of pregnancy in both groups ($P = 0.5$). All females with COVID-19 positive pregnancy were high risk women obstetrically, with presence of comorbidities like aplastic anemia, iron deficiency anemia, hypertensive disorders of pregnancy, hypothyroidism, uncontrolled DM, severe FGR.

Scrutinizing the risk factors for acquiring novel coronavirus infection, whilst only one woman gave history of definite close contact (husband) with COVID-19 positive person, three women with exposure to another positive Health care worker within the hospital premises were found negative subsequently on RTPCR assay ($P = 0.230$). [Table 1]

Eighty five percent of COVID-19 positive gestational women were found to have at least one symptom suggestive of viral infection; with fever being the predominant presentation ($P = 0.196$). However, more than half of women who were negative on viral testing were asymptomatic suspects coming from containment zones without any other risk factor, when compared to asymptomatic positive ($P = 0.045$) [Table 2]

Amongst the women with active novel corona virus infection, 3 stayed undelivered at the end of this preliminary review ($P = 0.026$). Remaining four delivered live born babies, two by LSCS (failed induction; previous LSCS with

S. No.	Characteristics	Positive	% (n = 7)	Negative	% (*n* = 105)	*P* value
1	Age (years)					.186
	<20	0	0	7	6.7	
	20-25	2	28.5	49	46.6	
	25-30	5	71.4	34	32.4	
	>30	0	0	15	14.3	
2	Socioeconomic Status					.219
	I	0	0	0	0	
	II	0	0	0	0	
	III	0	0	2	1.9	
	IV	4	57.1	28	26.6	
	V	3	42.8	75	71.4	
3	Residence					
	Rural	2	28.5	49	46.6	
	Hotspot	1	14.3	39	37.1	Residence:0.452
	Non hotspot	1	14.3	10	9.5	Rural:0.388
	Urban	5	71.4	56	53.3	Urban:0.518
	Hotspot	4	57.1	49	46.6	
	Non hotspot	1	14.3	7	6.6	
4	Religion					.927
	Hindu	5	71.4	81	77.1	
	Muslim	2	28.5	21	20	
	Sikh	0	0	1	0.9	
	Christian	0	0	2	1.9	
	Others	0	0	0	0	
5	Antenatal care					1
	Booked	3	42.8	39	37.1	
	Unbooked	4	57.1	66	62.8	
6	Parity					.292
	1	2	28.5	53	50.4	
	2	3	42.8	39	37.1	
	3	2	28.5	9	8.5	
	>4	0	0	5	4.7	
7	Period of gestation					.500
	<13 weeks	0	0	6	5.7	
	13-28 weeks	0	0	5	4.7	
	28-37 weeks	4	57.1	28	26.6	
	37-42 weeks	3	42.8	64	60.9	
	>42 weeks	0	0	2	1.9	
8	Co-morbidites					
	Anemia	2	28.5	8	7.6	.118
	Diabetes mellitus	1	14.3	6	5.7	.372
	HTN	1	14.3	3	2.8	.230
	Hypothyroidism	1	14.3	6	5.7	.372
	Other Obstetrics co-	3	42.8	16	15.2	.093
	morbidities	0	0	7	6.6	1
9	History of contact					.230
	Yes	1	14.3	3	2.8	
	No	6	85.7	102	97.2	
10	History of travel					1
	Yes	0	0	1	0.9	
	No	7	100	104	99	
11	Substance abuse					1
	Yes	0	0	4	3.8	
	No	7	100	101	96.2	

Table 1: Sociodemographic Factors, obstetrics characteristics and risk factors of study population

	Table 2: Clinical presentation of the study population					
S. No.	Clinical features	Positive	% (n = 7)	Negative	% (*n* = 105)	*P* value
1	Asymptomatic	1	14.2	60	57.14	0.045
3	Symptomatic	6	85.7	45	42.86	0.045
	Fever	4	57.1	30	28.5	0.196
	Cough	1	14.2	12	11.4	0.589
	Sore throat	1	14.2	6	5.7	0.372
	Runny nose	1	14.2	2	1.9	0.177
	Headache	1	14.2	2	1.9	0.177
	Loss of smell	1	14.2	2	1.9	0.177
	Loss of taste	0	0	0	0	No *p* value
	Malaise	2	28.5	4	2.8	0.045
	Fatigue	3	42.8	6	5.7	0.011
	Loss of consciousness					
	Diarrhoea	0	0	0	0	No *p* value
	Others	0	0	0	0	No *p* value
		0	0	0	0	No *p* value

