

Impact of Covid-19 on Neonatal Feeding Practices of Post-Natal Mothers: TNAI-Funded project

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Abstract

Every year, 15 million pre-term and/or about 21 million low birth weight newborns appear worldwide who form the vulnerable population and need high quality care due to neglect of breastfeeding, which is a basic requirement as much for infant survival as for their normal growth and development. The World Health Organisation (WHO) recommends exclusive breastfeeding up to 6 months and thereafter with complementary feeding up to 2 years of age or longer. Covid-19 era, with far reaching impacts on health, economy and life style, has been very dreaded period in our lives. An unpredictable fear loomed large on health functionaries in particular. Lockdowns impacted maternal experiences and breastfeeding practices. The new scenario, with potential risk of transmission necessitated better infant feeding support in view of mental health challenges and unknown circumstances faced by mothers towards self-care and infant care. This study to assess the impact of Covid-19 on neonatal feeding practices of post-natal mothers was part of a TNAI-funded project. Survey type research approach was adopted in this retrospective cross-sectional design study using google forms from mothers across the country through different social platforms and lactation groups. The study participants also included the mothers visiting a tertiary super specialty hospital in Southern India as the obtained responses through google forms were not meeting the sample size estimated. Post-natal mothers who delivered during the Covid-19 pandemic in India since March 2020 constituted study population. A total of 382 samples were included in the study.

Key words: Covid-19, Neonatal feeding practices, Post-natal mothers

Breastfeeding is an essential component for infant survival as well as for its normal growth and development. The World Health Organisation (WHO) recommends exclusive breastfeeding up to 6 months and thereafter to continue it along with complementary foods up to 2 years of age or more (WHO, June 2020).

Various studies and concerns regarding transmission of Covid-19 via breastmilk have created confusions regarding exclusive breastfeeding. A systematic review evaluated a total of 46 mother-infant dyads that were tested positive for Covid-19 with 13 infants being positive. The breastmilk analysis showed that 43 (93.5%) had no Covid-19 virus, while three were tested positive for virus. Among the three positive samples, one infant was not breastfed but was positive, while other two infants were negative. Among these two

infants being negative, one was breastfed and the other was given expressed breastmilk after the RNA particles were no longer detected in breastmilk. Hence the reason for infant to be positive was not directly related to breastmilk (WHO, June 2020).

A longitudinal study on breastfeeding practices and antibodies in the breastmilk of Covid-19 confirmed patients that was undertaken in Hubei province published interim results by 1 April 2020. The total mothers included were 64 who then were categorised into three groups: mothers confirmed Covid-19 positive (N=24), mothers suspected of Covid-19 but having negative polymerase chain reaction report (N=19), and mothers who were negative (N=21). The average duration of mother child separation immediately after birth among the confirmed, suspected and control group mothers was found to be 36.7±21.1, 16.6±13.1 and 10.5±8.2 days, respectively. The mixed feeding rates (breastfeeding and formula feeding) among the three groups were 58.3 percent, 52.6 percent and 95.2 percent, respectively. The exclusive breastfeeding rates were significantly lower among the confirmed and suspected groups compared to

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control group ie., 4.2 percent, 15.8% and 47.6% respectively ($p=0.006$) (Peng et al, 2020).

Lockdown on the other hand had also impacted maternal experiences and breastfeeding practices. The preliminary data from a study done in UK suggested better infant feeding support, to recognise and provide face to face support in view of mental health challenges and unknown circumstances faced by mothers towards self-care and infant care (Vazquez-Vazquez et al, 2020).

WHO in a scientific brief recommends that mothers suspected or confirmed Covid-19 should be encouraged to initiate or continue breastfeeding with basic preventive measures as the benefits of breastmilk are more than the risks associated with it (WHO, June 2020). There are however no absolute guidelines related to management of breastfeeding and rooming in with skin-to-skin contact depending on health status of the mother and family and the potential risk of transmission. Various research studies are trying to derive results regarding health status and separation of mother and infant due to Covid-19 (Popofsky et al, 2020).

A global survey and thematic analysis to evaluate the health care providers' voices and experiences through online survey was undertaken from 62 low- and middle-income countries (LMICs). A total of 1120 responses of healthcare professionals (HCPs) in the neonatal care area including nurses, paediatricians, policy makers and administrators responded to the survey. The results showed that the newborn care practices were disrupted due to reduced care seeking behaviour and a limited workforce due to stress and fear. Also, more than half reported that interventions like kangaroo mother care (KMC) were also discontinued or discouraged due to Covid-19 pandemic. Fifty percent of the mother-baby dyads were separated if mothers were Covid-19 positive and 16 percent of those with unknown status were also separated from the babies. Even the follow-up care was found to be disrupted mainly due to families' fear of visiting the hospitals (73.3%) (Rao et al, 2021).

