SURVEY REPORT ON

IMPACT OF COVID-19 ON UTILIZATION OF REPRODUCTIVE MATERNAL, AND CHILD HEALTH SERVICES IN SELECTED DISTRICTS OF TAMIL NADU: A MIXED METHOD STUDY

GOVERNMENT OF TAMIL NADU

TAMILNADU HEALTH SYSYTEM REFORM PROGRAM

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Globally, millions of pregnant women, new mothers and children are affected with severe illness or death each year. Despite the continuous global efforts to improve maternal and child health through sustainable development goals (SDGs), the progress on utilization of health services and reduction in maternal and child mortality varies between and within countries. Regardless of the efforts, according to world health organization (WHO), 2019 approximately 295,000 women dying each year due to pregnancy and delivery related complications that leads to maternal mortality ratio (MMR) of 211 per 100,000 live births. About 90% of maternal and under-5 deaths are from sub-Saharan Africa, Southern Asia and South-Eastern Asia. Globally, an estimated 5.4 million children under 5 years died and out of theses 2.5 million deaths occurred during the neonatal period which leads to an under-5 mortality rate (U5MR) of 38 per 1000 live births and neo natal mortality (NNMR) of 17 per 1000 live births. The SDGs under health goal 3.1 primarily concentrates to improve maternal and child health care, which mainly focuses on reducing MMR to less than 70 per 100,000 live births, U5MR to 25 per 1000 live births by 2030.

According to UNICEF & World Bank, 2020 estimates thousands of women in India die due to pregnancy, child birth related complications and substantial number of children affected with vaccine preventable diseases. As per Sample registration system (SRS, 2016-18), current maternal mortality ratio in India is 113 per 100,000 live births whereas in Tamil Nadu it is lesser than the national average at 60 per 100,000 live births. According to NFHS- 5 data (2020-21) NNMR, infant mortality rate (IMR) and U5MR rate in India is 24.9, IMR 35.2 and U5MR 41.9 per 1000 live births respectively. For Tamil Nadu it is 12.7, 18.6 and 22.3 per 1000 live births respectively. Though Tamil Nadu has made substantial progress in improving RMNCH+A services and there is higher inequality between districts of Tamil Nadu. According to vital events survey of Tamil Nadu, 2012, the IMR in Erode is 9.9 whereas in Thoothukudi it is 21.8 per 1000

live births. Government of India through RMNCH+A program in 2013, appropriately directs the efforts of health care workers towards the most disadvantaged and vulnerable groups in ensuring the “continuum of care” through various life stage. The more disadvantaged groups in terms of socio-economic status, low education, residing in rural areas influences the utilization of health care services. These trends shows the further efforts to reduce inequality and more towards to achieve SDG goal 3.

In this situation the current Endemic has challenged most of the health systems around the world. The COVID-19 Endemic has imposed devastating impact on health care system, livelihood economies. It has disrupted the regular continuum of care and compelled the healthcare systems to prioritize the services rendered by them. The Endemic has shifted the health care workers, equipment, facilities to cope with the rising number covid-19 patients and health workers were also got affected with nosocomial covid-19 infections. Battling with COVID-19 and providing essential care is difficult and also various factors such as fear, lack of transportation has influenced the highly recommended RMNCH utilization of services. The Covid-19 has interrupted in RMNCH services along with nutrition services. This influenced the countries, states and districts progress towards SDG goal 3 and widened the gaps among districts. This magnitude of disruptions could stall or even reverse the progress especially it influences the low performing districts. To avert the deaths and improve the progress in RMNCH services it is important to ensure that appropriate care is available to each and every woman and child during the Endemic. Therefore, covid-19 may have further worsened the utilization in districts where it is poor already. This study is designed to evaluate the impact of COVID-19 on the utilization of RMNCH services in selected districts of Tamil Nadu using mixed method research.

1.2 Aim of the Study

The study aims to assess the impact of covid-19 on utilization of RMNCH services during the first and second waves of pandemic and also critically examine the direct and indirect impact related to accessing the services in selected districts of Tamil Nadu.

1.3 Specific objectives

1. To find out the utilization of RMNCH services during COVID-19 pandemic
2. To evaluate the direct and indirect impact of COVID-19 on utilization of RMNCH services
3. To find out the gaps in the RMNCH services and identify the most affected level of care during COVID-19 pandemic

1.4 Literature review

Ayaz A. Baloch et al. (2021) address the number of clients who avail of routine care or RMNCH services at the primary health care level considerably declined during the first wave of the COVID-19 outbreak in Sindh, Pakistan. These results highlight a rising threat to poor RMNCH and outcomes. A retrospective study was conducted in 22 districts using data from 1169 primary health care facilities. The District Health Information System (DHIS) was used to retrieve district-wise services utilization data from January to April 2020, i.e., January to February 2020 (pre-COVID-19) and March to April 2020 (during COVID-19). The monthly difference for selected RMNCH services indicators was calculated using the expected number of clients (January to February average) versus the actual number of clients for March and April 2020. Results state a decrease of 12.5% for March and 33% for April 2020 in the total number of clients who availed of primary health care services in Sindh compared to the pre-COVID-19 monthly average. There was a decrease in first antenatal care visits (15.6% and 16.3%), delivery coverage (12.8% and 17.9%), and family planning client visits (31.6% and 36.3%) were observed for March and April 2020, respectively. The pentavalent vaccine results revealed a decrease of 19.3% and 63.1%, while a decrease of 17.3% and 54.3% were observed for children receiving the first dose of measles vaccine in March and April, respectively.

Anil K. Singh et al. (2021) described that response to the public healthcare delivery system to the Covid-19 Endemic is negatively affecting both the provision and utilization of maternal and child healthcare services. Data on maternal and child health

services provided under specific government programmes were gathered from public health facilities in the Uttar Pradesh district of Sant Kabir Nagar. A comparison of data from the Endemic phase with data from 2019 was performed to determine the impact on services. The study found that all maternal and child health interventions had lower coverage. The number of institutional deliveries decreased by 2.26 percent overall. Antenatal care services were the hardest hit, with a 22.91 percent decrease. Immunization services were also drastically reduced by more than 20%.

Kababa Temesgen et al. (2021) assessed maternal health care services utilization during the COVID-19 Endemic in the West Shoa Zone, Central Ethiopia. A community-based cross-sectional study was conducted on 844 pregnant women or women who had given birth within the previous six months before the study. The study participants were chosen using a multi-stage sampling technique. Face-to-face interviews with a semi-structured questionnaire were used to collect data. To determine the presence of significant associations, logistic regressions were used. The results explained the prevalence of maternal health service utilization during the COVID-19 Endemic was 64.8%. The odds of utilization were higher among mothers who had college and above education and who could read and write. Mothers who did not fear infection were more likely to visit a health facility.

Wanyana D et al. (2021) conducted a study on Rapid assessment on the utilization of Maternal and Child Health services during Covid-19. A cross-sectional quantitative study design was conducted and it aimed to assess the change in the utilization of MCH services during the Covid-19 outbreak in Rwanda. The results illustrates that Kigali was the only province with a significant increase in fourth PNC visits for babies and mothers, while the Southern Province saw a significant increase in measles + rubella (MR) 1 vaccination utilisation. This study emphasised the importance of taking precautionary measures to avoid disruptions in MCH service delivery and routine health services during outbreaks.

Manu Goyal et al. (2020) studied the experiences from the tertiary care hospital on RMNCH during COVID-19 The main objective of this study was to assess the effects of the COVID-19 Endemic on obstetric care and outcomes. All antenatal and parturient

women admitted from April to August 2020 were included in a prospective observational single-center study. Data on admissions, deliveries, antenatal visits, reasons for inaccessibility of health care, and complications during pregnancy were collected and compared to data from the pre COVID period of October 2019 to February 2020. During the Endemic, there was a 45.1 percent decrease in institutional deliveries (P0.001), a 7.2 percentage point increase in high-risk pregnancy, and a 2.5-fold increase in pregnant women admitted to the intensive care unit. One-third of women received insufficient antenatal care. The main reason for delayed health-seeking was lockdown and fear of infection, which resulted in 44.7 percent of pregnancies having complications.

1.5 Novelty of the study

- Triangulation of the data from both providers and beneficiaries' side
- Utilization of services during two time periods – during lockdown 1 & 2

1.6 Study Protocol

Study setting

This study was conducted in 6 districts across the states. (Ariyalur, Dharmapuri, The Nilgiris, Ramanathapuram, Tirunelveli and Virudhunagar.)

1.7 Ethical considerations

Ethical approval for this study was obtained from institutional ethics committee, SRM Institute of Science and Technology. Study approval and permission was obtained to collect data from health care facilities selected for the study. Informed consent was obtained from all the study participants, confidentiality and privacy will be ensured. A participant information sheet that contains information, risks and benefits associated with participation of the study was issued to all participants.

1.8 Expected outcomes

The resilience of the health systems in providing health services during Endemic times. The study will identify the strengths and gaps from both health system and beneficiaries service utilization.

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CHAPTER 2

STUDY METHODOLOGY

2.1 Operational Plan

The Study was conducted in following Phases:

- Preparatory phase
- Data Collection
- Data analysis
- Report Preparation

2.2 Preparatory phase

The following activities were done during the preparatory phase

- ✓ Study design including study participants
- ✓ Developing the data collection tool
- ✓ Manpower planning
- ✓ Training the field staff

2.2.1a Study design

The study used mixed method design to evaluate the impact of COVID-19 Endemic on utilization of reproductive, maternal, neonatal and child health with adolescent program (RMNCH) across selected districts of Tamil Nadu. The quantitative part of the study involved the collection of data from the Pregnant women and PNC mothers in the selected districts on RMNCH (antenatal care, institutional delivery, IFA tablets consumed for 100 days, postnatal care, family planning services and immunization uptakes) during the first lock down and the second lockdown (March 2020 to December 31st 2021) in Tamil Nadu. The qualitative arm assessed the perceptions of users of health care facilities and health workers on how COVID-19 has shaped the utilization of RMNH services in their locality and other contextual factors.

2.2.1b Study participants

Quantitative survey

Women in the reproductive age group (15-49) of selected districts who received reproductive and maternal health-care services, and/or who visit health facilities for their newborn health-care services at the selected governmental health facilities of 6 districts during selected 2 time period.

Sampling Method

A total list of mothers who visited the governmental health facilities for RMNCH services during the first and second wave were collected from the PICME database and used as a sampling frame. Simple random sampling method was adopted to select the respondent mothers from rural, urban and tribal areas.

Total sample size: 1800 (300 from each district)

From each district 300 participants were selected randomly which includes Urban, Rural, Tribal areas. If there is no tribal population in the selected districts/ selected block then the sample collection will be distributed from urban and rural areas.

Qualitative study

In-depth interviews

The participants for the one – on – one, in-depth interviews include

- Mothers who delivered during COVID-19 period
- Pregnant women diagnosed with COVID-19
- Stakeholders : Director District Health Services (DDHS), Block level medical officers, Medical officers (PHC), Village Health Nurse (VHA), Anganwadi worker (AWW), Accredited health social activist (ASHA)

Sampling method

Participants for the qualitative study were identified, by using purposive sampling method. To achieve maximum variation different stakeholders was interviewed.

Sample size was determined based on saturation of information

2.2.2. Data Collection tool

Quantitative:

A structured questionnaire was first developed cover the major aspects of services provided by the government, reasons for not accessing the services, etc and field tested before finalizing. Then the questionnaire was translated to the local language. A android based digital survey tool was developed for data collection from field by the field investigators.

Qualitative:

A Comprehensive checklist was developed for the one –on – one in depth interview to ensure the coverage of services.

2.2.3. Manpower planning

Identification and recruitment of the field staff for data collection. For quantitative survey, experienced field investigators and for qualitative survey, anthropologists were recruited.

2.2.4. Training the field staffs

The training session began with registration and self-introduction of the field investigators and the trainers (Project managers) then followed by project orientation. The investigators are oriented on the objectives, survey methodology, survey ethics, digital data collection and do’s and don’ts of the project. The investigators were clearly instructed to obtain informed consent from the respondents of the survey.

Quantitative

The second session was conducted. Every question in the questionnaire was discussed in both Tamil and English language. The questionnaire was developed in English and translated into Tamil for easy understanding and was back translated to ensure accuracy of translation. Following the full discussion on the questionnaire, the field investigators were made to do mock interviews through which the project team assessed the interviewing skill of the investigators.

Third session was dedicated for Open Data Kit (ODK) Training. ODK is an open source android app that replaces paper forms used in survey based data gathering. Finalized submission can be sent to (and new forms downloaded from) a server.

All the trainees' were given training on ODK for digital data collection and its functions for effective and efficient data collection. After training, practical exposure was as well demonstrated whereby trainees conducted mock interviews using ODK which helped the investigators to clarify their doubts. These repeated trainings helped the investigators to have a better understanding of the survey questionnaire.

Qualitative

The anthropologists were trained in gaining the respondents trust and to conduct the interviews by sharing the pros and cons. The interview checklist was shared with each and explained in detail on each points. Mock interviews were conducted to clarify their doubts and for better understanding on the concepts.

2.3. Data collection

Quantitative

Data was collected from participants at community level and also from facility on utilization of RMNCH services. The data was collected services utilized in first and second covid-19 lockdown. Data collected from the community was validated with the Health system records. Data collected on ANC care, institutional delivery, PNC care, family planning services and immunization. Further, utilization of various MCH schemes was also assessed.

Qualitative

The researcher scheduled and confirmed the date and time of the planned IDs with the study participants consent. The study participants were informed about the purpose of the study and were invited to participate in the interview after obtaining informed consent. The participants also were informed about recoding and approximate time of the interview about 30-60 minutes while taking consent. The in-depth interview guide was developed specifically for each stakeholders. The participants' starts the narration retrospectively from conception to delivery about various services availed, difficulties and challenges faced. After the interview the audio

recording was transcribed verbatim. The transcripts were compared with audio recordings to enhance the quality of the response.

2.4 Data analysis

Quantitative data

Collected quantitative data was cleaned and analyzed using SPSS software to find out the trends of utilization of health services. Participants' responses and the health records was reviewed and cross verified for the analysis.

Qualitative data

The audio recorded data was transcribed and analysis began with reading the transcripts again and again to achieve immersion in to the data. Then abstract ideas were extracted as open codes and then similar codes are discussed by the research team and sorted into categories. Based on the categories themes was generated that represent significant issues with utilization of RMNCH services. The transcript was coded by two researchers separately to ensure quality and reduce inter-coder variability.

2.5 Report Preparation

Quantitative

Tables were generated based on the indicators needed from the data using SPSS software and the results were interpreted in the report.

Qualitative

Themes were developed using inductive approach where allowed the collected interview data to determine the themes and results were interpreted in the form of narrative analysis in the report.

Chapter 3

RESULTS

3.I. SOCIO – DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

In this section, basic characteristics of the participants of this study are discussed. Such as their religion, community, educational background, occupation, income, etc. Quantitative Survey covers the above mentioned sections and Qualitative survey describes the distribution of the sampled participants.

Quantitative Survey

The Quantitative survey covered 1800 Women across six districts namely Ariyalur, Dharmapuri, Nilgiris, Tirunelveli, Ramanathapuram and Virudhunagar.

Table 3.1. Background characteristics of the respondents

Characteristics	Category	Frequency	Percentage
Religion	Hindu	1554	86.3
	Muslim	126	7.0
	Christian	116	6.4
	No religion	2	0.1
	Others	2	0.1
	Total	**1800**	**100.0**
Caste of the Head of the household	Scheduled caste	361	20.1
	Schedule Tribe	73	4.1
	Backward class	1016	56.4
	Most Backward class	262	14.6
	Others	43	2.4
	Don’t know	45	2.5
	Total	**1800**	**100**
Educational background of the sampled women	No formal education	9	0.5
	Primary school	36	2.0
	Secondary school	232	12.9
	Senior secondary	536	29.8
	Under graduation	666	37.0
	Post graduation	248	13.8
	Others	73	4.1
	Total	**1800**	**100**

Educational background of the husband	No formal education	20	1.1
	Primary school	74	4.1
	Secondary school	325	18
	Senior secondary	492	27.3
	Under graduation	527	29.2
	Post graduation	183	10.1
	Others	179	9.9
	Total	**1800**	**100**
Wife Occupation before Covid	House wife/ Unemployed	1555	86.3
	Daily wages/labourer	44	2.4
	Self- employment/ business	13	0.7
	MGNREGA	5	0.2
	Government Employee	21	1.1
	Private Employee	150	8.3
	Others	12	0.6
	Total	**1800**	**100**
Wife Occupation during Covid (Mar 2020- Dec 2021)	House wife/ Unemployed	1691	93.9
	Daily wages/labourer	27	1.5
	Self - employment/ business	7	0.3
	Government Employee	21	1.1
	Private Employee	52	2.8
	Others	2	0.1
	Total	**1800**	**100**
Husband Occupation before Covid	Unemployed	23	1.3
	Daily wages/labourer	607	33.7
	Self-employment/ Business	328	18.2
	Government Employee	78	4.3
	Private Employee	728	40.4
	Others	36	2
	Total	**1800**	**100**
Husband Occupation during Covid (Mar 2020- Dec 2021)	Unemployed	776	43.1
	Daily wages/labourer	345	19.2
	Self- employment/ Business	207	11.5
	Government Employee	80	4.4
	Private Employee	380	21.1
	Others	12	0.7
	Total	**1800**	**100**

3.I.1 Religion of the sampled women

The District wise percent distribution of the Religion of the sampled women is provided in the Table 3.1. Hindu Religion was the majority with 86.30 percent compared to other religions. Muslim Women were found to be 7 percent and Christian 6.4 per cent.