gestational hypertension with impending rupture). In contrast, women who were negative for COVID-19, 7 underwent evacuation (including one molar pregnancy at 24 weeks POG), two were operated (laparotomy and proceed) for ruptured ectopic pregnancy, 74 delivered vaginally (with one patient having a preterm MSB baby) (*P* = 0.034); remaining 21 percent women underwent LSCS. Fortunately, all 4 COVID-19 positive parturient had relatively uneventful postnatal period. None of the suspects required ICU admission. Only one amongst the 4 live born babies was low birth weight (*P* = .234) All had good Apgar scores, with no early neonatal death. Upon COVID-19 testing of newborns, two babies tested positive (day 3) for SARS-CoV2 [Table 3].

Discussion

An initial attempt was made over first fifty days, to review the effects of SARS-CoV2 infection on pregnancy in the extant study including all suspect/confirmed positive pregnant women for the first time in India. Seven women came to be COVID-19 positive. This can be attributed to stringent lockdown guidelines, restricting movement of patients, limited availability of testing kits in early days in India, causing less liberal testing protocols for pregnant women. Sampling of pregnant women gained momentum after issuing of ICMR guidelines of testing asymptomatic women residing in hotspots/evacuee camps/containment zones.[19]

Table 4 depicts a comparative evaluation of studies done by past pollsters till date on COVID-19 in pregnancy, across the world, with the findings of present study.

As opposed to previous systematic reviews, a relatively younger age (mean age = 27 years) in women in this analysis reverberates the concept of early age at marriage and conception prevalent in India.[1,9-12,21,22]

Just like most of the respiratory infections, sociodemographic factors play a vital role in transmission of this unique COVID-19 in pregnancy, as indicated by most of the study population belonging to lower socio-economic status. This is boosted by the fact that most of the antenatal women (confirmed cases or negative) were residing in areas declared as hotspots/containment areas for COVID-19 by Government of India to map the local transmission of the disease and prevent the contagion from dissemination.[6] It also emphasizes this consortium of women endorse most of the infectious morbidity, which can be further ascribed to poverty, illiteracy, poor sanitation, inadequate shelter and overcrowding in most of the families.[24,25] This factor has not been examined by any investigators till date. It forms the basis of the notion of social distancing and practicing hand hygiene by all as a cornerstone to curtail the spread of SARS-CoV2, as advocated by WHO, and MOHFW guidelines in India.[4,8]

Also, majority of women were un-booked, with no previous antenatal visits, which can be explained by the poor attitude of these women for seeking timely antenatal care, coming only at term or in labor for maternity services. Therefore, unlike other types of coronavirus infection (SARS, MERS), there was not much disparity in both groups in relation to trimester of pregnancy.[9-11] Safdarjung hospital, being the largest tertiary care center in Northern India, serves as the referral health facility for numerous nursing homes and hospitals of public and private sector across the North India. As such, all confirmed SARS CoV2 positive women in the present study, were high risk pregnancies having associated comorbidities, contributing towards making them even more susceptible to acquire the viral infection. In-fact the only known positive, asymptomatic COVID-19 women included was also a referral from another smaller non-COVID facility for further management. Ethnic variation in gestation age of babies holds true with mean gestational age of our women being 256 days, when opposed to the current available western data.[1,25,26,27]

History of exposure to people with symptoms of COVID-19, coming from hot spot areas and women with Immunocompromised conditions/immunosuppressive drugs are those who are most prone for COVID-19 in pregnancy.[1-3,9,10-12,26] A Meticulous

S. No.	outcomes	Positive	% (n = 7)	Negative	% (n = 105)	*P* value
	Table 3: Feto-maternal Outcome of the study population					
	Maternal outcomes					
1	Procedure					
	Evacuation	0	0	7	6.6	1
	b) Delivery	4	57.1	96	91.4	0.026
	Vaginal	2	28.5	74	70.4	0.034
	LSCS	2	28.5	22	20.9	0.641
	Instrumental	0	0	0	0	No *p* value
	Laparotomy and proceed	0	0	2	1.9	1
	Undelivered					
		3	42.8	0	0	0.0001
2	PPH	0	0	2	1.9	1
3	Other Postnatal complications	0	0	2	1.9	1
4	Need of blood transfusion	2	28.5	11	10.5	.187
5	ICU/ Mechanical ventilation	0	0	0	0	No *p* value
6	Final Outcome					1
	LAMA	0	0	9	8.5	
	Discharge	7		96	91.4	
	Death	0	0	0	0	
	Fetal Outcomes					
1	Birth	4	57.1	96	91.4	1
	Live birth	4	57.1	95	90.5	
	Still birth	0	0	1	0.9	
2	Sex					1
	Male	2	28.5	51	48.5	
	Female	2	28.5	45	42.8	
3	Birth weight					0.324
	<2.5 kg	1	14.3	54	51.4	
	>/=2.5 kg	3	42.8	42	40	
4	GCA	0	0	0	0	
5	Apgar Score					1
	Low (<7)	0	0	12	11.4	
	Good (>=7)	4	57.1	84	80	
6	NICU admission	0	0	11	10.4	.377
7	Neonatal death	0	0	4	3.8	1
8	COVID-19 status of newborn			Not done		
	Positive	2	28.6			
	Negative	2	28.6			
	Not indicated	0	0			