There are about 15 million pre-term and/or about 21 million low birth weight (LBW) newborns appearing annually worldwide who form the vulnerable population and need high quality care (Minckas et al, 2021). The infant mortality rate in India is 30/1000 live births and among that neonatal mortality stands at 21.7/1000 as per sample registration system 2019. Even though there is a decline every year, one in every 33 infants and 21 neonates die in their first year of life (SRS Bulletin, 2021). Breastfeeding along with

KMC are known to be the life saving measures in the outcome of neonates especially in the LMICs.

Covid-19 created dilemmas in caring for mother-newborn dyads mainly with regard to KMC and breastfeeding hence disrupting the facility-based-care among the Institutions around the world (Minckas et al, 2021). The study explores the impact of Covid-19 pandemic on post-natal mothers neonatal feeding practices.

Methodology

The research approach adopted was survey type. A retrospective cross-sectional design was adopted in the study, conducted with the intention to obtain data using google forms from mothers across the country through different social platforms and lactation groups. The study participants also included the mothers visiting a tertiary super specialty hospital in Southern India as the responses through google forms did not meet the sample size estimated.

Study population: All post-natal mothers who delivered during the Covid-19 pandemic in India since March 2020 constituted study population.

Sample and sample size

$n = Z_{\alpha/2} P (1-P) / e^2$ where, $Z_{\alpha/2}$ = 1.96 at 95% CI, e = 5% precision level $n = 380$. Hence, 382 samples were included in the study.

Sampling technique: Convenient sampling technique was executed in the study.

Inclusion & exclusion criteria: Mothers who had child birth since March 2020 were included. Mothers who do not follow English were excluded.

Instrument for data collection: The tool used developed by the investigator was based on reviewed literature and discussion with healthcare providers as well as experts and mothers who had delivered during Covid-19.

Description of the instrument: The instrument consisted of a baseline proforma that included the basic information about the mother and the neonate, Covid-19 status and breastfeeding status after discharge. Also, there was a self-reported checklist on impact of Covid-19 on neonatal feeding practices of post-natal mothers regarding breastfeeding and post-natal wellbeing.

Content validity: The tool was sent for validation to 5 experts. Experts were from the field of paediatrics and OBG Nursing. No major modifications were suggested. The CVI obtained was 1.

Pilot study: A pilot study was conducted among to mothers who delivered during Covid-19 to ascertain the feasibility of the study between 19

and 30 April 2022, which was confirmed by the responses obtained.

Method of data collection: After the approval of ethics committee, the google forms were created to obtain informed consent from the participants. This form was sent to the investigators' network of HCPs, Lactation WhatsApp groups, Moms of Mangaluru group, and Facebook to reach out to mothers who have had childbirth since March 2020. The consenting mothers were sent the google forms with the instrument to obtain their responses related to the feeding practices soon after birth and during the first month after birth, perception about breastfeeding and wellbeing during Covid-19 pandemic.

Since only 82 responses were obtained through online mode, the remaining 300 responses were obtained through offline mode by distributing tool to mothers attending the immunisation services of the tertiary hospital, Mangaluru. The time duration taken by an individual mother to complete the google form was around 10-15 minutes.

Data analysis: The data was anonymised and organised in an excel sheet. The quality of data obtained face-to-face was entered and checked on all data sheets. The sociodemographic profile of subjects is described in frequencies and percentages. The comparison of feeding practices in Phase 1 (April 2020- February 2021) and Phase 2 (March 2021- June 2021) of Covid-19 was performed using Chi-square test.

Results

Description of Baseline Variables

Table 1: Baseline characteristics of the subjects (n=382)

Variables	Frequency	Percentage
<i>Age of mother (in years)</i> (Mean±SD - 30.01±4.11)		
21-25	62	16.2
26-30	132	34.6
31-35	169	44.2
>35	19	5.0
<i>Education status of mothers</i>		
Upto 12 th grade	31	8.1
Under-graduation	149	39.0
Post-graduation	194	50.8
PhD	8	2.1
<i>Occupation</i>		
Homemaker	140	36.6
Professional	191	50.0
Self employed	51	13.4

Variables	Frequency	Percentage
<i>Healthcare professional</i>		
Yes	129	33.8
No	253	66.2
<i>Income of family per month</i> (Median-100000; IQR- 30,000-150000)	21	5.5
Not mentioned		
<25000	84	22.0
25000-50000	50	13.1
>50000-100000	126	33.0
>100000-500000	93	24.3
>500000	8	2.1
<i>Type of family</i>		
Nuclear	217	56.8
Joint/3-generation	165	43.2
<i>Number of living children</i>		
1	195	51.0
2	178	46.6
3	9	2.4
<i>Mode of delivery</i>		
Normal vaginal delivery	167	43.7
Assisted vaginal delivery	16	4.2
Emergency Cesarean section	92	24.1
Planned Cesarean section	107	28.0
<i>Gestation of baby at birth</i>		
Term	314	82.2
Pre-term	68	17.8
<i>NICU admission</i>		
Yes	84	22.0
No	298	78.0
<i>Previous breastfeeding status</i>		
Not applicable	195	51.0
Yes	166	43.5
No	21	5.5
<i>State</i>		
Karnataka	321	84
Kerala	13	3.4
Tamil Nadu	14	3.7
Andra Pradesh	6	1.6
Assam	1	0.3
Maharashtra	12	3.1
Meghalaya	4	1.0
Gujarat	4	1.0
Delhi	2	0.5
Telangana	5	1.3
<i>Phase of Covid-19 during delivery</i>		
Phase 1	157	41.1
Phase 2	225	58.9