3.I.2 Community of the sampled women

Community was categorised based on the caste of the head of the household. Among the 1800 sample women, 56.4 percent belong to backward class, 14.6 percent belong to most backward class, 20.1 belong to scheduled caste, 4.1 percent belong to scheduled tribe and remaining other community.

3.I.3 Educational background of the sampled women

Out of 1800 sampled women, 50.8 percent were graduates (37 percent -under graduates; 13.8 percent – Post graduates), 2 percent completed primary school and 0.5 percent had no formal education and others as mentioned in Table 3.1.

3.I.4 Educational background of the Husband of sampled women

Out of 1800 sampled women, 20.7 percent of their husbands had no formal education, 16.7 percent completed Senior secondary schooling and only 16.9 percent were graduates as in Table 3.1

3.I.5 Occupation of the sampled women before COVID and during COVID (March 2020 – December 2021)

Table 3.1 also presents the percent distribution of Occupation of the sampled women before and after COVID period. Before COVID, among the 1800 sampled women, 86.3 percent of the women were housewife, 8.3 percent were private employees and 2.4 percent were daily labourers.

During the COVID period (March 2020- December 2021). among 1800 sampled women, 93.9 percent of the women were housewife, 2.9 percent were private employees and 1.5 percent was daily labourers. From the table 3.1 it is seen that housewife had increased by 7.5 percent during COVID and other working women categories were decreased.

3.I.6 Occupation of the Husband of sampled women before COVID and during COVID (March 2020 – December 2021)

The percent distribution of Occupation of the husbands of sampled women before and after COVID period is shown in Table 3.1. Among the 1800, 40.4 percent of their husband was private employees and only 1.3 percent was unemployed before COVID Endemic.

During COVID period (March 2020- December 2021). Among the 1800 sampled women, 21.1 percent of their husbands were private employees and 43.1 percent were unemployed during COVID. From the above mentioned, it is seen that unemployed husbands had increased by 41.8 percent during COVID.

EFFECT OF COVID

Table 3.2 Effect of COVID

Factors	Category	Frequency	Percentage
Lost job during Covid (Mar 2020- Dec 2021)	Yes	970	53.9
	No	830	46.1
	Total	**1800**	**100**
Got new job locally	Yes	69	7.1
	No	901	92.9
	Total	**970**	**100**
Mother affected by COVID during their Pregnancy (n=1800)	Yes	39	2.2
	No	1761	97.8
	Total	**1800**	**100**
Family members were affected by COVID during	Yes	78	4.3
	No	1722	95.7
	Total	**1800**	**100**
Mother whose area was under a containment zone	Yes	277	15.4
	No	1523	84.6
	Total	**1800**	**100**
Overall impact of COVID	Yes	339	18.8
	No	1491	81.2
	Total	**1800**	**100**

3.I.7 Loss of Job of the Husbands of sampled women during COVID (March 2020 – December 2021)

About 54 percent of husbands lost their job during COVID period which constitutes more than half the sampled women families which affected their economic source and many others.

3.I.8 Percent of Husband of sampled women got Local Job during COVID (March 2020 – December 2021)

Among 970 husbands who lost their job, only 7.1 percent of them got job locally during COVID whereas 92.9 percent remained unemployed.

3.I.9 Family COVID history during Pregnancy of the sampled women

As shown in Table 3.2, only 2.2 percent of sampled women seemed to be affected by COVID during their pregnancy among 1800 women.

And 4.3 percent of the women family members were affected by COVID during the sampled women pregnancy.

Around 15 percent of the mothers' livelihood area was in the containment zone during the Endemic. Even though the prevalence of COVID among the sampled women and their family seem to be negligible.

Qualitative Survey

The one-on-one In-depth interviews was conducted among 127 sampled women

3.I.10 Distribution of the sample interviews

Out of 127 interviews, 39 interviews were done among the health care workers and 88 interviews were done among the women who was pregnant during COVID.

Table 3.3 Distribution of the sampled interviews

Name of the Districts	No. of interviews in Urban	No. of interviews in Rural	No. of interviews in Tribal	HCWs (VHN/ ASHA/ AWW)	Total
Ariyalur	5	5	5	6	21
Dharmapuri	5	5	4	7	21
Nilgiris	4	5	5	8	22
Tirunelveli	5	10	NA	6	21
Ramanathapuram	5	10	NA	6	21
Virudhunagar	5	10	NA	6	21
Total	**29**	**45**	**14**	**39**	**127**

3.II REPRODUCTIVE HEALTH SERVICES

In this section Contraception services, abortion services, unplanned pregnancy are discussed in detail under Quantitative survey and mainly about contraception services under Qualitative survey.

Quantitative Survey

3.II.1 Abortion services

From the Table 3.4 shown below, its reported that 6.3 percent of women among 1800 had abortion or miscarriage during the COVID time. Among them majority of them belong Dharmapuri district and Ramanathapuram district with 28 percent and 26 percent (Table 3.5) and Tirunelveli had nil abortion or miscarriage during COVID period.

Table 3.4 Percent of sampled women who had abortion or miscarriage during COVID time

	Frequency	Percentage
Yes	113	6.3
No	1687	93.7
Total	**1800**	**100**

Table 3.5 District wise percent of sampled women who had abortion or miscarriage during COVID time

District	Frequency	Percentage
Ariyalur	22	19
Dharmapuri	32	28
Nilgiris	23	20
Tirunelveli	0	0
Ramanathapuram	29	26
Virudhunagar	7	6
Total	**113**	**100**

It was reported that almost 57 percent of 113 women received abortion services at the hospital they sought their prenatal care (Table 3.6)

Table 3.6: percent who got abortion services at the hospital they sought care (n=113)		
Sought abortion services	Frequency	Percentage
Yes	64	56.6
No	49	43.4
Total	**113**	**100**

Table 3.7 depicts that among the 64 women who got abortion services at the hospital they sought their prenatal care, about 72 percent of them received the service from a government health care facility, at either a Health sub centre(HSC) or Primary Health Centre(PHC) or block PHC or District government hospital or government mobile clinic during the COVID period and 28.1 percent from either a private hospital or a private clinic.

Table 3.7 Health care facility where abortion was performed at the hospital they sought care (n=64)		
	Frequency	Percentage
Government Hospital (HSC/PHC/Block PHC/District Hospital/ Govt mobile Clinic)	46	71.9
Private (Private Hospital/ Clinic /Dispensary	18	28.1
Total	**64**	**100**

From the Table 3.8 it is noted that out of 64 women who received abortion services , about 69 percent of abortion was done by the trained health care worker such as Doctor, Nurse, ASHA and 31.2 percent was done by Dai.

Table 3.8 who performed the abortion (n=64)		
	Frequency	Percentage
Health care workers (Doctor / Nurse / Asha)	44	68.8
Dai	20	31.2
Total	**64**	**100**

Among 113 women who had abortion during COVID, 49 women (43 percent) received abortion services from facilities other than the hospital they sought their prenatal care. Out of which majority of 80 percent of abortion was done at a private center such as private hospital, clinic, dispensary and 16.3 percent of abortion was done at government facility different from their routine prenatal care facility, 2 percent reported that they received abortion from others except the practitioners.

Table 3.9 Abortion performed other than the hospital they sought care (n=49)		
Facility	**Frequency**	**Percentage**
Government Hospital (HSC/PHC/Block PHC/District Hospital/ Govt mobile clinic)	8	16.3
Private (Private Hospital/ Clinic /Dispensary)	39	**79.5**
Others	2	4.0
Total	49	100

Safe abortion is defined as those who sought abortion services from the health care facilities and by trained health care workers. It was reported that 113 women had miscarried or had abortion during COVID. Among the reported abortion, 98.2 percent

got safe abortion service and 1.8 percent used unsafe abortion practice as shown in Table 3.10.

Table 3.10 Percent of Women got safe abortion during COVID (n=113)		
	Frequency	**Percentage**
Yes	111	98.2
No	2	1.8
Total	113	100

3.II.2 Counselling on Contraceptive methods

Contraceptive methods are two types: Permanent and temporary. Permanent methods include Male and Female sterilization. Temporary methods include Condoms, pills, Injectable, Intrauterine devices such as Copper T, spacing method, etc.

Among the 1800 sampled women, almost 63 percent of women received Counseling on contraceptive methods such as Permanent method for Multigravida mothers and Temporary methods such spacing for Primi mothers.

Table 3.11 Percent of mothers Received Counseling on Contraceptive methods (n=1800)		
	Frequency	**Percentage**
Yes	1132	62.9
No	668	37.1
Total	**1800**	**100**

Among the 1132 women who received Counseling on Contraceptive methods, Ariyalur district stands on top with people who received Counseling with 86.7 percent

and Dharmapuri district with 44.3 percent is at the bottom compared to other sampled districts.

Table 3.12 District wise percent of women received Counseling on Contraceptive methods (n=1132)

District	Frequency	Percentage
Ariyalur	260	86.7
Dharmapuri	133	44.3
Nilgiris	163	54.3
Tirunelveli	193	64.3
Ramanathapuram	140	46.7
Virudhunagar	243	81.0
Total	1132	62.9

3.II.3 Contraception services

Out of 1800 women, 50 women had miscarriage before even registering their pregnancy henceforth 1750 women will be considered here.

Table 3.13 pictures that out of 1750 women, 15.7 percent used permanent method of contraception i.e., Sterilization among them 16.7 percent usage reported during the first wave of COVID and 2.6 percent during the second wave of COVID.

Table 3.13 Permanent methods VS Time of Event (by Wave)					
			Time of Event (by Wave)		**Total**
			1st Wave	**2nd Wave**	
Permanent methods	No	Count	1361	114	1475
		% within Time of Event (by Wave)	83.3%	97.4%	84.3%
	Yes	**Count**	**272**	**3**	**275**
		% within Time of Event (by Wave)	**16.7%**	**2.6%**	**15.7%**
Total		Count	1633	117	1750
		% within Time of Event (by Wave)	100.0%	100.0%	100.0%

Temporary methods include both traditional and modern methods of contraception. It was used by 25 percent of women among them 25.4 percent usage was reported during first wave and 18.8 percent was reported during the second wave which is detailed in Table 3.14. Temporary method usage is almost 10 percent higher than the permanent method.

Table 3.14 Temporary methods VS Time of Event (by Wave)					
			Time of Event (by Wave)		**Total**
			1st Wave	**2nd Wave**	
Temporary methods	No	Count	1219	95	1314
		% within Time of Event (by Wave)	74.6%	81.2%	75.1%
	Yes	**Count**	**414**	**22**	**436**
		% within Time of Event (by Wave)	**25.4%**	**18.8%**	**24.9%**
Total		Count	1633	117	1750
		% within Time of Event (by Wave)	100.0%	100.0%	100.0%

Modern methods such injectable, pills, condom, IUD, etc were used by 40 percent of women among them 41 percent usage was during the first wave and 20.5 percent usage during the second of COVID.

Table 3.15 Modern methods VS Time of Event (by Wave)					
			Time of Event (by Wave)		**Total**
			1st Wave	**2nd Wave**	
Modern methods	No	Count	964	93	1057
		% within Time of Event (by Wave)	59.0%	79.5%	60.4%
	Yes	**Count**	**669**	**24**	**693**

		% within Time of Event (by Wave)	**41.0%**	**20.5%**	**39.6%**
Total		Count	1633	117	1750
		% within Time of Event (by Wave)	100.0%	100.0%	100.0%

3.II.4 Teenage pregnancy

It was reported that 211 percent of women got married in their teens. Among the teenage pregnancy 10.5 percent of women reported being married at age of 18 years and less.

Table 3.16 Age at marriage less than 20 age (n=1800)

Age	Frequency	Percentage
15	6	0.3
16	11	0.6
17	27	1.5
18	145	8.1
19	190	10.6
Total	**379**	**21.1**

Among the sampled districts, Dharmapuri district stands out in percent of teenage marriage with 27.7 percent, secondly Ariyalur district with 25.3 percent and Ramanathapuram district stands least with 11.7 percent compared to other districts.

Table 3.17 District wise percent of Teenage marriage		
District	**Frequency**	**Percentage**
Ariyalur	76	25.3
Dharmapuri	**83**	**27.7**
Nilgiris	64	21.3
Tirunelveli	50	16.7
Ramanathapuram	35	11.7
Virudhunagar	71	23.7
Total	379	21.1

Teenage pregnancy was reported to be 8 percent among 1800 sampled women (Table 3.18)

Table 3.18 Percent of Teenage Pregnancy (n=1800)		
Teenage Pregnancy	**Frequency**	**Percentage**
Yes	**144**	**8**
No	1656	92
Total	1800	100

Among the reported Teenage pregnancy, Ariyalur district was comparatively high with 12.7 percent, secondly Dharmapuri district with 9.7. This data coincides and proves significant when referred to the district percent of Teenage marriage (table 3.17) where both these districts was high in teenage marriage compared to other districts.

Table 3.19 District wise percent of Teenage Pregnancy		
District	**Frequency**	**Percentage**
Ariyalur	**38**	**12.7**
Dharmapuri	29	9.7
Nilgiris	27	9.0
Tirunelveli	21	7.0
Ramanathapuram	5	1.7
Virudhunagar	24	8.0
Total	**144**	**8.0**

Table no : Contraception services - TNHSRP results VS NFHS 5 results														
	TNHSRP							NFHS -5						
	Ariyalur (A)	Dharmapuri (D)	Nilgiris (N)	Ramanathapuram (R)	Tirunelveli (T)	Virudhunagar (V)	Total (To)	A	D	R	N	T	V	To
Any method	51.0	20.3	33.0	32.3	28.0	64.3	38.2	61.4	70	72.2	77.9	69.8	68.1	68.6
Any modern method	49.7	20.3	28.0	32.3	28.0	64.0	37.1	60.2	68	68.1	74.6	64.4	66.3	65.5
Limiting methods	21.0	9.7	4.3	16.7	8.7	31.3	15.3	49.6	61.1	56.6	68.9	55.1	61.2	57.9
Spacing methods	33.0	13.0	24.7	20.0	19.7	35.0	24.2	10.6	7	11.5	5.8	8.8	5.1	7.6

The Overall usage of any contraception method was found to be 38.2 percent in this study which was low compared to the NFHS 5 result 68.6 percent. And the same was pictured in the results of usage of any modern method and limiting methods where the result of this study was comparatively low to NFHS 5 results. Except spacing methods where the usage was found to be 35 percent which was high in accordance with NFHS 5 result 7.6 percent.

The detailed district wise data is displayed in the table above. The above results pictures that contraception service usage was majorly disrupted during the Pandemic period and the reasons were also discussed in the previous sections.

3.II.5 Qualitative Survey

Reproductive Health Services

The major service under reproduction is usage of Contraceptives / Family planning methods.

Three major themes emerged from thematic analysis of the participants interviews namely:

I. Short term influence
II. Positive measures
III. Identified Gaps

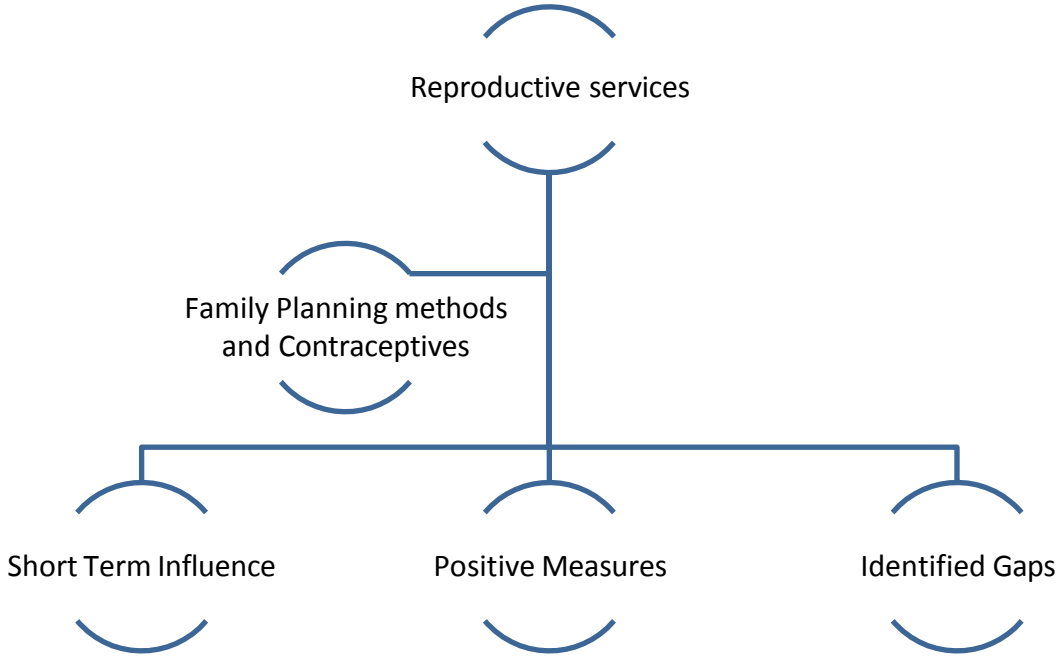

Figure 3.1 Thematic analysis of reproductive services during COVID

3.II.5.a Short term influence

Short term influence was further sub themed into Direct Short term influence and Indirect Short term influence of COVID and its measures in utilization of reproduction services

- **Direct Short term Influence**

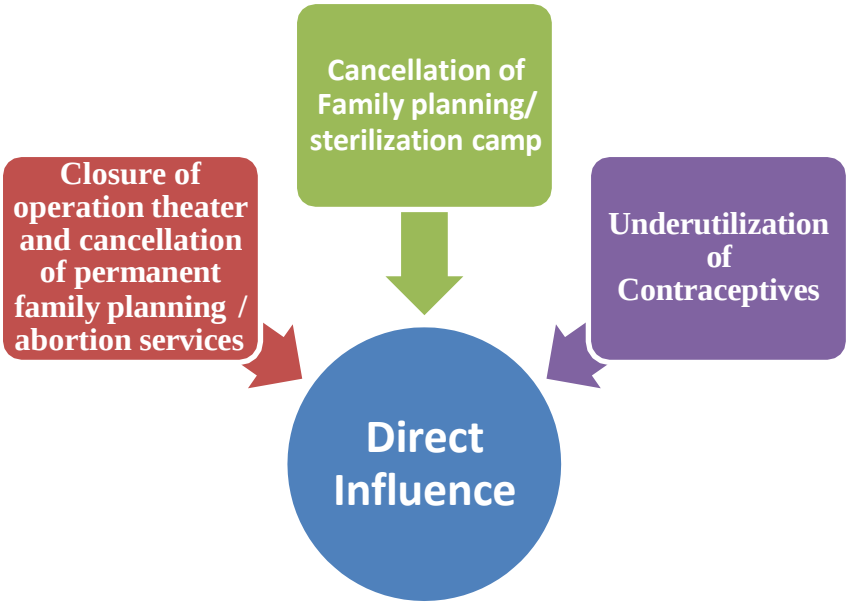

Figure 3.2 Thematic analysis of direct influence of reproductive services during COVID

Closure of Operation Theater and cancellation of permanent family planning / abortion services

It was observed from the interviews that due to COVID, Family planning Operation theater was closed henceforth family planning and abortion services was cancelled and not performed.