breakdown of risk factors in the present study revealed a positive history of contact/exposure only in 4 cases, amongst which the only one with prolonged close contact (spouse) was COVID-19 positive. The other three had exposure of smaller duration at a distance to health care worker (using adequate PPE), averting them from acquiring SARS-CoV2. This emphasizes the need for use of mask and for following respiratory etiquettes by all, including patients, besides practicing social distancing to break the chain of coronavirus spread.

No significant difference was observed in symptomatology in women of both groups, with fever followed by dry cough being the most common clinical presentation.[9-12] This is in accordance with noteworthy reviews on COVID-19 in pregnancy.[10-12]

Other symptoms were less consistent in COVID-19 positive women. Hence, obstetricians and midwives at Prenatal clinics across various health facilities, should be directed to ascertain all pregnant women and their aides (as feasible) be scrutinized for increased temperature, and respirational signs; and all symptomatic must be isolated from others, with directives to wear a mask at all times.

Though case reports/series published so far have described mostly cesarean section as mode of delivery for gestational women, amongst the delivered women with COVID-19 positive status in the present research, LSCS was done only for obstetric indications.[17,18] This is endorsed by the national guidelines, in absence of evidence favoring one mode of birth

Author	Year	Study duration	Study design/type	Location	Study population (Sample size)	Outcomes studied	Main Results
Table 4: Comparative evaluation of present study with published reports of COVID-19 in pregnancy							
Di Mascio *et al.*[9]	2020		Systematic review and meta analysis	Italy	19 studies including 79 Pregnant women = 41 COVID-19, MERS = 12, 26 SARS	Pregnancy and perinatal outcome	COVID-19 iis associated with higher rate of preterm birth (41.1%), preeclampsia, LSCS and perinatal death (7%); no evidence of vertical transmission
Gao YJ *et al.*[10]	Aug 2020	3.5 months (January 1, 2020, to April 16, 2020)	MOOSE based metanalysis	China	14 studies (Case reports and case series) with 236 pregnant women with COVID-19	positive CT findings caesarean section, fever, cough lymphopenia coexisting disorders fetal distress preterm labor and severe case or death studied	Incidences of fever, cough and positive CT findings in pregnant women with COVID-19 are less than those in normal population with COVID-19, but the rate of preterm labor is higher among pregnant with COVID-19;no evidence that COVID-19 can spread through vertical transmission.
Allotey *et al.*[11]	August 2020	6.5 months (1 December 2019 to 26 June 2020)	Living systematic review and meta-analysis.	UK	28 studies, 11 432 women) of pregnant and recently pregnant women diagnosed as having suspected or confirmed covid-19.	rates, clinical manifestations (symptoms, laboratory and radiological findings), risk factors, and maternal and perinatal outcomes	Pregnant and recently pregnant women are less likely to manifest covid-19 related symptoms of fever (odds ratio 0.43, 95% confidence interval 0.22 to 0.85; I2 = 74%; 5 studies; 80 521 women)and myalgia than non-pregnant women of reproductive age; potentially more likely to need intensive care treatment for covid-19. Pre-existing comorbidities, high maternal age, and high body mass index seem to be risk factors for severe covid-19 (4.21, 1.06 to 16.72; I2 = 0%; 2 studies; 320 women) Preterm birth rates are high in pregnant women with covid-19 (3.01, 95% confidence interval 1.16 to 7.85; I2 = 1%; 2 studies; 339 women)

Contd...