Out of 393 mothers who filled survey 382 met the inclusion criteria. Most mothers (44.2%) were between 31-35 years, 50.2 percent were postgraduates and professionally employed, 56.8 percent belonged to nuclear family, 51 percent

were first time mothers and 43.7 percent underwent vaginal delivery (Table 1). Among the respondents, 41 percent had childbirth during Covid-19 phase I and 58.9 percent during the phase II.

Table 2: Covid-19 status of the subjects (n=382)

Variables	Phase 1 157	Phase 2 225	Chi square (p value)	Total %
Mother positive with Covid-19 before admission				
Yes	18	20	0.69 (p=0.41)	9.9
No	139	205		
Mother positive during admission for childbirth				
Yes	6	10	0.09 (p=0.76)	4.2
No	151	215		
Mother positive after discharge				
Yes	13	17	0.05 (p=0.82)	7.9
No	144	208		
Baby positive after birth				
Yes	3	6	0.23 (p=0.63)	2.4
No	154	219		
Family member positive after discharge				
Yes	14	19	0.02 (p=0.87)	8.6
No	143	206		

Table 2 points out that 9.9 percent of mothers were tested positive before getting admitted for childbirth, 4.2 percent were tested positive during the time of childbirth and 7.9 percent were tested positive following discharge. Only 2.4 percent of babies tested positive.

Neonatal Feeding Practices, Perception and Wellbeing of Post-natal Mothers Related to Breastfeeding and Covid-19

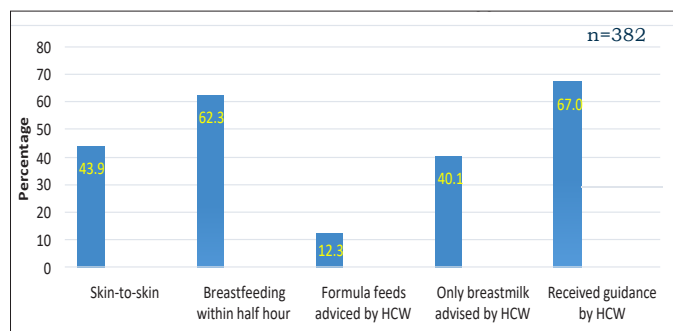


Fig 1: Practices followed by the health care workers (HCW) after childbirth in the hospital.
(The cumulative percentage are more than 100 as multiple responses were received)

More than two-thirds of the mothers (67.0%) responded that they received breastfeeding related guidance from HCW's (Fig 1), less than two-thirds

(62.3%) initiated breastfeeding within half hour of birth, 43.9 percent had baby with skin-to-skin contact soon after birth and 40.1 percent were advised to feed baby only on breast milk. Around 12.3 percent of mothers were, however, advised to use formula feeds in the hospital.

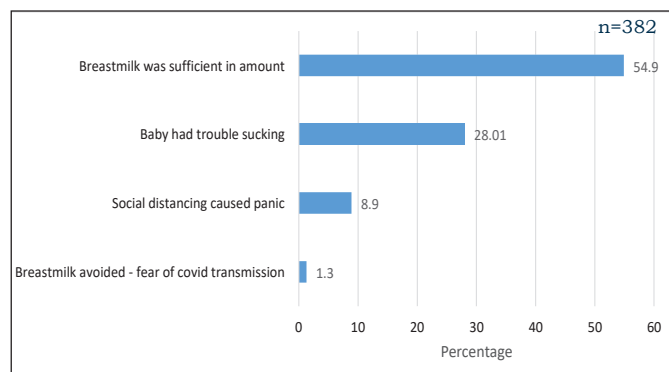


Fig 2: Factors that influenced breastfeeding practices of mothers.

More than half the proportion of mothers (54.9%) were confident that breastmilk was sufficient in amount (Fig 2). The most reported negative factor was that the baby had trouble sucking (28.0%). More than half, 56.0 percent of mothers practiced handwashing before and after handling the baby and 34.0 percent of them always wore masks (Fig 3).

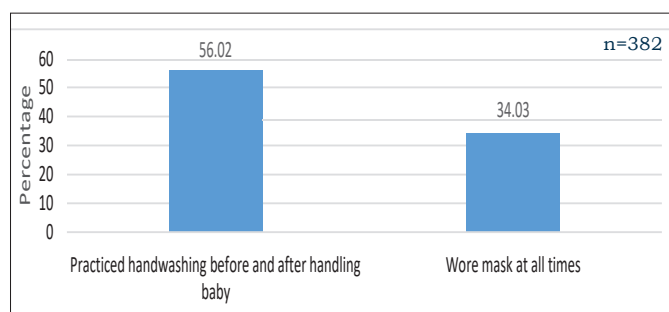


Fig 3: Covid-19 precautionary practices followed by the mothers.