A VHN aged 24 exclaimed that,

" Due to closure of family planning operation theatres, sterilization was not performed and no abortion services was done"

Cancellation of Family planning / Sterilization camp

In order to control and prevent COVID strict measures were followed. One such important measure was social distancing and avoid crowd. It was reported that due to which all the Family planning camps were cancelled.

A SHN stated that.

"Due to COVID, it was unable to conduct family planning camps"

Underutilization of Contraceptives

Many Health care workers stated that Public were not coming forward to the contraceptive measures inspite of their accessibility and availability. A 30 year old VHN reported that,

"During COVID family planning theatre was closed, Sterilization and abortion services were not done and also due to spread of COVID, family panning camps were not conducted. Even though other temporary contraceptive measures such as Chhaya, Antara, Mala-D, Copper-T, and Condom was available in PHC but public didn't come forward to use those measures"

Even some Women reported that they are not interested in using contraceptives after delivery.

- **Indirect Short term Influence**

  The two following indirect impact factors implies the impact of COVID measures on Family planning methods which resulted in increase in pregnancies during Endemic compared to Pre – Endemic period.

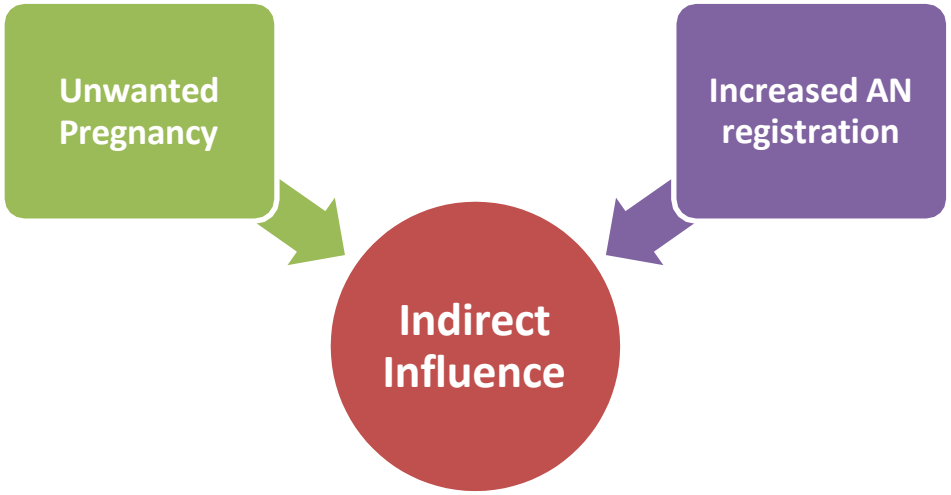

Figure 3.3 Thematic analysis of indirect influence of reproductive services during COVID

Unwanted Pregnancy

Unwanted Pregnancy, High Order Births (HOB), and High risk pregnancy seems to be increased during the COVID Lockdown period.

A UHN stated that.
“Higher order birth was increased during lockdown for example 50%.”

Another response was,
“High order pregnancy, high risk pregnancy increased during Endemic compared to before”

Increased Antenatal (AN) Registration

Majority of the health care workers registered that ANC registration has increased during Endemic compared to Pre – COVID period.
A VHN claimed that,
“ AN registration has increased during compared to before for example before it was 13 during COVID it was 20 at the sub center level”

3.II.5.b Positive measures

Reported that all temporary contraceptive measures were easily accessible and available at all time in health care centres starting from Sub centre available. It seemed that even though the sterilisation and abortion services could not be offered during COVID, it was made sure atleast the temporary measures were available

Almost all VHNs commented that,

“Contraceptive pills Mala-D, Chhaya, Emergency contraception pills, Condom and Copper IUD or Loop are quite available at the SHC, PHC and DPHs”

3.II.5.c Identified gaps

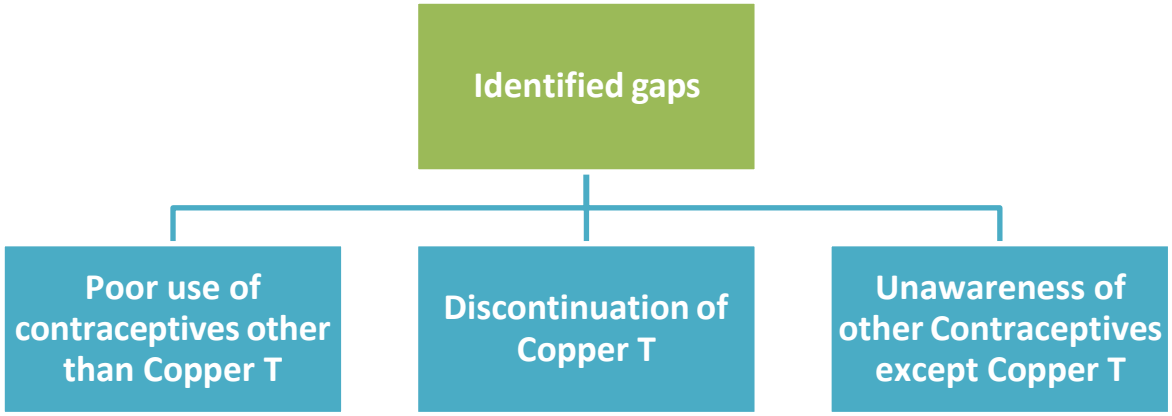

Figure 3.4 Thematic analysis of identified gaps of reproductive services during COVID

Poor use of contraceptives other than Copper T

It was found that majority of the participants has used only Copper T other than sterilization.

Discontinuation of Copper T

Most of the Copper T users stated that they removed Copper T within 45 days to 3 months as they experienced physical discomfort, abdominal and hip pain, also due to discomfort during their menstrual period.

Respondent aged 29 shared,

"Copper T was inserted for me after my delivery but I removed copper T after 3 months in private hospital as I was feeling discomfort during my menstrual periods"

Another response was,

“I used Copper T after my child delivery but I had pricking feeling while walking or sitting, and also I was losing weight so I removed it in 45 days”

Unawareness of other Contraceptives except Copper T

A 32 year old Multigravida respondent stated,

“I have not done sterilization. Each child has three years difference. Also, Other than Copper-T I am not aware of other contraceptive methods”

One more primi respondent aged 23 shared,

“ I do not know about contraception other than Copper T”

Key Findings of Qualitative Survey

- During Endemic it was observed that increase in pregnancies which may be the result of closure of family planning OTs
    - but it was also observed public are still not comfortable in using Other Contraceptive measures which may due to their incomplete knowledge about the safety and effects of all the contraception measures
    - discontinuation of contraception in half even when used, For example Copper T was used predominantly but equally discontinued due to many reasons
    - lack of awareness of other available contraception which are easily available and accessible in health centres and also their importance
- It was observed that awareness is required about all family planning methods and detailed importance of usage of contraception.

3.III. MATERNAL HEALTH SERVICES

In this section Antenatal care, Antenatal registration, Counseling of AN mothers and other maternal care services impact are discussed.

Quantitative Survey

3.III.1 Antenatal registration

Among 1800 women, total number of women registered was 1704. Out of which 96.2 percent (1641 women) registered their pregnancy during first trimester.

Table 3.20 Percent of Mothers registered their pregnancy during 1st Trimester (n=1598)

	Frequency	Percentage	(NFHS-5)
Yes	1641	96.2	77.4
No	63	3.8	
Total	1704	100	

Among the mothers who registered their pregnancy during their first Trimester (12 weeks), the mothers in each sampled districts were above 92 percent and not less than NFHS 5 report (Table 3.21).

Table 3.21 District wise percent of mothers registered their pregnancy during 1st Trimester

District	Frequency	Percentage	NFHS-5
Ariyalur	294	98.0	65
Dharmapuri	263	94.27	78.4
Nilgiris	285	96.28	80
Tirunelveli	242	92.37	84.5
Ramanathapuram	279	98.59	82.9
Virudhunagar	278	97.89	65
Total	1641	96.30	

Out of 61 mothers who had not registered during first trimester, 32 percent of Mothers from Ramanathapuram district not register during first trimester of their pregnancy during COVID which was comparatively high compared to other districts. Least was reported in Tirunelveli district, second least was both Ariyalur and Virudhunagar district with almost 10 percent.

Table 3.22 District wise percent of mothers not registered their pregnancy during 1st Trimester (n=61)		
District	Frequency	Percentage
Ariyalur	6	9.52
Dharmapuri	16	25.40
Nilgiris	11	17.46
Tirunelveli	4	6.35
Ramanathapuram	20	31.75
Virudhunagar	6	9.52
Total	63	100.00

Among the registered mothers, 4 percent registered through mobile phone. And it was reported that the 68 mothers who registered over mobile phone all belong to Ariyalur district.

Table 3.23. Percent of mothers registered pregnancy over phone		
	Frequency	**Percentage**
Yes	68	4.0
No	1636	96.0
Total	**1704**	**100**

3.III.2 Mother and Child Protection card

It is observed from the Table 3.24 that 187 mothers had delay in receiving Mother and Child Protection (MCP) card. Among them, 8 percent didn't receive the MCP card, for about 53 percent of women MCP card was distributed with a month delay and 39 percent of women received after a week of registration.

Table 3.24 Percent of mothers had delay in receiving MCP card (n=187)		
	Frequency	**Percentage**
After a week	73	39.0
After a month	99	52.9
No card was distributed	**15**	**8.0**
Total	**187**	**100**

3.III.3 Antenatal Care

Out of 1800 women, 113 had abortion and the remaining 1687 women are considered here. Table 3.25 describes the percent of women received atleast four Antenatal care (ANC). Among the 1687 women 95.4 percent of women that is 1610 women received four AN care which coincides with NFHS 5 report.

Table 3.25 Percent of Women received at least four AN care			
	Frequency	Percentage	(NFHS-5)
Yes	**1610**	**95.4**	**89.90**
No	77	4.6	
Total	1687	100.00	

Women from Ariyalur, Tirunelveli, Ramanathapuram and Virudhunagar districts received four ANC with100 percent. Secondly Dharmapuri with 99 percent and Nilgiris district has least record with almost 74 percent.

Table 3.26 District wise percent of women received at least four AN care		
District	Frequency	Percentage
Ariyalur	278	100
Dharmapuri	264	98.5
Nilgiris	**204**	**73.7**
Tirunelveli	300	100
Ramanathapuram	271	100
Virudhunagar	293	100
Total	1610	95.4

Among the pregnant women who received four AN care, 33 pregnant women was COVID positive as seen in Table 3.27 inspite of which they attended adequate AN visit whereas among the pregnant women who didn't receive four AN care only1 mother was COVID positive.

Table 3.27 pregnant women affected with COVID received at least four AN care.				
	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	33	97.1	1577	95.4
No	1	2.9	76	4.6
Total	34	100	1653	100

Among the pregnant women who received four AN care, 71 pregnant women family members were COVID positive as seen in Table 3.28 inspite of which they reported adequate AN visit whereas among the pregnant women who didn't receive four AN care only 4 pregnant women family members was COVID positive.

Table 3.28 Mothers who received at least four AN care from the families affected with COVID

	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	71	94.6	1539	95.4
No	4	5.3	73	4.5
Total	75	100	1612	100

Among the 1610 pregnant women who received four Antenatal care, 234 mothers were under Containment zone and among those 77 who didn't receive four AN care only 28 were under containment zone.

Table 3.29 Women lived in the Containment zone and received at least four AN care.

	Containment zone		Non- containment zone	
	Frequency	Percentage	Frequency	Percentage
Yes	234	89.3	1376	96.5
No	28	10.6	49	3.4
Total	262	100	1425	100

Out of 1687 mothers, only 3.8 percent of pregnant women received Antenatal care less than 3 times. Among them except 1 pregnant woman who belong to Dharmapuri district, remaining 63 belong to Nilgiris district as seen in table 3.31.

Table 3.30 Percent of pregnant women **received less than 3 ANC due to COVID**		
	Frequency	Percentage
Yes	64	3.8
No	1623	96.2
Total	1687	100

Table 3.31 District wise percent of pregnant women **received less than 3 ANC due to COVID**		
District	Frequency	Percentage
Dharmapuri	1	1.6
Nilgiris	63	98.4
Total	64	100

Table 3.32 pictures the record of basic parameters tested during the antenatal visits of the mothers which include weight, blood pressure, Urine sample test, Blood sample test, gestational diabetes mellitus test, abdominal examination. From the table it is seen that majority of pregnant women were tested more than three times which is good indicator and shows that the mothers were monitored regularly even during the COVID.

Table 3.32 Antenatal Check-ups		
Parameters	No of times check-ups done	
	Less than 3 times	Less than 6 times
Weight	48	293
BP	60	429
Urine	304	1102
Blood	346	1068
Abdominal Examination	195	861
GDM	1181	1661

Counseling given to the mothers during their ANC visits.

Counseling about major and main complications of pregnancy includes bleeding, convulsions, prolonged labor, abdominal pain and elevated blood pressure. Among the 1687 women (excluded abortion/miscarriage) 841 were Primi-mothers and 846 multi-gravida mothers. From the table, irrespective of primi or multi gravida gravida all mothers were equally educated and counselled about the pregnancy complications in order of primitive measures and to reduce their sudden anxiety during the labor period. Among the complications, majority of women reported that they were given Counseling regarding the bleeding (above 60percent) and abdominal pain (above 70 percent) than other complications.

Table 3.33 Counseling about the signs of pregnancy complications during AN visits				
Complications	Primi (n=841)		Multi (n=846)	
	Frequency	Percentage	Frequency	Percentage
Bleeding	512	60.88	531	62.77
Convulsions	275	32.70	282	33.33
Prolonged labor	497	59.10	473	55.91
Abdominal pain	612	72.77	604	71.39
Elevated blood pressure	417	49.58	455	53.78

From the table, Primi mothers reported high percent about the post natal care Counseling. Among the care, majority of women reported that they were given counseling regarding the Kangaroo mother care 81 percent of Primi mothers and 61 percent of multigravida mothers which is one of the important post natal care to be followed immediately after the child delivery for improving the child's physiological and emotional health.

Table 3.34 Counseling about the Post natal care

	Primi (n=841)		Multi (n=846)	
	Frequency	Percentage	Frequency	Percentage
Institutional delivery	542	64.45		41.96
Cord care	519	61.71		66.19
Breast feeding	461	54.82		39.83
KMC	679	80.74		61.35
Family planning	417	49.58		40.31
COVID Care	392	46.61		46.22

3.III.4 Tetanus Toxoid injection

Reported; out of 1800 women, only 1640 women received Tetanus Toxoid (TT) injections during their pregnancy amidst the COVID time. Table 3.35 depicts the percent of mothers received 2 TT injections and 1 TT injection during their pregnancy. Among the mothers, 91.6 percent received 2 TT injections and 8.4 percent of women received only 1 TT injection during their pregnancy.

Table 3.35 Percent of Mothers received TT injections during their pregnancy (n=1640)

	Frequency	Percentage
2TT	1503	91.6
1TT	137	8.4
Total	**1640**	**100**

Among the pregnant women who received 2 TT injections during pregnancy, about 96 percent belong to both Dharmapuri and Virudhunagar district; Secondly Ramanathapuram district 95 percent, around 79 percent belong to Nilgiris district.