Table 4: Contd...							
Author	Year	Study duration	Study design/ type	Location	Study population (Sample size)	Outcomes studied	Main Results
Zaigham *et al.*[12]	April 2020	4 months (8th dec to 1st april2020)	Systematic review	Sweden	18 articles with 108 pregnancies	Clinical manifestation of COVID-19, maternal morbidity and mortality, neonatal morbidity and mortality	Most common presentation was fever (68%) and coughing (34%), with lymphocytopenia (59%) with elevated CRP (70%); 91% underwent LSCS;3 maternal ICU admission; neonatal death;1 IUD; vertical transmission couldn't be ruled out
Yan *et al.*[13]	April 2020	2 months	Retrospective case study	China	116 Pregnant women with COVID-19 from 25 hospitals	Clinical characteristics, outcomes and potential vertical transmission of SARS CoV2 infection	SARS CoV2 is not associated with risk of spontaneous abortion and spontaneous preterm birth; no evidence of vertical transmission with infection setting in 3rd trimester
Xu Qiancheng *et al.*[14]	April 2020	2 month (15th jan to 15th March 2020)	Single centre Retrospective	China	Single centre comparing Pregnant (28) with COVID-19 and non-pregnant reproductive age women (54) with COVID-19	Severity of disease, virus clearance time, length of hospital stay and potential vertical transmission of covid 1	Both clinical groups had comparable clinical course and outcome; no evidence of vertical transmission
Dehan liu *et al.*[15]	2020	1 month (jan to feb2020)	Retrospective	China	15 pregnant women with COVID-19 pneumonia	Symptoms, lab results, pulmonary involvement, time course of changes on chest CT, treatment experiences	All cases were mild and achieved good recovery from pneumonia;10 underwent LSCS, 1 vaginally, 4 undelivered; no neonatal death reported
Huijun Chen *et al.*[16]	2020	11 days (20th jan to 31st jan)	Retrospective	China	9 pregnant women with COVID-19 pneumonia	Clinical presentation, perinatal outcome, lab investigation and intrauterine vertical transmission were reviewed	7 had fever, 4 had cough, 2 malaise, 2 sore throats, 3 myalgia, 5 lymphopenia; 9 live birth occurred all by LSCS; no evidence of vertical transmission
Iqbal *et al.*[17]	2020	April 16,2020	Case report	Washington DC	34 year old G7P5L5 @ 39 weeks in labor with fever with chills with dry cough with myalgia	Progress of pregnancy and labor with fetal outcome	Uncomplicated labor with vaginal delivery without any health care worker exposure
Wang *et al.*[18]	2020	2nd feb 2020	Case report	China	30 week pregnant women with covid 19 with fever	Outcome associated with pregnancy related COVID-19 and fever	Delivered healthy baby by LSCS with uneventful postpartum and neonatal course
Maria Claudia alzamora *et al.*[19]	2020	7th April 2020	Case report	Peru	41 year old G3P2L2 at 33 weeks with severe COVID-19 requiring invasive ventilators support	Clinical course, progress of pregnancy and feto maternal outcome	Mechanical ventilation and preterm delivery in mother along with positive RTPCR in neonates (16 hours), suggesting possible vertical transmission

Contd...

Table 4: Contd...							
Author	**Year**	**Study duration**	**Study design/ type**	**Location**	**Study population (Sample size)**	**Outcomes studied**	**Main Results**
Sentilhes L *et al.*[20]	June 2020	March 1 to April 3, 2020	retrospective single-center study	France	54 pregnant women with confirmed (*n* = 38) and suspected (*n* = 16) COVID-61 19 infection.	Clinical course, progress of pregnancy and feto maternal outcome	preterm deliveries were medically 63 indicated for their COVID-19-related condition for 23.8% (5/21): Oxygen support was required for 24.1% (13/54); studies are 72 required to determine whether these risk factors are also associated with poorer maternal outcome in these women.
Khalil *et al.*[21]	June 2020	6th April to 18th June 2020	Systematic review and meta-analysis	London	86 studies were included	Clinical course, progress of pregnancy and feto maternal effects	Risk of iatrogenic preterm birth and caesarean delivery was increased.
Present Study	2020	50 days	Retrospective	India	All suspect/known COVID-19 positive Pregnant females	Comparative evaluation of confirmed COVID-19 positives with negative suspects -Sociodemographic and obstetric attributes, risk factors, clinical presentation, feto maternal outcome in SARS COV2	Seven (6.25%) were positive for SARS-COV2; Majority hailed from urban hotspot areas (57.7%) and were un-booked (57.1%). Most were mild cases, and symptomatic (85.7%), with fever (57.1%) being the predominant feature;with no adverse effects on pregnancy and fetus; vertical transmission cannot be ruled out

over another.[28,29] But when contrasted with suspects who tested negative for SARS-CoV2, this uneven delivery bias towards LSCS can be attributed to lesser no of COVID-19 positive cases. Further continued longitudinal review for the same, with increasing number of COVID-19 positive parturient, would be able to give a better grasp on the effect on mode of delivery, if any.[6-13,15]