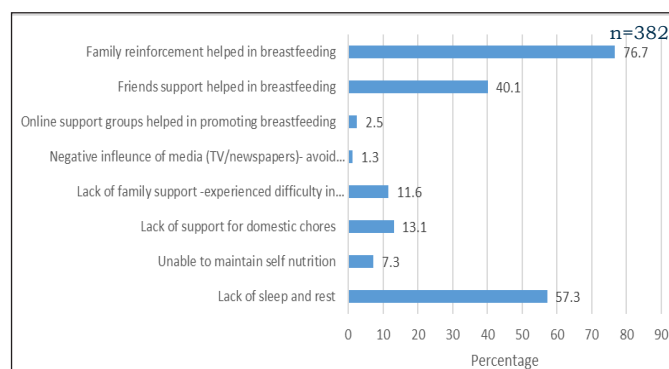


Fig 4: Social support systems during first month after discharge from hospital.
(The cumulative percentage are more than 100 as received multiple responses)

A large proportion of mothers responded that family reinforcement aided in breastfeeding (76.7%), followed by friends (40.1%) and online groups (2.5%) (Fig 4). However, difficulties were expressed with regard to lack of rest and sleep (57.3%), performing domestic chores (13.1%), lack of family support (11.6%) and negative influence of social media (1.3%) as seen in Fig 4.

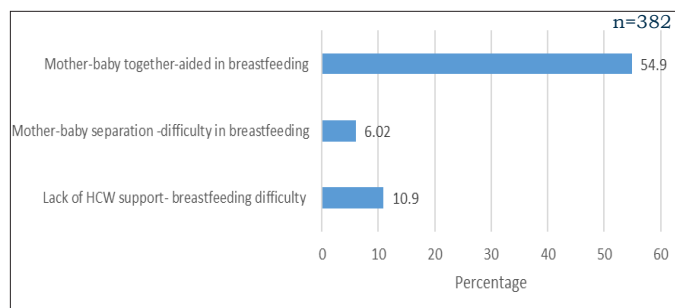


Fig 5: Factors influencing breastfeeding practices of mothers after discharge.

Fig 5 shows that having mother-baby dyad together at all times aided in breastfeeding among 54.9 percent whereas 6.0 percent mothers had difficulty as the mother and baby were separated during first month after birth.

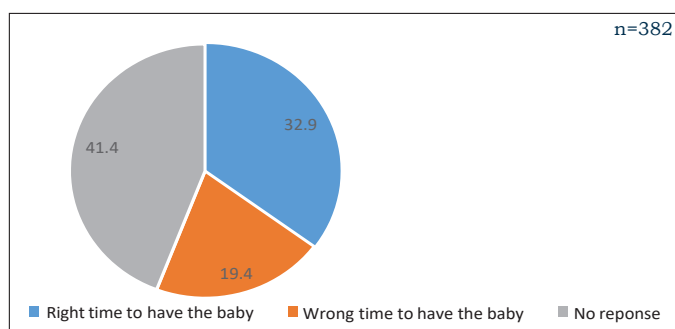


Fig 6: Perceptions of mothers on timing of childbirth during Covid-19 pandemic.

A small proportion of mothers (19.4%) felt it was a wrong time for having a baby however, 32.9 percent felt it was good time to have a baby (Fig 6).

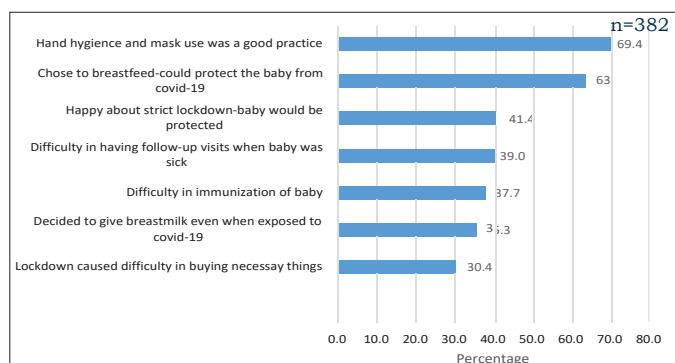


Fig 7: Mothers perceptions of postnatal period during Covid-19 pandemic

(The cumulative percentage are more than 100 as received multiple responses)

More than two-thirds of mothers (69.4%) felt hand hygiene and use of mask was a good practice to follow during the pandemic, 63.4 percent chose to breastfeed as they felt it could protect the baby from Covid-19 and 41.4 percent were happy that strict lockdown was instituted as safety measure (Fig 7). Around 37.7 percent had difficulty in immunising their neonate and 30.4 percent had difficulty in buying necessary things during lockdown. Only 35.3 percent mothers decided to give breastmilk only to their neonate