Table 3.36 District wise percent of Mothers received 2 TT injections during their pregnancy (n=1640)

District	Frequency	Percentage
Ariyalur	250	89.93
Dharmapuri	253	96.56
Nilgiris	190	78.19
Tirunelveli	278	92.67
Ramanathapuram	251	95.08
Virudhunagar	281	95.90
Total	1503	91.65

3.III.5 Iron Folic acid tablets

Intake of iron folic acid (IFA) supplements is a necessary action during pregnancy. It is seen from Table 3.37 that only 7.2 percent of pregnant women received less than 100 IFA tablets from the government facility during COVID.

Table 3.37 Percent of Mothers received less than 100 IFA tablets from government. (n=1687)

	Frequency	Percentage
Yes	130	7.2
No	1557	92.8
Total	1687	100

Among the 130 pregnant women who received less than 100 IFA, only 4 pregnant women were COVID positive during the Endemic period as shown in Table 3.38. Majority were COVID negative yet not received adequate IFA tablets.

Table 3.38 Mothers affected with COVID and received less than 100 IFA tablets (n=1687)

	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	4	11.8	126	7.7
No	30	88.2	1527	92.3
Total	34	100	1653	100

Among the 130 mothers who received less than 100 IFA, 13 pregnant women' family members reported being COVID positive during the Endemic period as shown in table 3.39.

Table 3.39 Family Members affected with COVID received less than 100+ IFA tablets.

	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	13	17.4	117	7.3
No	62	82.6	1495	92.7
Total	75	100	1612	100

3.III.6 Albendazole tablet

Albendazole tablet is used for deworming during pregnancy which should be done after 1st trimester of pregnancy. A single dose of 400 mg of Albendazole is recommended based on National guidelines for deworming in Pregnancy.

From table 3.40, it is observed that 92 percent of pregnant women received Albendazole tablets for deworming from health care worker during COVID.

Table 3.40 Mothers received Albendazole tablet for deworming from Health worker. (n=1687)

	Frequency	Percentage
Yes	1553	92
No	134	8
Total	1687	100

3.III.7 Nutritional Supplement

Among the 1687 pregnant women, 93.9 percent received nutritional supplement during their pregnancy in Endemic period.

Table 3.41 Mothers received nutritional supplement during their pregnancy (n=1687)		
	Frequency	Percentage
Yes	1584	93.9
No	103	6.1
Total	1687	100

Among the women who received nutritional supplement during their pregnancy, about 99 percent belong to Nilgiris district, 96 percent belong to Ramanathapuram district and rest as shown in Table 3.42.

Table 3.42 District wise percent of Mothers received nutritional supplement during their pregnancy (n=1687)		
District	**Frequency**	**Percentage**
Ariyalur	260	93.53
Dharmapuri	244	91.04
Nilgiris	**273**	**98.56**
Tirunelveli	265	88.33
Ramanathapuram	261	96.31
Virudhunagar	281	95.90
Total	1584	93.89

Among the 1584 pregnant women who received nutritional supplement, 30 mothers was COVID positive during the Endemic period and among the 103 mothers who didn't

receive nutritional supplement, only 4 pregnant women was COVID positive as shown in Table 3.43.

Table 3.43 pregnant women affected with COVID received nutritional supplement during their pregnancy				
	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	30	88.2	1554	94
No	4	11.8	99	6
Total	34	100	1653	100

Among the 1584 pregnant women who received nutritional supplement, 66 pregnant women' family members were COVID positive during the Endemic period and among the 103 mothers who didn't receive nutritional supplement, only 9 mothers' family members was COVID positive as shown in Table 3.43.

Table 3.44 Mothers received nutritional supplement during their pregnancy while their family members were affected with COVID-19				
	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	66	88	1518	94.2
No	9	12	94	5.8
Total	75	100	1612	100

3.III.8 Delivery

Among the 1687 pregnant women, 51.4 percent had Caesarean section(C-section) for baby delivery and 48.6 percent had normal delivery during labor.

Table 3.45 Type of baby delivery (n=1687)		
	Frequency	Percentage
Normal	820	48.6
C-section	867	51.4
Total	1687	100

Among the facilities delivered, private hospital percentage is higher both in Normal and C- section delivery with 32.1 percent and 51.8 percent. In PHC 23.9 percent of normal delivery and 11.9 percent of C-section was conducted during the Endemic period. And it was reported that 1 normal delivery was conducted at home.

Table 3.46 facilities where baby delivered						
Facilities	Normal		C-section			
	Frequency	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
PHC	196	23.9	103	11.9	299	17.72
Block PHC	119	14.5	81	9.3	200	11.86
District Hospital	241	29.4	234	27	475	28.16
Private Hospital	263	32.1	449	51.8	713	42.26
Home	1	0.1	0	0	1	0.06
Total	820	100	867	100	1687	100

Among the 1687 delivery, 1586 was during 1st wave of COVID and 101 deliveries during the 2nd wave of COVID period and the facility wise distribution is detailed in Table 3.47 below.

Table 3.47 Delivery 1st wave VS 2nd wave				
Facilities	1st Wave		2nd Wave	
	Frequency	Percentage	Frequency	Percentage
PHC	276	17.40	23	22.77
Block PHC	187	11.79	13	12.87
District Hospital	454	28.63	21	20.79
Private Hospital	668	42.12	44	43.56
Home	1	0.06	0	0.00
Total	1586	100.00	101	100.00

51 percent of 1687 women received financial assistance from government for their delivery care and during the first wave of COVID women who received financial assistance is higher than who reported nil assistance whereas during the 2nd wave of COVID financial assistance received percentage is half the women who received nil assistance for their delivery care as shown in Table 3.48.b.

Table 3.48.a Financial Assistance received for delivery care (n=1687)		
	Frequency	Percentage
Yes	860	51
No	808	47.9
Don’t Remember	19	1.1
Total	1687	100

Table 3.48.b Financial Assistance received for delivery care – 1st wave vs 2nd wave (n=1687)				
Facilities	1st Wave		2nd Wave	
	Frequency	Percentage	Frequency	Percentage
Yes	823	51.89	37	36.63
No	747	47.10	61	60.40
Don’t Remember	16	1.01	3	2.97
Total	1586	100.00	101	100.00

Out of 1687 women 10 percent of them were referred to a higher level for delivery due to COVID. Among the reasons for referral, major reason reported was health worker on COVID duty (44 percent) secondly medical reasons of the mother (32 percent) as in Table 3.49.b.

Table 3.49.a Percent of women Referred to a higher level facility due to COVID for delivery (n=1687)

	Frequency	Percentage
Yes	168	10
No	1519	90
Total	1687	100

Table 3.49.b Reasons for referral (n=168)

Reasons	Frequency	Percentage
Health worker is on COVID duty	74	44.04
Health worker is tested positive for COVID	3	1.78
Myself / Family member was COVID +ve	2	1.19
My family members had symptoms of COVID	1	0.59
Other medical reasons	53	31.54
Other reasons	35	20.8

When the maternal service usage results of this study was compared to NFHS 5 results it was found to be that this study shows the high usage compared to the NFHS 5 results. The overall percent of women attended ANC in first trimester of pregnancy among sampled 6 districts in this study was 96.5 percent which was 19.1 percent higher than NFHS 5 result. Consumption of tablets in this study was 89.1 percent which was 12.4 percent higher than NFHS 5. Cesarean service was higher by 6.5 percent, Usage of TT injection service two and more time by 4.2 percent and only the consumption of IFA tablet was low by 11 percent than NFHS result. From the results tabulated below it was understood that inspite of COVID maternal service usage was not interrupted majorly and effective work done by the health care workers during the Pandemic period.

Table no : Maternal services - TNHSRP results VS NFHS 5 results

	TNHSRP							NFHS -5						
	Ariyalur (A)	**Dharmapuri (D)**	**Nilgiris (N)**	**Ramanathapuram (R)**	**Tirunelveli (T)**	**Virudhunagar (V)**	**Total (To)**	**A**	**D**	**R**	**N**	**T**	**V**	**To**
ANC in 1st Trimester	98.0	94.7	96.3	93.3	98.7	98.0	96.5	65	78.4	82.9	80	84.5	65	77.4
Received IFA tablets	73.3	85.7	93.3	90.7	85.3	98.0	87.7	99.2	99.1	97.5	99.6	100	99.4	98.7
2+ TT injection	86.3	90.7	67.0	92.7	88.3	94.7	86.6	83.1	89	76.3	84.9	80.1	78.6	82.4
Deworming tablets - Consumed	81.7	87.3	95.3	89.7	82.7	98.0	89.1	81.6	84.4	79.2	81.5	86.1	76.1	76.7
Cesarean section	59.7	45.1	53.1	55	40.6	53.9	51.4	57.3	29.1	47.4	42.3	60.2	50	44.9

3.III.9 Qualitative Survey

Maternal Care Services

The services under maternal care that are to be discussed are,

- AN registration
- Antenatal Care
- IFA tablets/ TT injection
- free and cashless delivery/caesarean section
- free provision of blood
- free diet
- free transport
- Postnatal Care

Three major themes emerged from thematic analysis of the participants interviews namely:

I. Short term influence
II. Positive measures
III. Identified Gaps

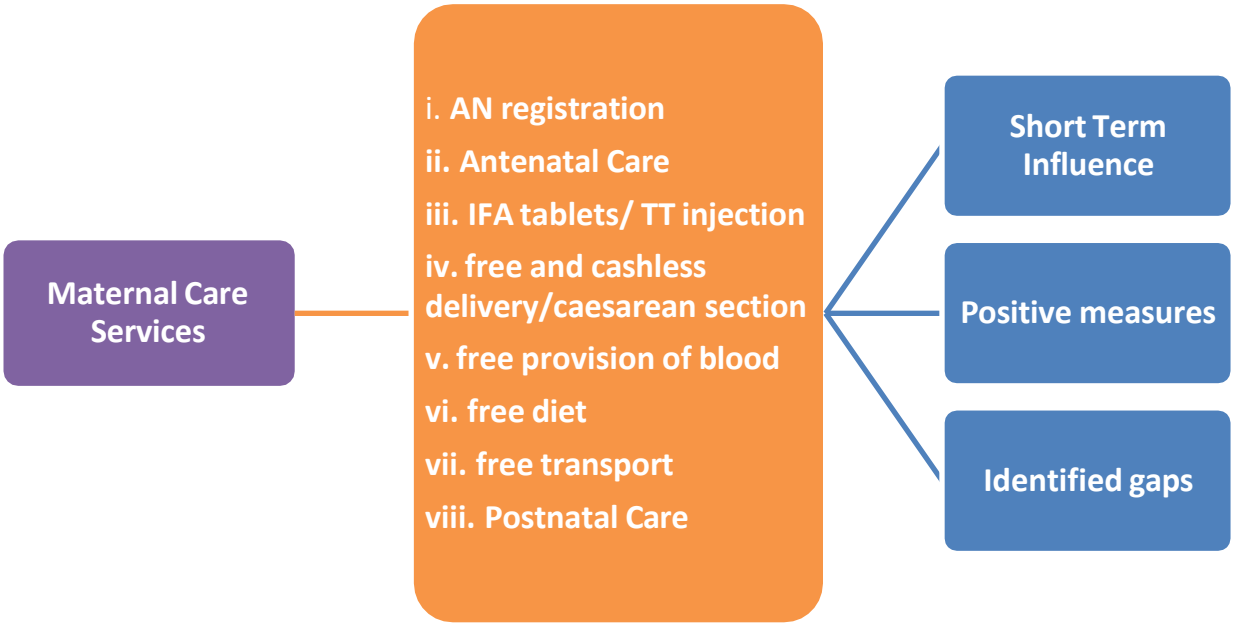

Figure 3.5 Thematic analysis of Maternal care services during COVID

3.III.9.a Short term Influence

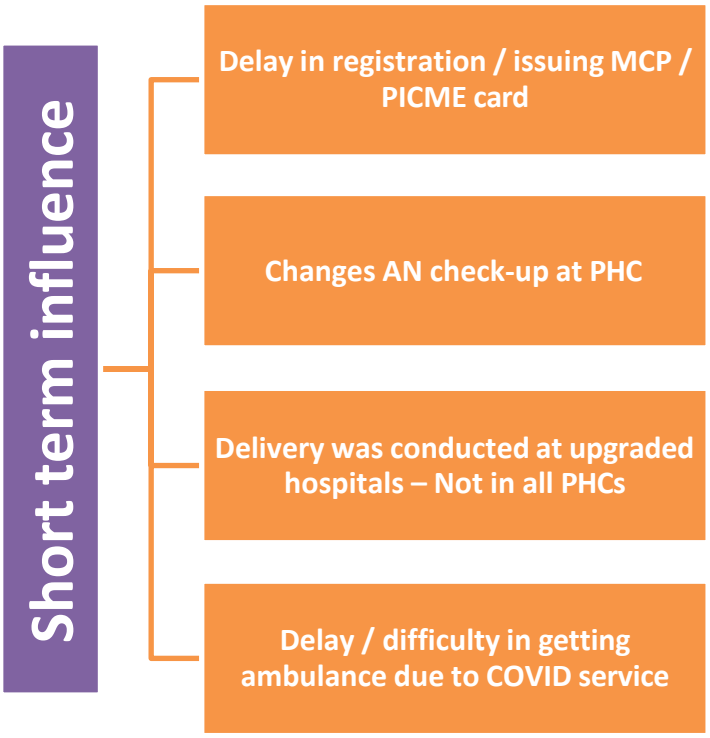

Figure 3.6 Thematic analysis of Short term influence of maternal care services during COVID

Delay in registration / issuing MCP / PICME card

During Endemic, health care workers were assigned additionally to COVID duties, due to which their routine work are interrupted and delayed, one such was Antenatal registration and issuing PICME card. Some of the responses from VHN were,

"PICME registration for Primi mothers are delayed due to error/ payment error in the data upload"

"During Endemic, due to additional duties routine work was delayed. Uploading of ANC and PNC data, delay in ANC registration and issuing MCP/ PICME card for about 1 month"

Changes AN check-up at PHC

"During COVID time VHN insisted to AN mother to get appointment to visit PHC for monthly check up on that previous day to avoid crowd" was the comment stated by 30 year old multigravida mother.

It was reported that PHC restricted to provide AN checkup to only 10 to 15 AN mothers per day to avoid the crowd and following the COVID protocols.

Delivery was conducted at upgraded hospitals – Not in all PHCs

"I got labor pain in the home and admitted in PHC. M.O from PHC referred to go GH by using 108" -29 year old muliti gravida mother

"During 9th month, pain started before my delivery date, so went to the PHC were I took my ANC checkups. Doctor examined me and referred me to GH. So got admitted in GH, after 6 hours I delivered baby by normal delivery" – 28 aged multigravida mother

It seemed that in some PHCs delivery was referred to the higher centres during Endemic.

Delay / difficulty in getting ambulance due to COVID service

Due to allotment of majority of vehicles for COVID, getting an ambulance for time was difficulty and some claimed that they waited for nearly an hour for ambulance.

"transport facility was not available" – 29 year old Multigravida mother

3.III.9.b Positive measures

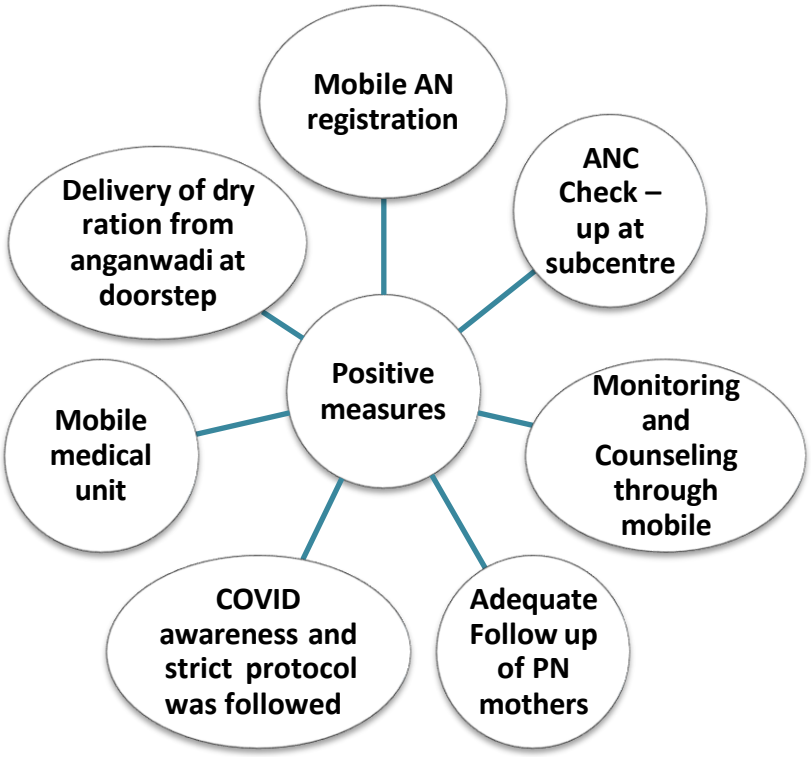

Figure 3.7 Thematic analysis of Positive measures of Maternal Care services taken during COVID

Mobile AN registration

In some areas VHN identified and visited the AN pregnant woman during COVID and registered some through Mobile when there was strict lockdown and were public transport facility was not available.

ANC Check –up at sub centre

A VHN responded,

"To avoid crowd and spread of COVID ANC check up was not done for all at PHC as like pre COVID time"

It was noted that in order to prevent overcrowding, ANC check-up in some places were done in sub center level henceforth it would easy for the AN women to travel distantly, reduce their waiting time and to minimize the exposure to the risk of disease.