In line with most of the previous investigations, findings of this study also highlighted less virulence of SARS-CoV2, with respect to adverse effects in pregnancy and fetus. But these observations were in strike contrast with conclusions drawn by Mascio *et al.*, Allott *et al.* or Khalul *et al.*, that COVID-19 was allied with moderately greater preterm births, preeclampsia, other maternal morbidity and perinatal death That may be due to earlier gestational age upon acquiring SARS-CoV2, heterogeneity in clinical presentation and perinatal management amongst the included cases in that review.[6] All 4 live born neonates were healthy with good APGAR scores, with only two of them testing positive for infection, during the course of hospital stay. But vertical transmission cannot be commented upon accurately in these cases, since the mothers' reports were delayed, and received postpartum due to logistical challenges in

these early days of COVID-19 in India. As per hospital norms, rooming in was practiced, and babies' breast fed; this could also have led to babies getting infected. However in subsequent analysis, both became negative. Ideally, if symptomatic, separation from mother should be done, But since benefits of breast feeding outweigh risks of transmitting SARS-CoV2 due to close contact, we recommend rooming in.[2,17,18] However, COVID-19 positive mothers must wear mask, and practice hand hygiene before each feed, maintaining 6 m distance when not feeding.

Strengths and limitations of this preliminary review

The fortes of this initial review of suspected women undergoing COVID-19 testing during pregnancy and further analysis, was an unfiltered biggest first-hand account of SARS- CoV2 antenatal cases in India till date, and managing confirmed cases after establishing a separate nearly ideal dedicated COVID-19 facility ; besides enthused and well-trained clinicians, along with much needed support from hospital administration. It has been a learning experience for all obstetricians involved in dispensing care to these women. Also, completeness and accuracy in data collection, with a predefined methodology, rules out selective reporting bias. This has provided much enhanced

quality conclusions to be drawn unlike previous isolated case reports/series from other countries.

However, a smaller incidence of COVID-19 positive amongst suspects is just a tip of iceberg to actual incidence of SARS-CoV2 in pregnancy. This is in line with the current movement restrictions applied all over the region, where most of the women are not being able to report to hospital, unless indicated. Also, absence of widespread availability of cost-effective testing facilities across the nation prevents universal testing in pregnant women to avert morbidity and mortality in them.

Conclusion and Recommendations

To summarize, 7 (6.25%) were positive for SARS-COV2; Majority women hailed from urban hotspot areas (57.7%) and were un-booked (57.1%). Most were mild cases, and symptomatic (85.7%), with fever (57.1%) being the predominant feature; with no adverse effects on pregnancy and fetus; vertical transmission cannot be ruled out at this initial stage.

The findings of the present study describe not much altered outcome in mother and baby after acquiring SARS-CoV2 infection, when parallel evaluation of confirmed positive was done with negatives; though almost all confirmed cases had preexisting comorbidities, posing a higher risk to their pregnancy. Leveraging this existing longitudinal pregnancy surveillance to seize quantifiable information for COVID-19, especially involving multiple centers across India, could help to facilitate rapid collaborative data collection across the nation for public health action, specifically on pregnancy outcome in early gestation, vertical transmission, and neonatal upshots. Also various strategies to tackle knowledge interludes encompassing the effect of COVID-19 in pregnancy ought to be deployed or instituted, including sentinel reconnaissance, sero-prevalence surveys, and socio-behavioral and psychosomatic exploration, involving participation of both public and private sector. Also, in light of rapidly evolving evidence, guidelines need to be modified accordingly, tailored to local needs of patients. Adept preparedness in terms of training of doctors and health care workers becomes the need of the hour for even smaller centers in low resource settings in India.

Besides the successful mantra to circumvent the chain of transmission of this SARS-Cov2 pathogen, and its deleterious effects remain implementation of preventive measures like regular hand hygiene, maintaining social distancing, following respiratory etiquettes, staying at home and disinfecting contaminated surfaces; for all this educational materials can also be developed and distributed.

to all the suspected pregnant women included who fought the battle against COVID-19, and went through the ordeal, apart from the stressful process of parturition.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

There are no conflicts of interest.

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