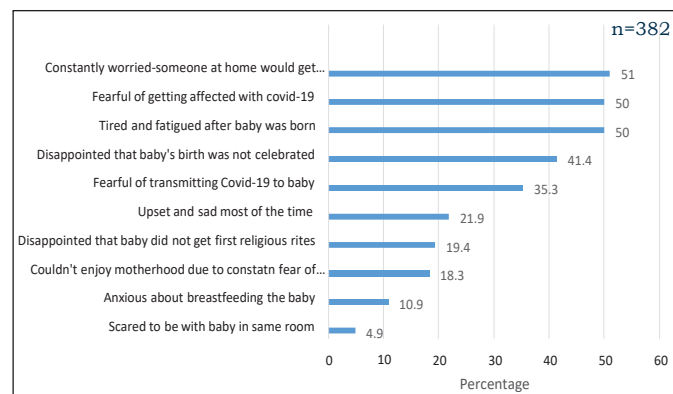


Fig 8: Negative feelings of mothers of postnatal experience during Covid-19 pandemic.

(The cumulative percentage are more than 100 as received multiple responses)

even if exposed to Covid-19. Figure 8 describes the negative feelings the mothers had related to post-natal period. A little more than half of all mothers (51.0%) were constantly worried if someone at home would get the infection and least was 4.9 percent were scared of having the baby in the same room.

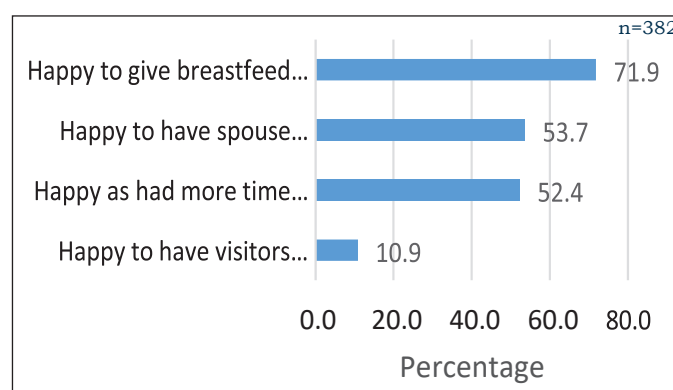


Fig 9: Positive feelings of mothers of post-natal experience during Covid-19 pandemic.

(The cumulative percentage are more than 100 as received multiple responses)

Fig 9 describes the positive feelings the mothers had towards the post-natal period. A large proportion of mothers (71.9%) were happy to breastfeed on demand, 53.7 percent were happy to have their spouse around all the time. A little more than half of all the mothers (52.4%) were happy

to have had more time to be with the baby and only 10.9 percent were happy to have visitors and friends come to their home during lockdown.

Comparison of Neonatal Feeding Practices between Covid-19 Wave 1 and Covid-19 Wave 2

Table 3: Comparison of Covid-19 phase and breastfeeding practices of the mothers (n=382)

Covid-19 phase	Total No.	Exclusive breastfeeding practiced				Chi square	p value
		Yes	%	No	%		
Phase 1	157	119	75.8	38	24.2	0.12	0.72
Phase 2	225	174	77.3	51	22.7		

There was no significant difference in breastfeeding practices of mothers during the covid phaseI & II (p=0.72)(Table 3).

Table 3: Comparison of mothers diagnosed with Covid-19 positive status andbreastfeeding practice during the two phases of Covid-19 (N=30)

Covid-19 positive	Total number	Exclusive breastfeeding practiced				Chi square	p value
		Yes	%	No	%		
Phase 1	13	5	38.5	8	61.5	0.78	0.37
Phase 2	17	4	23.5	13	76.5		

Table 4 shows that there is no difference in breastfeeding practices between Covid-19 positive mothers during the two phases of Covid-19 (p=0.37)

Comparison of Neonatal Feeding Practices between Covid-19 Positive Mothers and Covid-19 Negative Mothers

Table 5: Comparison of mothers diagnosed with Covid-19 and those negative withbreastfeeding practices followed after discharge (n=382)

Mother status	Total No.	Exclusive breastfeeding practiced				Chi square	p value
		Yes	%	No	%		
Covid-19 positive	30	9	30.0	21	70.0	39.73	0.001**
Covid-19 negative	352	284	80.7	68	19.3		

Most of the mothers (70%) who were Covid-19 positive chose not to breastfeed their babies, compared to mothers without Covid-19 (19.3%), and this was statistically significant(p=0.001) as seen in Table 5.