Monitoring and Counseling through mobile

In order to minimize direct person contact and COVID exposure, Antenatal and Postnatal mothers were given Counseling through mobile calls and also their health status was monitored continuously through the calls. In person visit of Health care workers (HCW) to home was done only to the needed pregnant women. Also it was through their responses it was noted, the AN and PN were felt assured that they can contact the HCW whenever it was needed and depend on them.

"Due to COVID regular schedule was unable to maintain. Field visits for ANC and PNC mothers were not regularly due to COVID. Monitoring and Counseling to mothers was given through mobile" - VHN

"Assisted VHN in COVID duties. Counseling to ANC and PNC mothers and monitoring was done through mobile phones" - AWW

"VHN are contacted through mobile calls" - 32 year old Multigravida mother

Adequate Follow up of PN mothers

"After my baby's delivery, VHN followed and monitored our process through Mobile phone" 22 year old primi mother

Postnatal mothers were followed through the mobile calls and some home visits was done depending on the situation and need. It was observed that irrespective Endemic, PN mothers received adequate care.

COVID awareness and strict Protocol was followed

The following responses show that awareness of COVID was done and protocol was followed.

"During the Monthly visit of PHC, VHN gave awareness to precaution of Covid such as wear facemask, and Keep social Distance and Use Sanitizer hand wash and advised her don't come crowded time and also PHC itself restriction to provide AN care per day 10 to 15 members only allowed." - 31 year old multigravida mother

"During COVID time VHN insisted to AN mother to get appointment to visit PHC for monthly check-up on that previous day to avoid crowd" – 20 year old primi mother

Mobile medical unit

Observation from responses state that Mobile medical unit was helpful during Lockdown for the VHNs and HCWs to the inaccessible areas and reaching the beneficiaries to their locality.

Delivery of dry ration from anganwadi at doorstep

Anganwadi dry ration was delivered at door step or passed through neighbours once in 15 days to the beneficiaries.

"Anganwadi ration received it by door step"- 23 year old multigravida

3.III.9.c Identified Gaps

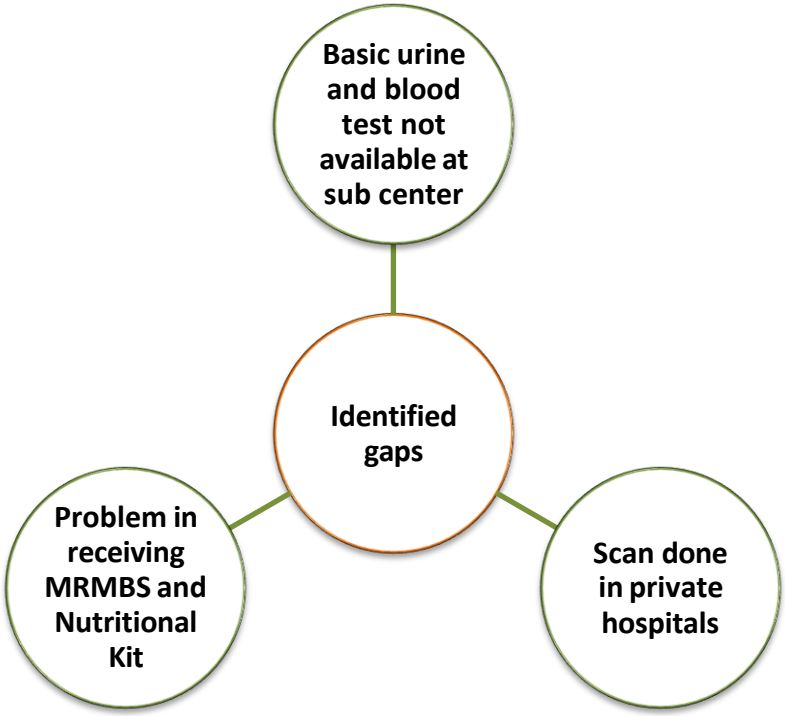

Figure 3.8 Thematic analysis of identified gaps of Maternal Care services during COVID

Basic urine and blood test not available at sub center

A VHN responded,

> *"To avoid crowd and spread of COVID ANC check up was not done for all at PHC as like pre COVID time"*
>
> In accordance to the statement, it was noted that in order to prevent over crowding, ANC check up in some places were done in sub center level where basic lab investigations are not available and the pregnant mothers need to visit the PHC for lab investigations which some experienced as inconvenient and feared of the waiting time during COVID.

Scan done in private hospitals/centers

A VHN reported,

"Only Anomaly Scanning facilities were available at the District Health Centre. However, in general 3rd, 5th and 9th month scanning are taken in the Private centers."

A 35 year Old Multigravida Women responded,

"Due to the lack of a scan facility at the PHC level, I decided to go to a private clinic, where the third month scan was completed. The cost of the scan was around Rs. 3000. The cost of the fifth-month scan is roughly Rs. 1000, and the cost of the seventh-month scan is almost Rs. 2000"

Both the stakeholder and beneficiary here comment the same. In most of the places, District hospitals were quite distanced and waiting time is more due to increased in number of patients there, henceforth majority of the public preferred Private centres for their regular AN scan due to lack of scan facility at PHC level.

Problem in receiving MRMBS and Nutritional Kit

It was reported majority of the respondents, didn't receive the MRMBS benefit or the nutritional kit during COVID as there seems to be delayed and lack of supply and it was distributed to the high risk mothers as per the need and supply. It was most common among the Primi mothers due to the data error or uploading error.

A 20 year old Primi mother commented,

"I did not receive any MRMBS or Nutritional kit"

Response from a VHN

"Muthu Lakshmi Reddy Scheme (MLRS) are not regular for AN mother. Kit is not regular and it's delayed in distribution always. There was high Shortage in distribution in both the places. Due to insufficient kit from the DPH_PHC_SHC. The VHN instructed to distribute the kit based on the priorities such as High-Risk Birth, Twin Delivery, Anemic Mother AN mother."

Key findings of Qualitative Survey

- AN registration even though it was delayed, registration was done and PICME cards distributed to the AN mothers.
- Through Mobile calls, HCW provided adequate moral support to the AN and PN mothers and their health status was monitored continuously.
- Focus required mainly on distribution of MRMBS kits and benefits to their beneficiaries in timely manner
- Also the lack of scan facility at PHC level, which leads to more private consultations and investigations and also been burden to the people who are unable to afford the cost privately.

3.IV CHILD HEALTH SERVICES

In this chapter, early breast feeding initiation practice, complications of babies and their treatment, vaccination, nutrition and other child health services are discussed.

Quantitative Survey

3.IV.1 Initiation of breastfeeding within one hour of delivery

Among the 1686, only 65.5 percent of women initiated breastfeeding within one hour of delivery.

Table 3.50 Percent of Mothers Initiated breast feeding within an hour (n=1686)

	No of samples	Percentage
YES	1106	65.5
NO	580	34.5
Total	**1686**	**100**

Among the districts, Women from Ramanathapuram district seems to be relatively high in percentage with regards to initiating breastfeeding within one hour of delivery with 80.4 percent and only 45 percent of women from Tirunelveli district initiated breastfeeding within an hour of delivery which is low as shown in Table 3.51

Table 3.51 District wise Percent distribution of Mothers Initiated breast feeding within an hour (n=1106)		
District	**Frequency**	**Percentage**
Ariyalur	190	68.8
Dharmapuri	173	64.3
Nilgiris	229	82.7
Tirunelveli	135	45.0
Ramanathapuram	218	80.4
Virudhunagar	161	54.9
Total	**1106**	**65.5**

Among the mothers who initiated breastfeeding within one hour of delivery 61.7 percent were COVID positive and 65.6 percent were COVID negative.

Table 3.52 Mother affected with COVID and initiated breast feeding within an hour				
	COVID+		**COVID-**	
	Frequency	Percentage	Frequency	Percentage
Yes	21	61.7	1085	65.6
No	13	38.3	568	34.4
Total	34	100	1653	100

Among the mothers who initiated breastfeeding within one hour of delivery 61.4 percent lived in a family affected with COVID during their pregnancy and 65.7 percent lived in a family non-affected with COVID.

Table 3.53 Mother lived in a Family affected with COVID and initiated breast feeding within an hour				
	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	46	61.4	1060	65.7
No	29	38.6	552	34.3
Total	75	100	1612	100

3.IV.2 Complications of the baby

From Table 3.54, it was self- reported by mothers that 7.8 percent of babies were underweight; 1.9 percent of babies were premature and 4.5 percent babies had Jaundice at the time of birth among 1687 delivered babies.

Table 3.54 Percent of babies had any complications after birth - self reported (n=1687)		
Complications	**Frequency**	**Percentage**
Underweight baby	132	7.8
Premature baby	32	1.9
Jaundice	76	4.5

3.IV.2.a Underweight Babies and Treatment

Among the self-reported 132 underweight babies, Tirunelveli district was comparatively high than other districts with 11.7 percent and Ramanathapuram district with 0.2 percent was low as shown in Table 3.55.

Table 3.55 District wise percent of Underweight babies (<2.5 Kgs)

District	Frequency	Percentage
Ariyalur	19	6.3
Dharmapuri	22	7.3
Nilgiris	30	10.0
Tirunelveli	35	11.7
Ramanathapuram	2	0.7
Virudhunagar	24	8.0
Total	132	7.3

And it was reported that 100 percent of underweight babies across all the districts received treatment for underweight.

Based on the actual birth weight measured, 227 babies (13.5 percent) were underweight. Among them Nilgiris district stands out with 28 percent than the other districts and Tirunelveli has low percent of underweight babies with 6.2 percent.(Table 3.57).

Table 3.56 Birth weight of babies (n=1687)		
	Frequency	**Percentage**
Low birth weight	**227**	13.5
Normal	1460	86.5
Total	1687	100

Table 3.57 District wise percentage of underweight baby (n=227)		
District	Underweight	Percentage
Ariyalur	36	15.9
Dharmapuri	45	19.8
Nilgiris	63	27.8
Ramanathapuram	42	18.5
Tirunelveli	14	6.2
Virudhunagar	27	11.9
Total	227	

3.IV.2.b Premature babies and Treatment

District-wise comparison among the 32 premature babies show that Ariyalur district was comparatively high than other districts with 3.6 percent, Virdhunagar district with 1.0 percent was low and Ramanathapuram district had zero premature babies as shown in Table 3.58.

Table 3.58 District wise percent of Premature babies

District	Underweight	Percentage
Ariyalur	10	3.6
Dharmapuri	5	1.9
Nilgiris	5	1.8
Tirunelveli	9	3.0
Ramanathapuram	0	0.0
Virudhunagar	3	1.0
Total	**32**	**1.9**

And it was reported that 100 percent of premature babies across all the districts received treatment for prematurity.

3.IV.3 Immunization delay during COVID

Among the 1687 delivered babies, it was self-reported by mothers only 10.4 percent of babies had delayed vaccination during COVID.

Table 3.59. Percent of Children delay in getting vaccine during COVID – Self reported (n=1687)

	Frequency	Percentage
Yes	175	10.4
No	1512	89.6
Total	**1687**	**100.0**

Among the 175 babies who had delayed vaccination, Ariyalur districts reported higher with almost 40 percent and Ramanathapuram district was lower with 2.6 percent as shown in Table 3.60.

Table 3.60 District wise percent distribution of delayed vaccination in Children during COVID

District	Frequency	Percentage
Ariyalur	**86**	**30.9**
Dharmapuri	25	9.3
Nilgiris	26	9.4
Tirunelveli	18	6.0
Ramanathapuram	7	2.6
Virudhunagar	13	4.4
Total	175	10.4

Among the babies with vaccination delays, 8.8 percent mothers tested positive for covid during their pregnancy and 10.4 percent of mothers were COVID negative.

Table 3.61.a Percent distribution of delayed vaccination in Children due to mothers affected with COVID				
	COVID+		**COVID-**	
	Frequency	Percentage	Frequency	Percentage
Yes	3	8.8	172	10.40
No	31	91.1	1481	89.59
Total	34	100	1653	100

Among the babies with delayed vaccination, 18.6 percent mothers' family members were COVID positive and 10 percent of mothers' family members were COVID negative.

Table 3.61.b Percent distribution of delayed vaccination in Children due to mothers' family affected with COVID				
	COVID+		**COVID-**	
	Frequency	Percentage	Frequency	Percentage
Yes	14	18.6	161	9.98
No	61	81.3	1451	90.01
Total	75	100	1612	100

Among the babies with delay in vaccination, 6.8 percent were delayed due to restriction of containment zone and 10 percent were in non – containment zone.

Table 3.61.c Delayed vaccination due to containment zone				
	Containment zone		**Non- containment zone**	
	Frequency	Percentage	Frequency	Percentage
Yes	18	6.8	157	10
No	244	93.12	1268	90
Total	262	100	1425	100

Based on the actual report, it was reported that 1.1 percent of immunization delay was at birth, 20 percent at 1.5 months , 38 percent at 2.5 months ; 44 percent at 9 months.

Among the immunization delay, Dharmapuri district was leading in delay starting from birth with 2.1 percent and ending 9 months delay with 54.7 percent than other districts. Nilgiris district was least compared to other districts almost at all level of vaccination with 15.2 percent at 1.5 months to 36 percent at 9 months as detailed in Table 3.62.

Table 3.62 District wise Immunization delay

District	At birth Delay		1.5 Months Delay		2.5 Months Delay		3.5 Months Delay		9 Months Delay	
	f	%	f	%	f	%	F	%	f	%
Ariyalur	4	1.5	67	24.6	116	42.6	147	56.1	106	46.3
Dharmapuri	5	2.1	64	26.4	107	44.2	118	51.8	98	54.7
Nilgiris	2	0.8	36	15.2	70	29.8	93	39.9	75	35.9
Tirunelveli	2	0.7	58	19.7	114	38.6	165	56.1	127	44.9
Ramanathapuram	0	0	43	19.6	91	41.9	118	55.1	90	46.2
Virudhunagar	4	1.3	40	13.3	90	30.2	132	44.4	114	39.3
Total	17	1.1	308	19.7	588	37.7	773	50.6	610	44

In this study High endemic districts of COVID were Ariyalur, Ramanathapuram and Virudhunagar, remaining three were low endemic. Irrespective of endemicity the immunization delay was equally distributed among all the sampled districts as shown in the Table 3.63. At birth both were delayed by 1 percent, at 1.5 months delayed by 20 percent and so on.

Table 3.63 Immunization delay VS Endemicity

	At birth Delay		1.5 Months Delay		2.5 Months Delay		3.5 Months Delay		9 Months Delay	
	F	%	f	%	f	%	f	%	F	%
High Endemic	8	1	150	19	297	37.7	397	51.4	310	43.7
Low Endemic	9	1.1	158	20.4	291	37.7	376	49.8	300	44.7
Total	17	1.1	308	19.7	588	37.7	773	50.6	610	44

Table 3.64 Immunization delay VS Wave

Wave	At birth Delay		1.5 Months Delay		2.5 Months Delay		3.5 Months Delay		9 Months Delay	
	f	%	f	%	f	%	f	%	f	%
1st Wave	16	1	298	18.1	576	36.8	760	48.2	610	44
2nd Wave	1	2.8	10	1.6	12	0.9	13	2.8	0	
Total	17	1.1	308	19.7	588	37.7	773	50.6	610	44

In this study Immunization have been mostly affected in the 1st first Wave of COVID-19. 48.2% of delays happened in the 1st Wave during 3.5 Months of vaccine schedule, and during the 2nd Wave 2.8% of delay in Immunization happened at the Birth dose.

Table 3.65 Complete Immunization

	Frequency	Percentage
Yes	394	40.04
No	590	59.96
Total	984	100

In our study shows nearly 40% of Children have been Completely Immunization in spite of the COVID-19 Pandemic.

3.IV.4. Diarrhoea and ORS received during COVID

It was reported by mothers that 2.5 percent (43 Children) had diarrhoea during the endemic period. Among them, they were most prevalent in Ariyalur and Tirunelveli district with almost 5 percent (Table3.65)

Table 3.66 Diarrhoea among children during COVID (n=1687)		
	Frequency	Percentage
Yes	**43**	**2.5**
No	1542	91.4
Don't Know	103	6.1
Total	1687	100

Table 3.67 District wise prevalence of Diarrhoea among children during COVID		
District	Frequency	Percentage
Ariyalur	12	4.5
Dharmapuri	4	1.8
Nilgiris	5	1.9
Tirunelveli	13	4.5
Ramanathapuram	4	1.9
Virudhunagar	5	1.7
Total	43	2.8

It was found that 43 babies had diarrhoea during COVID. Among them 81.4 percent of babies received Oral Rehydration Solution (ORS) from health care worker during COVID as shown in Table 3.67.

Table 3.68. Percent of Children received ORS from health worker during COVID (n=43)		
	Frequency	**Percentage**
Yes	35	81.4
No	7	16.3
Don’t Know	1	2.3
Total	**43**	**100.0**

Table 3.68 pictures district wise percent of Children got ORS from health worker during COVID and seen that Children who had diarrhoea in Nilgiris and Virudhunagar district 100 percent received ORS from health worker during COVID and rest as seen in the table.

Table 3.69 District wise percent of Children got ORS from health worker during COVID (n=43)		
District	**Frequency**	**Percentage**
Ariyalur	10	83.3
Dharmapuri	3	75.0
Nilgiris	5	100.0
Tirunelveli	9	69.2
Ramanathapuram	3	75.0
Virudhunagar	5	100.0
Total	**35**	81.4

35 mothers received ORS supplementation from health worker during lockdown. Out of which 34 was during first wave and 1 was during second wave.

Table 3.70 Mothers received ORS supplementation from health worker during lockdown		
	1st Wave	2nd Wave
Yes	34	1
No	6	1
Don't Know	1	0
Total	41	2

3. IV.5 Acute Respiratory infection during COVID

Among the 1687women, 1.9 percent reported that their child had Acute Respiratory Infection (ARI) during COVID period.

Table 3.71 ARI among Children during COVID		
	Frequency	Percentage
Yes	35	1.9
No	1652	98.1
Total	1687	100.0

Among the COVID affected mothers', 5.8 percent reported that their child had Acute Respiratory Infection (ARI).

Table 3.72 ARI among Children born to mothers' affected with COVID				
	COVID+		**COVID-**	
	Frequency	Percentage	Frequency	Percentage
Yes	2	5.8	33	2
No	32	94.2	1620	98
Total	34	100	1653	100

Among the mothers' who lived with COVID affected family, 2.6 percent reported that their child had Acute Respiratory Infection (ARI).

Table 3.73 ARI among Children born to mothers' lived in a family affected with COVID

	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	2	2.6	33	2.0
No	73	97.3	1579	98
Total	75	100	1612	100

3. IV.6 Vitamin A dose among children during COVID

Out of 1687, 98.3 reported that their child received oral dose of Vitamin A (orange color drops) in the first six months. All the districts reported more than 97 percent children received Vitamin A dose in the first six months amidst COVID. Ramanathapuram district reported almost 100 percent as seen in Table 3.74.

Table 3.74 Percent of Children given Vitamin A dose orally in the first six months

	Frequency	Percentage
Yes	1657	98.3
No	28	1.7
Total	1687	100.0

Table 3.75 District wise children given vitamin A dose in the first six months		
District	Frequency	Percentage
Ariyalur	270	97.5
Dharmapuri	264	98.5
Nilgiris	271	97.8
Tirunelveli	291	97.7
Ramanathapuram	270	99.6
Virudhunagar	291	99.3
Total	1657	98.3

Among the children not received Vitamin A dose in the first six months, only 1 child's mother was COVID positive, remaining 27 was COVID negative.

Table 3.76 Children given Vitamin A dose in the first six months when Mother affected with COVID				
	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	33	97	1624	98.3
No	1	3	27	1.6
Total	34	100	1653	100

Among the children not received Vitamin A dose in the first six months, only 1 child's mothers' family members was affected with COVID, remaining 27 was COVID negative.

Table 3.77 Children given Vitamin A dose in the first six months when Family Members affected with COVID				
	COVID+		COVID-	
	Frequency	Percentage	Frequency	Percentage
Yes	74	98.6	1583	98.2
No	1	1.3	27	1.67
Total	75	100	1612	100

Adolescent Health Services

Adolescence is one of the significant stages of the life cycle and adolescent health and nutrition status has an inter-generational effect. The weekly Iron and Folic Acid Supplementation (WIFS) scheme is a community-based intervention to address the anaemia among adolescent boys and girls. The restrictions imposed and closure of schools due to COVID 19 has influenced the regular distribution of WIFS to school going children and in the community.

The in-depth interviews conducted among school teachers and students shows that there was problem in distributing the IFA tablets during the complete lockdown from March to July 2020. Some of the teachers also mentioned that after the complete lock down napkins and tablets were given to the anganwadi workers for distribution during their household visits. A teacher who is in-charge to distribute the tablets informed that

> "During *the first wave [particularly] from March 2020 to July 2020 there was no distribution of tablets to the students. After the complete lock down tablets were distributed to the students through volunteers and AWC 's"*

Another teacher informed that

> *"Due to COVID fear parents were not willing to collect the tablets from school when we tried to distribute. Then we planned and distributed along with dry ration"*

Students were requested to consume the tablets in-front of the teacher during working days. During the COVID time though tablets were distributed to the door steps, its consumption by students were not known. To know the status of the consumption

some of the beneficiaries both boys and girls were interviewed. Though there was interruption in distributing the tablets during the complete lock down

A girl who is 18 years old informed that

> *“I didn’t receive the tablets during the complete lockdown, then once I received napkins and tablets from VHN during the first wave. After the complete lockdown it was distributed at my house by volunteers and anganwadi workers”*

Another student who is studying in 8th standard explained

“I received the blue color IFA tablet from VHN and AWW along with dry ration but I didn’t eat [consume] it”

3.IV.7 Qualitative Survey

Child Health Services

The services under maternal care that are to be discussed are,

- Full immunization coverage
- Growth Monitoring
- Child Nutrition
- Pre- school Education

Three major themes emerged from thematic analysis of the participants interviews namely:

I. Short term influence
II. Positive measures
III. Identified Gaps

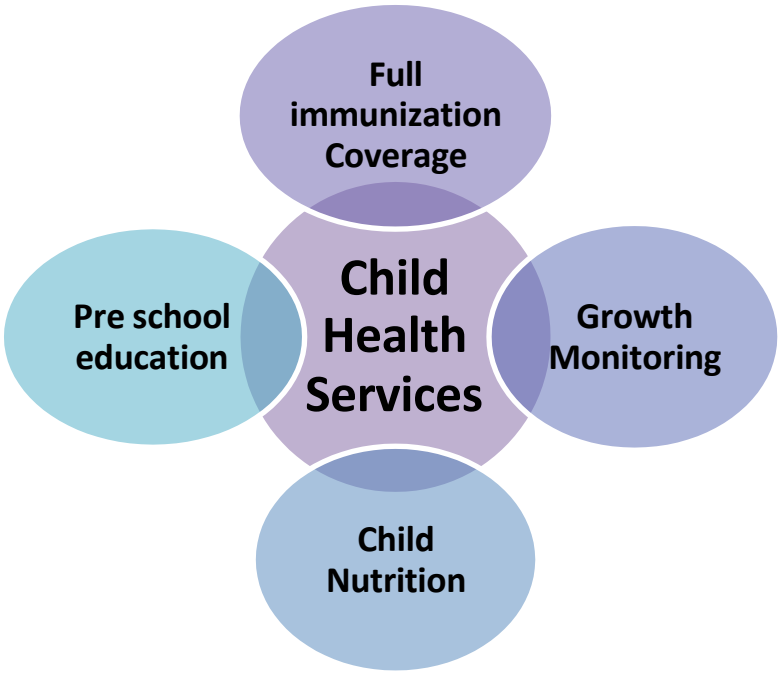

Figure3.9. Thematic analysis of Child Health Services during COVID

3.IV.7.a Short term Influence

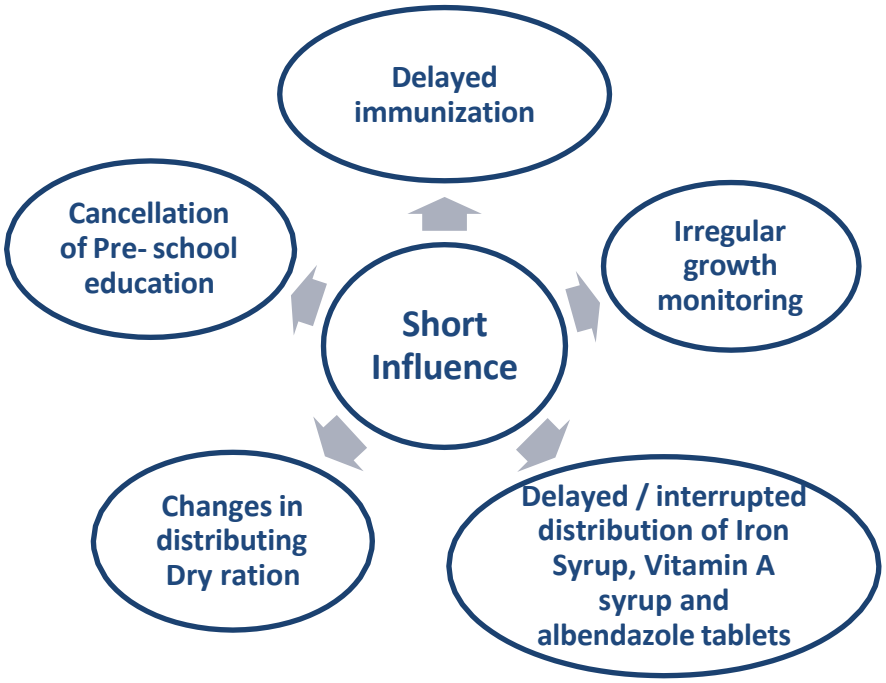

Figure 3.10. Thematic analysis of Short influence of Child Health Services during COVID

Delayed Immunization

Immunization to the children was delayed due to fear of COVID spread during the Endemic among the parents. But it was made sure that the missed children were followed uo and later immunized.

A VHN responded,

"Immunization to children was delayed as the parents feared of COVID spread but later immunized"

A UHN responded,

"Public feared seeing us during COVID and not cooperative during visits and vaccination and was not allowed inside the house and shutting of doors was most prevalent".

Irregular growth monitoring

Majorly reported,
“Due to closure to Anganwadi centre(AWC) due to COVID Lockdown, unable to measure height and weight regularly and growth monitoring is delayed”

Delayed / interrupted distribution of Iron Syrup, Vitamin A syrup and Albendazole tablets

As it was discussed due to the COVID lockdown, AWC were closed and also AWW were additional COVID duties were assigned resulting in delayed distribution of Iron syrup, Vitamin a syrup and Albendazole tablets to the beneficiaries.

“During Endemic, due to additional duties routine work was delayed. Uploading of ANC and PNC data, distribution of Vitamin A syrup, Iron Syrup, Albendazole tablets. etc was delayed” was the recorded response.

Changes in distributing Dry ration

“During the Endemic, in first lockdown no delay in dry Ration items & Sathumavvu but in second lockdown one month delay in all supply”

“During COVID lockdown anganwadi was closed but dry ration was distributed. Some times through the mobile calls they pass the message and ask to collect the dry ration”

Were some of the recorded responses.

Cancellation of Pre- school education

In following COVID prevention protocols, Anganwadi centres were closed during the entire lockdown as the children was one of the vulnerable populations even strictly it was followed, henceforth temporarily pre school education was cancelled and restarted after the leisure of COVID protocols. Many responses were,

“AWC was closed, unable to give preschool education and regular food. No direct contact between teacher and children”

3.IV.7.b Positive measures

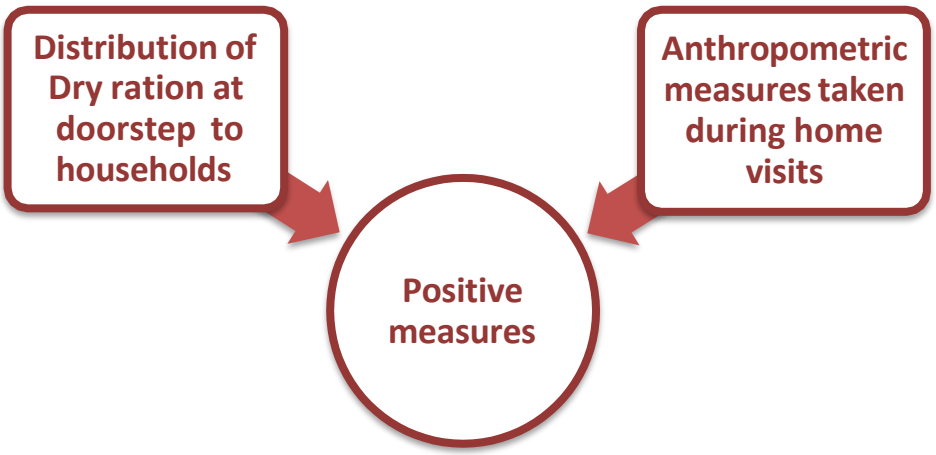

Figure 3.11. Thematic analysis of Positive measures of Child Health Services taken during COVID

Distribution of dry ration at doorstep to households

Dry ration was distributed at doorstep to the households of the children once in every 15 days due to the restricted/ limited movement of public during the Lockdown period when the supply was regular in order to maintain the child nutrition.

Majority of the Anganwadi worker(AWW) stated,*"We distributed Dry ration, supplementary food and eggs to the beneficiaries 15 days once at house, during second wave there was delay in supplying dry ration to Anganwadi center"*

Anthropometric measures taken during home visits

Anganwadi workers tried to measure and record the anthropometric measurements of children during the home distribution of dry ration when the parents gave consent as many people didn't allow the health care workers inside the house during Endemic due to their fear of disease spread.

A 40 year old AWW said,

"We measured the height, weight, etc of children using the equipments during the home delivery of dry ration when the parents allowed us"

3.IV.7.c Identified Gaps

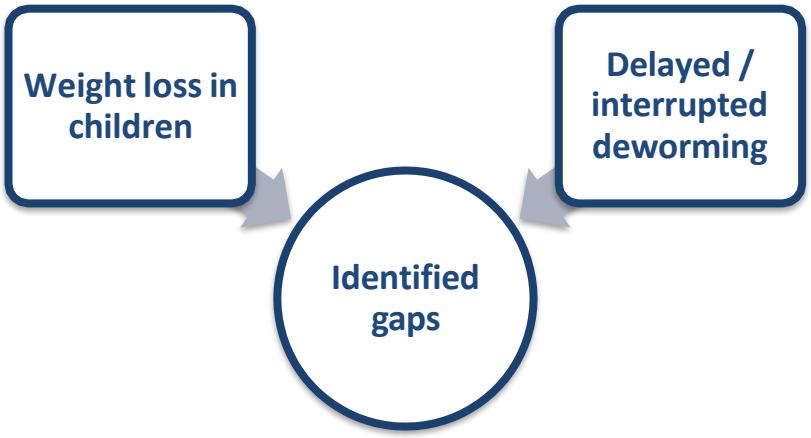

Figure 3.12. Thematic analysis of identified gaps of Child Health Services during COVID

Weight loss in children

It was reported that weight loss was observed in some children during the interrupted supply and distribution of Sathumavu (Nutritional mix) and dry ration during the Endemic period.

Response of a AWW recorded,

"During second wave there was delay in supplying dry ration to AWC and Due to closure of AWC regular weight check up was affected, and noticed weight loss among children"

Another response was

"Due to delay in receiving and distribution of dry rations, weight loss was observed in children during second wave"

Delayed / interrupted deworming

Deworming was interrupted or delayed due to the irregular/ delayed distribution of albendazole tablets during the Endemic.

A 44 year aged ASHA reported,

“Unable to conduct regular awareness camps and delayed in distributing the iron syrup, Vitamin A syrup and albendazole tablets”

The response from a AWW,
“Tab. Albendazole was not distributed so de warming process was failure in the lockdown”

40 year old AWW stated,

“During Endemic, COVID related additional duties was given to us, due to which there was delay in distributing iron syrup, Vitamin A syrup and albendazole tablets and uploading the data”

Key Findings of Qualitative Survey

- Through the observation of the recorded responses, it seemed that Public were more anxious and feared to meet the health Care Workers due to spread of COVID especially they were more concerned about their Children contact with outsiders. This played major role in delaying of most of the Child health services.
- COVID majorly impacted in delayed immunization but it was made sure by the Health Care workers that the missed children were followed up and immunized even though it was delayed.
- Though AWC was closed, AWW and other health Care workers tried their best in monitoring the Child growth even it was delayed through home visits and monitoring through mobiles.
- Delayed distribution of Dry ration and essential health supplements was observed in major areas which too was noted that supplements reached the beneficiaries through door step or passing through the neighbours even it was delayed inspite of the additional workload of Health Care workers following COVID protocols unless the interrupted supply.

3.V. PUBLIC PERCEPTION ABOUT THE HEALTH SERVICES PROVIDED BY HEALTH CARE WORKERS DURING COVID

As a part of this study, a small survey was conducted to understand the perception of public about the health care services provided by the health care workers during COVID.

Among the 1800 sampled women, more than 95 percent of them reported to have high trust on government messages, doctors, VHN and satisfied with the services provided by the health care workers during COVID. About 98 percent of women reported that they highly trusted Medical Officers (Doctors) during the COVID period (Table 3.78).

Table 3.78 Health services by Health workers

	Agree	Neither	Disagree
% women had high trust on Government messages	94.4	5.4	0.3
% women had high trust on Medical officer	98.3	1.3	0.4
% women had high trust on VHN	95.4	4.2	0.5
% women felt good about the services provided by the Health care workers during COVID	96.7	3	0.3
% women met health worker during COVID time	95.4	4.2	0.5

Women from Ariyalur district almost 100 percent reported that they had high trust on the messages issued by the government during COVID. Almost all district reported 92 percent of them highly trusted the government messages as shown in Table 3.79.

Table 3.79 Percent of women had high trust on Government messages

District	**Agree**	**Neither**	**Disagree**
Ariyalur	99.7	0	0.3
Dharmapuri	94.3	5.7	0
Nilgiris	92	8	0
Tirunelveli	95.4	4.3	0.3
Ramanathapuram	92.2	7.8	0
Virudhunagar	92.7	6.6	0.4
Total	94.4	5.4	0.3

Nilgiris district women reported 100 percent that they highly trusted the Medical officer i.e., Doctors during the COVID. Across all the sampled districts, 98 percent and above trusted Doctors and their services during the COVID period as in the Table 3.80.