Table 6: Comparison of mothers diagnosed with Covid-19 and those negative with breastfeeding practices during two phases of Covid-19 (n=382)

Covid-19 positive	Total No.	Exclusive Breastfeeding practiced				Chi square	p value
		Yes	%	No	%		
Phase I- Positive Negative	13 144	5 114	38.5 79.2	8 30	61.5 20.8	10.76	0.001**
Phase II-Positive Negative	17 208	4 170	23.5 81.7	13 38	76.5 18.3	30.37	0.001**

Table 6 shows significant differences in breastfeeding status of the mothers based on Covid-19 status during phase 1 and phase 2 (p=0.001) respectively.

Association of Breastfeeding Practices of Mothers with Selected Baseline Variables

Table 7: Association of breastfeeding practices of mothers with selected baseline variables n=382

Baseline variables	Covid-19 phase	Total No.	Exclusive breastfeeding practiced		Chi square	p value
			Yes	No		
Healthcare professional (HCP)	HCP Phase 1	52	43	9	2.02	0.16
	Non-HCP Phase I	105	76	29		
	HCP Phase II	77	60	17	0.02	0.88
	Non-HCP Phase II	148	114	34		
Gestation of neonate	Term Phase 1	117	84	33	4.01	0.04*
	Pre-term Phase I	40	35	5		
	Term Phase II	197	159	38	10.30	0.001**
	Pre-term Phase II	28	15	13		
NICU admission at birth	Yes Phase 1	26	23	3	2.72	0.09
	No Phase I	131	96	35		
	Yes Phase II	58	37	21	8.17	0.004**
	No Phase II	167	137	30		

The selected baseline variables were associated with breastfeeding practices of the mothers and significant association was found between exclusive breastfeeding practice of mothers and gestation of neonate at birth during Covid-19 phase I (p=0.04) and phase II (p=0.001) respectively (Table 7). Also, during phase II, the

exclusive breastfeeding practices significantly differ among the neonates admitted in NICU ($p=0.004$).

Discussion

Covid-19 created an unpredictable fear among all and being in hospitals during this period was one of the most fearsome moments. However, expectant mothers had to undergo hospitalisation and childbirth with the fear of contracting sickness and unknown aftereffects. The present study intended to evaluate the impact of Covid-19 on the post-natal mothers related to their wellbeing and their neonatal feeding practices.

The mean age group of the mothers was 30.01 ± 4.11 years where the majority belonged to the age group of 31-35 years ($n=169$, 44.2%). A study done by Vazquez-Vazquez et al (2020) also had mothers aged 31.4 ± 4.9 years like in the current study.

Most subjects who responded to the study were those who had childbirth during phase II of Covid-19 ($n=225$, 58.9%). Most of the subjects were graduates and postgraduates ($n=343$, 89.8%) and 50 percent among them were working professionals. Among professionals, further analysis showed that there were mothers who were working as a health care professional ($n=129$, 33.8%), most of whom had childbirth during phase II of Covid-19 ($n=77$, 59.69%). The mode of childbirth was normal vaginal delivery ($n=167$, 43.7%) followed by planned Cesarean section ($n=107$, 28%) for many of the mothers. A study that compared the mode of childbirth before and during lockdown showed no change in the methods by which childbirth occurred; similar findings were noted with normal vaginal childbirth (being 45%) in both the groups before and during lockdown.

Most of the mothers had term delivery ($n=314$, 82.2%) and most being during phase II of Covid-19 ($n=197$, 62.74%). About 84 (22%) neonates born during Covid-19 needed NICU admission, of which 58 (69.05%) were during phase II of Covid-19. This showed that even though the number of pre-term births were less during phase II, the NICU admissions required were more. The main indications expressed by mothers were hyperbilirubinemia, cephalhematoma, respiratory distress and pre-term.

Most of the mothers and neonates were unaffected with the Covid-19 virus in both the phases. However, a small percentage of mothers were positive with Covid-19 before admission ($n=38$, 9.9%), during admission ($n=916$, 4.2%) and after discharge ($n=30$, 7.9%) respectively. The neonatal positive status was seen in 9 (2.4%) babies

after birth. A previous study had subjects who had higher percentage of mothers who had Covid-19 but were never symptomatic ($n=76$, 47.5%) but, 25 (15.6%), 21 (13.1%) and 38 (23.8%) of mothers were symptomatic and positive for Covid-19 before admission, during admission, and both before and during admission, respectively (Popofsky et al, 2020). The present study, however, did not assess the symptomatic status of the mothers before or during hospitalisation. More than half of the mothers were first time mothers ($n=196$, 51.3%) but among those who had older babies, 21 (5.5%) of them had not breastfed their previous child due to insufficient milk supply and lack of knowledge and support (100%).

A scientific brief by WHO in their systematic review during phase I of Covid-19 found 46 mothers and 13 infants positive with Covid-19. Only three mothers' breastmilk samples had tested positive for the viral particles by RT-PCR and among these three babies, only one baby was tested positive for Covid-19 and the breastfeeding status of this baby being unknown. The other two babies had received breastmilk (WHO, June 2020). Hence, all health care sectors promoted skin-to-skin contact and breastfeeding irrespective of their Covid-19 status. However, recommendations from the Centers for Disease Control and Prevention suggested continuation of breastfeeding but have temporary separation of mother infant-dyad when mother is confirmed or suspected with Covid-19 (Bastug et al, 2020). This created dilemma across the health care sectors towards implementation of routine neonatal care.