Table 3.80 Percent of women had high trust on Medical officer

District	Agree	Neither	Disagree
Ariyalur	97.4	1.3	1.3
Dharmapuri	98	2	0
Nilgiris	97.7	1.7	0.7
Tirunelveli	100	0	0
Ramanathapuram	98	2	0
Virudhunagar	98.7	1	0.3
Total	98.3	1.3	0.4

Almost 96 percent of women in all district reported that they trusted highly the VHN and the service provided by them except Ariyalur where it was reported 87 percent of women trusted highly and 10.7 percent were had neutral opinion (Table 3.81).

Table 3.81 Percent of women had high trust on VHN

District	Agree	Neither	Disagree
Ariyalur	88.6	10.7	0.6
Dharmapuri	95.3	3.7	1
Nilgiris	96.7	3.3	0
Tirunelveli	97	2	1
Ramanathapuram	96.3	3.7	0
Virudhunagar	97.4	1.6	0.3
Total	95.4	4.2	0.5

99 percent of women from Tirunelveli district were satisfied with the services provided by the Health care workers during COVID. Only Ariyalur district reported 91 percent of satisfaction and rest were 97 percent and above.

Table 3.82 Percent of women felt good about the services provided by the Health care workers during COVID			
District	**Agree**	**Neither**	**Disagree**
Ariyalur	91	8.7	0.3
Dharmapuri	97.3	2.7	0
Nilgiris	98.7	0.7	0.7
Tirunelveli	99	0.7	0.3
Ramanathapuram	98.6	1.4	0
Virudhunagar	95.7	3.9	0.3
Total	96.7	3	0.3

98 percent of women from Virudhunagar district reported that they met health worker during COVID time. Only 87 percent of women from Ariyalur district reported that they met health worker during COVID time (Table 3.83). Overall 90.8 percent of 1800 women reported that they met atleast one of the HCW among VHN, ASHA, AWW, and CHW during the COVID time (Table 3.84)

Table 3.83 Percent of women met health worker during COVID time			
District	**Agree**	**Neither**	**Disagree**
Ariyalur	88.6	10.7	0.6
Dharmapuri	95.3	3.7	1
Nilgiris	96.7	3.3	0
Tirunelveli	97	6	1
Ramanathapuram	96.3	3.7	0
Virudhunagar	98	1.6	0.3
Total	95.4	4.2	0.5

Table 3.84 Met any health worker like VHN/ ASHA/AWW/CHW during the COVID time		
	Frequency	Percentage
Yes	1634	90.8
No	166	9.2
Total	1800	100.0

Table 3.85 below shows the Different services provided and matters talked about during the visits / contacts of health care workers. Among those services, 85 percent reported that they visited or contacted the health care workers for the purpose of immunization; secondly 66 percent for supplementary nutrition food, thirdly 65 percent for corona care services and so on. Lastly 18 percent for early childhood care and 12 percent for pre-school education which are services provided at anganwadi centers by the AWW.

Table 3.85 Different services provided and matters talked about during the visits / contacts of health care workers		
	Frequency	**Percentage**
Immunization	1534	85.2
Supplementary food	1185	65.8
Corona care	1171	65.1
Family planning	890	49.4
Growth monitoring of child	855	47.5
Delivery care	743	41.3
ANC care	576	32.0
Birth preparedness	574	31.9
Nutrition / Health education	559	31.1
Postnatal care	558	31.0

Treatment for sick child	444	24.7
Complication readiness	427	23.7
Menstrual hygiene	396	22.0
Early childhood care	329	18.3
Preschool education	218	12.1

Below table 3.86 shows the rating of the Quality of services provided by the health care workers during COVID 19. Among the 1800 women, 64 percent rated that the services provided was good; 32 percent reported that the services provided was very good which explains that the majority of the public were satisfied with services provide by the health care workers and quality of the services was good.

Table 3.86 Quality of services provided by the health care workers during COVID 19

	Frequency	Percentage
Very good	575	31.9
good	1150	63.9
Average	65	3.6
Poor	9	0.5
Very Poor	1	0.1

CHAPTER 4

DISCUSSION AND CONCLUSION

Table 4.1 Summary table of Reproductive Health services											
Indicators	**HE**	**LE**	**Urban**	**Rural**	**Tribal**	**Primi**	**Multi**	**CI**	**NI**	**1st Wave**	**2nd Wave**
Counseling services from Health worker	71.4	54.3	65	62.5	49.5	48.5	77.9	55.8	64.5	64.3	44.4
Adopted Family planning methods /Planned during Delivery	84.6	69.5	72.7	86.3	55.3	36.2	76.40	82.7	77.4	79.1	64.3
received delayed contraceptive services from Health worker / Planned to opt during delivery	8.0	10.9	6.6	10.8	15.8	3.3	11.8	13.3	8.0	9.3	7.1
Seek contra from govt	10.1	10.7	7.5	11.7	16.7	2.8	13.9	15.1	8.7	10.4	9.1
Sterilization not done due to facility not available due to COVID	2.4	2.5	1.6	3.5	0.0	1.4	3.0	2.7	2.4	2.4	3.6
Safe abortion / Abortion done	96.6	96.4	96.5	95.5	100	98.7	91.7	100	95.8	96.6	96.0
Got abortion services from the facility seek ANC	63.8	49.1	56.1	59.1	50.0	53.2	63.9	61.1	55.8	58.0	52.0
Received Abortion services from Govt facility	48.3	47.3	42.1	50.0	66.7	41.6	61.1	61.1	45.3	48.9	44.0
Abortion done by Trained Health personal (HW/ DAI)	88.0	90.9	87.7	88.7	100	88.3	91.7	100	87.4	87.5	96.0
Reasons - Un planned pregnancy	5.3	1.9	5.3	0.0	9.1	0.0	11.4	5.6	3.3	3.5	4.2
Reasons-Foetus had congenital abnormality	14.0	17.0	14.0	14.3	27.3	18.7	8.6	11.1	16.3	14.0	20.8
Delayed contraception for 7 or more days	2.1	1.3	0.8	2.8	1.1	0.1	3.3	3.4	1.3	1.8	0.0
Used any Contraceptive methods/ Exclude aborted women	51.8	31.2	35.8	48.0	34.7	33.9	49.1	48.0	40.0	42.6	23.8

Table 4.1 Summary table of Reproductive Health services											
Indicators	**HE**	**LE**	**Urban**	**Rural**	**Tribal**	**Primi**	**Multi**	**CI**	**NI**	**1st Wave**	**2nd Wave**
Permanent methods	21.7	10.8	14.9	19.2	3.2	1.7	30.7	15.3	16.5	17.1	3.0
Temporary methods	30.6	20.1	20.4	30.0	28.4	31.5	19.3	32.7	23.6	25.7	19.8
Modern methods	51.4	29.7	34.7	47.7	30.0	32.8	48.2	46.7	39.1	41.7	21.8
Delay_CPR_7days	28.4	8.6	10.5	19.7	4.0	2.8	20.4	15.5	14.3	15.1	7.7
Delay_CPR_3days	50.7	14.6	17.1	35.9	4.0	7.0	34.7	25.4	25.9	26.3	15.4
Delay_CPR_14days	19.4	5.3	6.6	13.7	0.0	1.4	13.6	11.3	8.8	10.2	0.0
Have you had difficulties in getting the Contraceptive services?	2.1	1.8	1.8	2.3	1.1	1.0	3.0	1.6	2.0	2.0	1.0

HE – High Endemic ; LE – Low Endemic ; CI – COVID Impact ; NI - No impact

Counseling services from health worker was widely received across more than half the population. Amidst COVID high endemic districts were able to attain 71 percent in Counseling services. Between the first and second wave, there is decline by 20 percent in services during the second wave. It was reported that sterilization was not done due to unavailability of the procedure during COVID. Across high endemic and low endemic districts it was same as 2.5 percent women were unable to do sterilization due to COVID.

100 percent of safe abortion services were obtained in tribal areas and even among the COVID impact/affected mothers. It can be seen that 96 percent of safe abortion services was used by the women while considering various factors. One of major reasons reported for abortion was congenital abnormality of the foetus which widely more than 10 percent (Table 4.1). There was noted delay in receiving the contraception services by more than 7 days around 1 to 3 percent. Notable low use of contraception services was seen in tribal areas (34.7 percent), among Primi mothers (40 percent), low endemic district (31 percent) and during second wave (24 percent). From the table 4.4 it is seen that only low percent of women sought contraceptive services from government facility during COVID especially in urban areas (7.5 percent), no COVID impact women (8.7 percent) and during second wave (9.1

percent). And also it can be seen that only about half the population has used any contraceptive method either permanent or temporary methods during COVID. Sterilization usage is low in tribal areas (3.2 percent), also during the second wave (3 percent). Usage of sterilization is comparatively low than the temporary methods was reported. Among the temporary methods, modern methods were used from 30 to 50 percent of the sampled women across various analysing factors. Around 1 to 2 percent of women reported difficulty in receiving the contraceptive services from the government facility.These results were also supported by the qualitative survey. From the qualitative analysis, it was observed that there was increase in pregnancies during COVID, low sterilization usage due to the closure of family planning operation theatres. It was also observed public are still not comfortable in using Other Contraceptive measures which may due to their incomplete knowledge about the safety and effects of all the contraception measures . Discontinuation of contraception in midway even when used, For example Copper T was used majorly but equally discontinued due to many reasons. It was observed that awareness is required about all family planning methods and detailed importance of usage of contraception.

Delayed pregnancy registration (after 1st trimester) was above 2 percent especially during the second wave (5 percent) and distribution of Mother and Child Protection card immediately was delayed only around 10 percent of women received MCP immediately after registering (table 4.2). Nearly 6 percent of women attended less than 3 ANC visits. Around 10 percent of women received less than 100 Ironic and Folic Acid supplements during their pregnancy in the COVID period. Around 7 to 10 percent of women have not taken two doses of Tetanus toxoid injection and not received deworming tablets during their pregnancy in the COVID period. Around 4 percent women didn’t receive nutritional supplement from anganwadi center but during the second it was doubled. 1 percent of Teenage Pregnancy (Table 4.2) was observed during COVID.

Table 4.2 Summary table of Maternal Health services

Indicators	HE	LE	Urban	Rural	Tribal	Primi	Multi	CI	NI	1st Wave	2nd Wave
Pregnancy registered after 1st trimester	1.7	5.6	3.60	3.8	2.1	2.9	4.4	4.7	3.4	3.5	5.0
Did you receive a mother and Child Protection (MCP) Card immediately after registration?	11.3	7.9	9.60	7.9	23.2	9.9	9.3	7.2	10.2	9.6	9.9
More than 90 IFA Service	8.3	6.3	5.4	9.5	5.3	7.1	7.4	7.2	7.3	7.1	10.9
Less than 100 IFA	9.0	7.6	6.8	9.7	9.5	8.2	8.4	7.8	8.4	7.9	13.9
Less than 3 ANC	0.0	7.6	0.9	7.1	1.1	3.8	3.8	5.9	3.3	3.7	5.0
Not received 2 TT injection	7.1	14.7	8.60	11.6	24.2	6.9	14.9	12.8	10.5	10.3	19.8
Not Received deworming tablets	8.2	7.7	7.80	8.4	5.3	8.2	7.7	10.0	7.5	8.0	6.9
Not received any supplementary nutrition from the Anganwadi center	4.8	7.5	8.90	3.5	4.2	5.7	6.5	7.2	5.9	6.0	7.9
Early marriage	2.9	2.2	1.80	3.3	3.2	1.9	3.2	3.1	2.4	2.6	1.0
Teenage pregnancy	0.2	0.7	0.40	0.5	1.1	0.5	0.5	0.3	0.5	0.5	0.0
Underweight baby	15.0	26.8	19.30	20.7	36.2	21.2	20.6	25.2	19.9	20.9	20.8
2nd PNC not happened	4.0	16.7	9.5	8.7	31.6	10.5	10.3	15.3	9.2	9.9	17.8
Referred to a higher level facility due to COVID?	4.4	15.5	9.6	10.2	10.5	12.2	7.7	17.8	8.1	9.7	13.9

HE – High Endemic ; LE – Low Endemic ; CI – COVID Impact ; NI - No impact

Around 20 percent of underweight children were reported both in 1st wave and 2nd wave of COVID, in tribal area 37 percent, COVID impacted 25 percent, rural 20.7 percent, urban 20 percent, etc.,(table 4.2) Second Post natal care visit was not done by around 15 percent of the women due to COVID. And Around 18 percent of referral to higher facility for baby delivery due to COVID was noted especially among COVID impacted mothers (17.8 percent), during 2nd wave (13.9 percent), in both rural and tribal 10 percent. The qualitative survey of maternal health services implies that AN registration even though it was delayed, registration was done and PICME cards distributed to the AN mothers. Through Mobile calls, HCW provided adequate moral support to the AN and PN mothers and their health status was monitored continuously. Focus required mainly on distribution of MRMBS kits and benefits to their beneficiaries in timely manner. Also the lack of scan facility at PHC level, which leads to more private consultations and investigations and also been burden to the people who are unable to afford the cost privately.

Review of table 4.3 shows that around 51 percent of women delivered baby through c- section. 74.7 percent of tribal women reported that they didn't receive any financial assistance from government 60.4 women reported during second wave they didn't receive any financial assistance and half the sampled women didn't receive any financial assistance during their pregnancy or delivery from government. Vaccination delay was noted. Around 36 percent in High endemic districts, 40 percent in low endemic districts; 47 percent in rural areas, 37 percent in first wave and 43 percent during second wave of COVID. Around 3 percent of children had diarrhoea. 50 percent didn't receive oral rehydration solution during second wave. Around 2 percent of children Acute respiratory infection (ARI) during COVID period. Among them 25 percent of mother didn't sought treatment for their child's ARI. Around 10 percent didn't receive any ICDS services during COVID. Through the observation of the recorded responses, it seemed that Public were more anxious and feared to meet the health Care Workers due to spread of COVID especially they were more concerned towards their Children contact with outsiders.

Table 4.3 Summary table of Child Health services

Indicators	HE	LE	Urban	Rural	Tribal	Primi	Multi	CI	NI	1st Wave	2nd Wave
Infant Not weighed at birth in the facility?	0.1	0.4	0.3	0.1	1.1	0.1	0.4	0.6	0.1	0.3	0.0
Baby delivered through C section	51.5	51.2	54.3	49.3	44.2	51.2	51.5	54.2	50.7	51.3	52.5
Faced some problems in the health facility during the delivery and stay during covid time?	1.4	2.4	2.1	1.8	1.1	1.8	2.0	1.9	1.9	2.0	1.0
Faced some problems in getting the delivery services?	0.8	1.3	1.4	0.9	0.0	0.7	1.4	0.9	1.1	1.1	0.0
Not Received any Financial assistance from Govt	35.2	60.6	55.4	37.1	74.7	49.2	46.6	50.2	47.4	47.1	60.4
Child vaccine Delayed	12.6	8.2	11.5	10.1	3.2	9.2	11.6	9.0	10.7	10.3	11.9
Delay in Getting vaccine due to COVID	35.8	39.0	29.3	46.9	0.0	34.9	38.1	30.0	37.8	36.4	42.9
Child had diarrhoea	2.5	2.6	2.9	2.4	1.1	2.5	2.6	3.7	2.3	2.6	2.0
Not Received ORS from HW	14.3	18.2	26.1	5.3	0.0	23.8	9.1	25.0	12.9	14.6	50.0
Health Worker not Received infor on How to prepare ORS solution	71.4	54.5	65.2	63.2	0.0	66.7	59.1	50.0	67.7	63.4	50.0
Child ever had ARI	1.7	2.5	2.0	2.1	2.1	1.5	2.6	1.9	2.1	2.1	2.0
Mother not seek treatment for ARI / ARI child	7.1	28.6	25.0	17.6	0.0	30.8	13.6	0.0	24.1	18.2	50.0
Received Counseling on weight baby	90.1	78.3	82.1	88.3	68.0	83.4	85.2	83.9	84.4	85.6	62.4
Not Received any benefits from ICDS	3.6	10.9	8.4	5.0	17.3	7.4	7.0	9.6	6.6	6.7	15.3

COVID majorly impacted in delayed immunization but it was made sure by the Health Care workers that the missed children were followed up and immunized even though it was delayed. Though AWC was closed, AWW and other health Care workers tried their best in monitoring the Child growth even it was delayed through home visits and monitoring through mobiles. Delayed distribution of Dry ration and essential health

supplements was observed in major areas which too was noted that supplements reached the beneficiaries at door step or passing through the neighbours even it was delayed inspite of the additional workload of Health Care workers following COVID protocols unless the interrupted supply.