Breastfeeding and Neonatal Practices

The current study estimated the various practices following childbirth, with most of the mothers reporting to have received guidance from their HCWs (67.0%) and 238 (62.3%) to have started breastfeeding their baby within half an hour following birth. Another study finding also showed that the post-natal mothers received 67.1 percent of breastfeeding support by healthcare professionals and 51.6 percent from the community. The support by health professionals was highest in Thailand (86.3%) (Coca et al, 2022). Around 210 (54.9%) of mothers were confident that breastmilk was sufficient for their neonates. Yet although skin-to-skin contact is recommended and known to increase success in lactation, this practice was limited to less than half of the mothers in this study ($n=16$, 43.9%). In addition, other concerning findings included advice from HCWs on providing formula feeds as safe measure ($n=47$, 12.3%); separation of mother and baby ($n=34$, 8.9%); fear of transmitting the infection to the baby ($n=5$,

1.3%); lack of guidance from HCWs [42 (10.9%)] and from family members (n=19, 4.9%) plus lack of rooming-in sharing the same bed (n=23, 6.02%) that could have impacted on reduced rates of exclusive breastfeeding by mothers (n=265, 69.4%). Lack of HCWs and family support with guidance is found to be a significant factor affecting breastfeeding (Piankusol et al, 2021).

Some facilitators for exclusive breastfeeding could have been that infants and mothers were cared for on the same bed (n=210, 54.9%) and online support from groups (n=112, 29.3%). A study conducted to compare the support in different countries have also reported support through online groups (48.6% and 35.5%) in the UK and Thailand.

Most of the mothers expressed that the family and friend's reinforcement and support helped them in maintaining the exclusive breastfeeding status (76.7%, 40.1% respectively). Some mothers did have trouble in managing the domestic chores and nutrition (13.1%, 7.3%) due to lack of family support. Although 126 (32.9%) mothers felt it was the right time to have the baby, 158 (41.4%) were happy with the strict lockdown protocol followed during this time, since they could be with the baby. However, some had trouble in immunization (37.7%) and follow-up (39%) visits. Mothers (69.4%, 63.4%) believed that breastmilk was safe and could protect their infant from Covid-19. A study estimating the beliefs and practice of mothers across five countries regarding breastfeeding found that mothers who gave breastmilk to their neonates during Covid-19 had positive belief towards breastfeeding (Coca et al, 2022).

Post-natal Wellbeing

The mothers did face fear and anxiety regarding the pandemic situations faced during both the phases of Covid-19. Fifty percent of the mothers were tired and fatigued in the first month after childbirth, scared of getting the infection and constantly worried if someone at home would get the infection. Most, 228 (59.7%) of mothers were anxious when visitors and friends came to visit them during this time and 158 (41.4%) of them were disappointed that they could not celebrate their child's birth with family and friends. However, 275 (71.9%) mothers were happy to be with the baby due to lockdown and had their spouse around all the time (n=205, 53.7%). Few of them did feel that they could not enjoy their motherhood due to constant fear of pandemic (n=70, 18.3%) and some were disappointed that their baby had not received first religious rites (n=74, 19.4%). The positive feelings were more prominent among the mothers but some mothers (n=84, 21.9%) felt upset and sad most of the time during their first month after delivery.

Maternal mental health issues like anxiety and depression were seen in a systematic review (Kotlar et al, 2022). A study on breastfeeding experiences during Covid-19 lockdown in UK explored the emotional states and anxiety level of mothers and found that around 7 percent of them were suffering from severe depression and 8 percent had severe anxiety. The lack of family and friends support due to lockdown had influence on mental wellbeing (Costantini et al, 2022).

Comparison of Breastfeeding Practices and Covid-19

The mothers breastfeeding practices were compared during phase 1 and 2 of Covid-19, showing no significant differences ($p=0.72$) between the two-time frames. Yet, this study showed that among those who were Covid-19 positive in both phases, 50 percent did not breastfeed their baby indicating fear of transmission and confusion on safety of breastfeeding during this time. The present study found significant difference in breastfeeding practices between the Covid-19 positive and those negative ($p=0.001$). Among the total 30 mothers who were positive with Covid-19 after discharge, 21 (70%) of them did not practice exclusive breastfeeding during the first month after delivery. These significant changes were noted during both the phases of Covid-19 ($p=0.001$). This study also showed a significant decrease in the rate of breastfeeding among the Covid-19 positive mothers when compared with the controls. It was mainly due to local recommendations to withhold breastfeeding in confirmed or suspected cases of Covid-19 as cited by Akinola et al (2022). The breastfeeding practice however varied from 57.84 percent to 95.3 percent during Covid-19 as seen in different studies evaluated by Akinola et al (2022) in their systematic review. WHO in June 2020 highlighted that Covid-19 is a low threat in infants when compared to the other infections that breastmilk helps to fight and protect from (Covid WHO, June 2020).

Also, there was a significant association between the breastfeeding practices and gestational age of the neonates during phase 1 and phase 2 ($p=0.04$, $p=0.001$) respectively. A significant association was also noted between the exclusive breastfeeding status and neonates requiring NICU admission after birth ($p=0.004$) during phase 2 of Covid-19.

Research performed in India on breastfeeding knowledge of postnatal mothers showed their knowledge to be low and inadequate (Rushender et al, 2022; Kumar & Mudhra, 2021). The lacunae in dissemination of adequate knowledge leading to good breastfeeding practices during non-Covid era

has been challenging. In addition to this, Covid-19 further hampered the practices related to exclusive breastfeeding during the first month after birth. A study estimated the reasons for cessation of breastfeeding before and during pandemic which ranked limited professional support the highest compared to other difficulties (71.4%, 79.9% respectively). The lack of face-to-face communication along with no health visitors visiting homes during pandemic are added experiences shared by mothers which show limitations related to emotional support (Brown & Shenker, 2021).

Implications

This study threw light towards the neonatal feeding practices, perceptions and wellbeing experienced by the post-natal mothers during Covid-19 pandemic as reported by them through a survey. The practices to be followed soon after childbirth such as initiation of breastfeeding and skin-to-skin contact are vital for all newborns. The study implies following safe evidence-based practices towards mother-baby dyad, providing proper guidance to all mothers irrespective of their knowledge level and being there for the post-natal mothers as an agent for reinforcement towards breastfeeding are simple measures that could help sustain post-natal wellbeing and improvement in maintenance of exclusive breastfeeding status irrespective of Covid-19 virus. The professional and social support through family and friends could be a motivator towards better breastfeeding status which should be known by every healthcare professional dealing with mothers and neonates.

Limitations

The study intended to identify the neonatal feeding practices followed by post-natal mothers and their wellbeing at different states of India. However, the responses received through online portals were limited and hence generalisation of the findings across the states is not possible.

Recommendations

Further studies could be undertaken like

- Study to determine the practices across India through multifaceted approach.
- Comparison between post-natal wellbeing and their influence on breastfeeding practices
- Qualitative studies to evaluate the breastfeeding related challenges faced by mothers and challenges faced by healthcare professionals in its promotion.

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BENEFITS FOR TNAI & SNAI MEMBERS

Welfare	Educational	Awards
1. TNAI & SNAI Scholarship (Rs. 24000/ Year) 2. Medical Assistance (Maximum upto Rs. 100000) 3. Critical illness assistance (Rs. 200000) 4. Nurses Welfare Grant 5. Subsidized accommodation at TNAI guest houses (helpdesk@tnaionline.org) 6. Free recruitment for European Countries (tnairecruitment@gmail.com). 7. Day Care Centre for the Elderly 8. Disaster Relief Fund for Individual/ State/National 9. Addressing grievances for nurses at various levels (tnai_2003@yahoo.com). 10. Accidental Death Insurance coverage of 10 Lakhs rupees (insurance.tnaionline.org) for TNAI members and Rs. 5 lakhs for the Students Nurses who opted TNAI-SNAI Membership (New Plan). 11. Special Offers for TNAI Members from Samsung India	1. Concession for: - Conference registration fee for participation in TNAI's national and State Conferences. - Continuing Education Programmes; American Heart Association (AHA) approved Basic Life Support (BLS)/Advance Cardiac Life Support (ACLS), Reproductive, Maternal, Neonatal, Child Health and Adolescent (RMNCH+A) and Language Programme. 2. Scientific Paper Presentation at TNAI/SNAI National Conference. 3. Participation of Competitions at State and National Level 4. Publication of articles in NJI and Bulletin (publicationstnai@yahoo.com) 5. Free online E-learning courses with credit hours (elearning.tnaionline.org). 6. Concession on TNAI publications 7. Research Grant for Nurses (Details are given in NJI and TNAI Website) 8. Sponsoring aspirant nurses from 5 regions for Civil Service Examination 9. TNAI fellowship for members	1. Lifetime achievement award 2. Incentives for motivator for enrolling TNAI/SNAI Membership

The Benefits for the TNAI and SNAI members are subjected to the eligibility and approval/decisions of TNAI Management time to time.

The Details of Membership Incentive w. e. f. 01/01/2021			
Sr. No.	Name of Fee	Rate of Membership	Incentive
1	Trained Nurses	Rs. 3000/-	Rs. 298.98/-
2	SNA to TNAI	Rs. 2200/-	Rs. 217.63/-
3	ANM/HVL	Rs. 1500/-	Rs. 146.44/-
4	Others	Rs. 1000/-	Rs. 95.59/-
5	SNA (New Plan)	Rs. 2000/-	Rs. 131.53/-