Table 4.4 Summary table district wise						
Indicators	**Ariyalur**	**Dharmapuri**	**Nilgiris**	**Ramnad**	**Tirunelveli**	**V.nagar**
Reproductive Health						
Counseling services from Health worker	86.70	44.30	54.30	64.30	46.70	81.00
Adopted Family planning methods /Planned during Delivery	92.2	72.7	61.9	76.5	65.6	89.2
received delayed contraceptive services from Health worker / Planned to opt during delivery	3.10	10.90	8.50	13.70	0.00	15.60
Seek contra from govt	2.00	8.30	7.10	18.60	0.00	17.10
Sterilization not done due to facility not available due to COVID / Planned during Delivery	0.00	1.80	2.50	2.90	0.00	5.40
Safe abortion / Abortion done	90.90	93.80	100.00	0.00	100.00	100.00
Got abortion services from the facility seek ANC	77.30	46.90	52.20	0.00	62.10	28.60
Received Abortion services from Govt facility	40.90	40.60	56.50	0.00	58.60	28.60
Abortion done by Trained Health personal (HW/ DAI)	77.30	84.40	100.00	0.00	96.50	85.70
Reasons - Un planned pregnancy	0.00	3.20	0.00	0.00	10.30	0.00
Reasons-Foetus had congenital abnormality	0.00	9.70	27.30	0.00	20.70	33.30
Delayed contraception for 7 or more days/	0.40	0.80	1.40	1.70	2.20	3.80
Used any Contraceptive methods/ Exclude aborted women	59.00	22.80	35.40	35.00	29.50	65.50
Sterilization adopted	22.70	10.80	4.30	16.70	9.60	32.10
Permanent methods	22.70	10.80	4.30	16.70	9.60	32.10
Temporary methods	35.6	13.8	26.4	20.0	20.3	35.5
Modern methods	58.30	22.80	30.70	35.00	29.50	65.20
Delay_CPR_7days	3.4	13.8	3.7	33.3	40.0	52.2
Delay_CPR_3days	10.3	37.9	3.7	46.7	66.7	91.3
Delay_CPR_14days	0.0	3.4	1.9	33.3	26.7	39.1
Have you had difficulties in getting the Contraceptive services?	0.70	2.20	2.20	1.00	0.70	4.80

Table 4.4 Summary table district wise						
Indicators	**Ariyalur**	**Dharmapuri**	**Nilgiris**	**Ramnad**	**Tirunelveli**	**V.nagar**
Maternal Health						
Pregnancy registered after 1st trimester	2.20	6.00	4.00	6.70	0.70	2.00
Did you receive a mother and Child Protection (MCP) Card immediately after registration?	28.10	4.90	11.60	7.30	5.90	0.30
More than 90 IFA Service	21.2	5.2	4.0	9.3	3.7	0.3
Less than 100+ IFA _service	21.2	9.3	4.0	9.3	5.9	0.3
Less than 3 ANC	0.0	0.4	22.7	0.0	0.0	0.0
Not received 2 TT injection	10.10	5.60	31.40	7.30	7.40	4.10
Not Received deworming tablets	13.30	9.30	3.20	10.30	11.10	0.70
Not received any supplementary nutrition from the Anganwadi center	6.50	9.00	1.40	11.70	3.70	4.10
Early marriage	5.40	2.20	2.90	1.70	0.00	3.10
Teenage pregnancy	0.40	0.70	0.40	1.00	0.00	0.30
Underweight baby	20.10	23.50	33.70	23.30	11.40	13.30
2nd PNC not happened	6.50	20.10	19.90	10.70	4.10	1.70
Referred to a higher level facility due to COVID?	5.00	5.60	37.20	4.30	2.60	5.50
Child Health Indicators						
Infant Not weighed at birth in the facility?	0.40	0.40	0.40	0.30	0.00	0.00
Baby delivered through C section	59.70	45.10	53.10	55.00	40.60	53.90
Faced some problems in the health facility during the delivery and stay during COVID time?	3.60	3.40	2.90	1.00	0.70	0.00
Faced some problems in getting the delivery services?	1.40	1.10	2.20	0.70	0.00	1.00
Not Received any Financial assistance from Govt	29.9	60.4	75.1	47.3	43.5	32.4
Child vaccine Delayed	30.9	9.3	9.4	6.0	2.6	4.4
Delay in Getting vaccine due to COVID	32.6	12.5	0.0	88.2	14.3	69.2
Child had diarrhoea	4.3	1.5	1.8	4.3	1.5	1.7
Not Received ORS from HW	16.70	25.00	0.00	23.10	25.00	0.00
Health Worker not Received infor on How to prepare ORS solution	66.70	50.00	0.00	76.90	75.00	80.00
Child ever had ARI	2.50	3.40	1.10	3.00	1.50	1.00
not seek treatment for ARI	0.00	44.40	0.00	22.20	25.00	0.00
Counseling on baby weight	97.70	68.40	76.60	87.80	71.90	97.90
Not Received any benefits from ICDS	2.70	21.80	8.70	3.80	4.30	3.90

Annexure I

IMPACT OF COVID – 19 ON UTILISATION OF REPRODUCTIVE MATERNAL AND CHILD HEALTH SERVICES IN SELECTED DISTRICTS OF TAMIL NADU: A MIXED METHOD STUDY

The Operational Research Program of the Tamil Nadu health system Reform Program (TNHSRP)

QUANTITATIVE SURVEY QUESTIONNAIRE

Participant ID

Date

Interviewer Name:

S.No.	Name of the District		
1	Block		
2	Panchayat		
3	Name of the PHC-		
4	HSC		
5	Location	Urban--1/Rural--2/Tribal—3	
Section 1 - Socio- Demographic Details ***(Frame of the survey is from mar 2020- June 2021)***			
1.1	Name		
1.2	Age (in completed years)		
1.3	Age at marriage		
1.4	Age at first child		
1.5	Mobile number (self/ spouse)		
1.6	Religion	HINDU.....01	

<table>
<tr><td></td><td></td><td>MUSLIM.....02
CHRISTIAN 03
NO RELIGION, ...09
OTHER 96
(SPECIFY)_____</td><td></td></tr>
<tr><td>1.7</td><td>Caste</td><td>SCHEDULED CASTE 1
SCHEDULED TRIBE..... 2
OTHER BACKWARD CLASS.....3
NONE OF THEM 4
OTHERS 5
DON'T KNOW .....8</td><td></td></tr>
<tr><td>1.8</td><td>Maternal Occupation during Covid (Mar 2020- Dec 2021)</td><td>
<table>
<tr><td></td><td>Before COVID</td><td>During COVID</td><td></td></tr>
<tr><td>House wife</td><td></td><td></td><td></td></tr>
<tr><td>Daily wages/ Laborer</td><td></td><td></td><td></td></tr>
<tr><td>Self-Employment/ Business</td><td></td><td></td><td></td></tr>
<tr><td>MGNREGA</td><td></td><td></td><td></td></tr>
<tr><td>Government Employee</td><td></td><td></td><td></td></tr>
<tr><td>Others</td><td></td><td></td><td></td></tr>
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<table>
<tr><td>1.9</td><td>Husband Occupation during Covid (Mar 2020- Dec 2021)</td><td><table>
<tr><td></td><td>Before COVID</td><td>During COVID</td><td></td></tr>
<tr><td>Unemployed</td><td></td><td></td><td></td></tr>
<tr><td>Daily wages/ Laborer</td><td></td><td></td><td></td></tr>
<tr><td>Self-Employment/ Business</td><td></td><td></td><td></td></tr>
<tr><td>MGNREGA</td><td></td><td></td><td></td></tr>
<tr><td>Government Employee</td><td></td><td></td><td></td></tr>
<tr><td>Others</td><td></td><td></td><td></td></tr>
</table></td><td></td></tr>
<tr><td>1.10</td><td>Whether you / your husband lost job during Covid (Mar 2020- Dec 2021)</td><td>1. Yes
2. No</td><td>If no go to 1.12</td></tr>
<tr><td>1.11</td><td>Got new job locally</td><td>1. Yes
2. No</td><td></td></tr>
<tr><td>1.12</td><td>Monthly Family income before Covid (male and Female)</td><td>_____(INR)</td><td></td></tr>
<tr><td>1.13</td><td>Monthly Family income during COVID (male and Female)</td><td>_____(INR)</td><td></td></tr>
<tr><td>1.14</td><td>Level of education</td><td><table>
<tr><td></td><td>a. Husband</td><td>b.Wife</td></tr>
<tr><td>No formal education</td><td></td><td></td></tr>
<tr><td>Primary school</td><td></td><td></td></tr>
</table></td><td></td></tr>
</table>

		Secondary school			
		Under-Graduation			
		Post-Graduation			
		Diplomo			
1.15	Total number of children ever born.	_____	
1.16	Birth Order of the child (born during COVID)	_____	
1.17	Name of the child (Born during COVID)		
1.18	During your pregnancy with this baby (name from above question) , were any of your family members affected by COVID?	1. Yes 2. No	
	Were you affected by COVID when you were pregnant with this baby?	1. Yes 2. No	If no go to 1.22
1.19	Did you get admitted to hospital immediately?	1. Yes 2. No	
1.20	What was the quality of the services provided?	1. Very good 2. Good 3. Average 4. poor 5. Very poor	
1.21	Were your area under a containment zone (locked / sealed because of COVID cases during this pregnancy?	1. Yes 2. No	
1.22			

Section 2 – Reproductive Health / services			
2.1	Prior to COIVD, RMNCH services were sought at (***If MultiGravida/ conceived before march 2020 Ask this question)***	1. Private 2. Public Facility 3. both 4. Others	
2.22.2	For this pregnancy (During COVID time) RMNCH services were sought at?	1. Private 2. Public Facility 3. Both 4. Others	
2.32.3	Has any health worker provided any counseling / information on Contraception? (***While you were pregnant for (name), Ask only for birth happened between Mar 2020-June 2021)***	1. Yes 2. No	If no Skip to 2.8
2.42.4	If yes, then when did you get counseling on Contraception?	1. Immediately after marriage 2. After first birth 3. During this pregnancy 4. After Second birth	
2.52.5	If Yes, Who provided the counseling?	1. Private health care worker 2. Government (ANM / VHN/ Nurse) 3. Dai (TBA) 4. Friends / Relatives/ neighbors 5. Others_____	
2.62.6	Were your husband with you for the full session of counseling on contraception methods ?	1. Yes 2. No	
2.72.7	What information you received from the health worker	1. On spacing methods (Condom/ Pills/ Injection/ IUD) 2. Permanent methods (Sterilization) 3. Others ……	
2.82.8	If not, what was the reason?	1. I was not able to go to facility 2. Health worker asked to come later 3. I didn't seek counseling 4. It was not a priority because of COVID	

		5. Don't know. 6. Others _____	
2.92.9	Did you have the plan/opted for using contraceptive methods at the time of delivery?	1. Yes 2. No	
2.102.10	Did you seek contraceptive services from government health services (VHN/ASHA/CHN/SHN)?	1. Yes 2. No	if no go to 2.12
2.112.11	After informing the health worker within how many days did you receive contraception services? ***(If you seek contraception from Govt Health worker)***	_____ days	
	Have you used any contraceptive method to space / limit the next pregnancy ?	1. Yes 2. No	If no then go to 2.19
2.122.12 2.132.13	Which method did you adopt?	1. Male sterilization 2. Female sterilization 3. Condom 4. PPIUCD 5. Tablets 6. Injection 7. Traditional methods 8. Others	
2.142.14	~~Did you face any delays in receiving the~~ services (Temp/ permanent)? Once you planned /decided to use contraception, after how many days of delivery/ decision did you receive contraception services?	~~1. Yes~~ 2. No ---------- days	
2.152.15 2.162.16	Where did you get the contraceptives / services?	1. Government health facility (Mobile clinic 2. AWW/ ASHA/ HSC/PHC/Block PHC/ District Hospital)	

		3. Private Health sector (Pvt. Hospital/ clinic/Pvt. Mobile clinic 4. AYUSH 5. Traditional Healer 6. Others	
2.172.1	Have you had difficulties in getting the Contraceptive services?	1. Yes 2. No	If no Go to Q2.20
7 2.182.18	Mention the difficulties?	1. Sterilization services was not available due to covid 2. Temporary methods products were not available at health facility (condoms/injectables/ pills) 3. Unable to get the products due to lock down 4. Difficulty in accessing the medical store 5. Others…….	
	Because of Delay in sterilization, did you use any other contraceptive methods?	1. Yes 2. No	If birth order Q1.16>1 and 2.13 =Yes
2.192.19	Because of Delay in sterilization did you conceived / miscarried / abortion with in a year of delivery (name)	1. Yes 2. No	If birth order Q1.16>1 and 2.8 =Yes
	Have you had a pregnancy that was aborted or miscarriage during Covid time?	1. Yes 2. No	If No Go to 3.1
2.19	When did the pregnancy end?	Month _____ Year _____	
a 2.20	Did you get the abortion services at hospital you seek care?	1. Yes 2. No	
2.21 2.21a			

2.22	Where was the abortion performed?	1. Government Hospital (HSC/PHC/Block PHC/District Hospital/ Govt.

Mobile Clinic)
isp
ens
ary
3. At home (traditional methods)

2. Private (Private Hospital/ Clinic/ D

		4. Others	
2.23	Who performed the abortion?	1. Health care workers (Doctor / Nurse / Asha) 2. Dai 3. Family member / Relative / friend 4. Self 5. Others_____	
2.24	What was the reason for the abortion?	1. Unplanned pregnancy 2. Contraceptive failure 3. Complications in pregnancy 4. Health did not permit 5. Female fetus 6. Male fetus 7. Economic reasons 8. Last child too young 9. Fetus had congenital abnormality 10. Husband / mother in law did not want 11. Covid fear 12. I don't want 13. Others ……	
2.25	Did you have any complication because of the abortion?	1. Yes 2. No	If no go to Next section 3.1
2.26	Did you seek treatment for the complication?	1. Yes 2. No	If no go to Next section 3.1
2.27	Where did you get the treatment?	1. Government Hospital (HSC/PHC/Block PHC/District Hospital/ Govt. Mobile Clinic) 2. Private (Private Hospital/ Clinic /Dispensary 3. At home (Traditional methods) 4. Others_____	

2.28	Did you face any problem in receiving the treatment?	1. Yes 2. No	If no , skip to next section 3.1
2.29	What were the problems / difficulties you faced in receiving the treatment?	1. Lack of health care workers during COVID 2. No transportation because of COVID lockdown 3. Lack of health care facility due to COVID 4. Treatment for abortion was not available (During COVID) 5. Others	
Section 3 - Maternal health			
3.1	How many weeks before you realized that you were pregnant?	……(In weeks)	
3.2	When was your pregnancy (Name of the baby) confirmed?	Month _____ Year_____	
3.33.3	Who did the confirmation test?	1. Self 2. Health care workers (Doctor/ VHN/ ASHA) 3. Private hospital 4. Independent Labs 5. Others	
3.43.4	Distance to the health facility	HSC. in Kms …… Mins PHC.. in Kms …… Mins DH ….. in Kms …… Mins Private Hospital….. in Kms …… Mins	
3.53.5	Was the pregnancy registered?	1. Yes 2. No	If no Go to ….3.13
3.63.6	How many weeks pregnant were you when you registered?	…….. Weeks	If weeks <12 go to 3.8
3.73.7	If registered after 12 weeks , What was the reason for the delay? ***(if unable to***	1. Not confirmed / Unable to recognize	

	test due to COVID ----probe for reasons)	2. Unable to test (Due to COVID) 3. Didn't know that its mandatory 4. Others - - - - - - - - - - -	
3.83.8	Who helped you to register your pregnancy with VHN?	1. VHN 2. AWW 3. ASHA 4. Private hospital 5. Other……	
3.93.9	How did you register your pregnancy?	1. In person 2. Over phone 3. Others	
3.103.10	Did you receive a mother and Child Protection (MCP) Card immediately after registration?	1. Yes 2. No	If yes skip to Q3.13
3.113.11	If not, when did you receive the MCP card?	1. After a week 2. After a month 3. Others	
3.123.12	What was the reason/s for the delay?	1. Lack of availability of MCP card 2. Health care workers were involved in COVID duty 3. Unable to access to the facility 4. Registered over phone 5. Others....._____	
3.133.13	Where did you get the regular AN check up?	1. Govt. Facility (HSC/ PHC/Block PHC/ District Hospital) 2. Private facility (Hospital/ maternity clinic) 3. Both Govt. and Private facility 4. Home itself (Health care workers visited home due to covid)	
3.143.14	How many times did you receive antenatal care during this pregnancy?	…… (in Nos)	if more than 3 go to 3.16
3.15	What were the reasons for less number of ANC visits?		

3.163.16	As part of your antenatal care during this pregnancy, how many times did the following test were done ?	1. Weight …… Number 2. BP ….. 3. Urine … 4. Blood ……. 5. Abdomen examination 6. HIV screening… 7. GDM……. 8. Rh typing……. 9. Blood grouping……. 10. VDRL…… 11. COVID (RT PCR).....	
3.173.17	If '0', to any of the above services, why was it not done?	1. Unable to visit the PHC during covid time 2. Health care workers did mobile monitoring during covid time 3. Fear of Covid not visited the health facility 4. Due to lock down no transportation available 5. Others_____(Specify)	
	If multipara, probe whether you received the services during your earlier pregnancy?	1. Yes 2. No	If Q1.16>1
3.183.18	Where was the ANC related test done?	1. Govt. (HSC /PHC/ DH) 2. Pvt. Hospital 3. private Laboratory 4. Others_____	
3.193.19			

3.203.20	How many times you went to this facility for AN care	1. Govt. (HSC /PHC/ DH)..... 2. Pvt. Hospital…….. 3. private Laboratory …….. 4. Others …….

3.21	Did you do the scan?	1. Yes 2. No	

3.22	How many scans did you do during your pregnancy?	…… (Nos)	
3.23	How many scans have you done in a government facility ?	……..	
3.24	Did you face any problems to do scans during covid time?	1. Yes 2. No	
3.25	Did you face any problems with the government facility to do scans during covid time?	1. Yes 2. No	If no go to 3.27
3.26	If yes, What were the difficulties you faced to do the scan?	1. Scan centre was closed 2. Long waiting time in the public hospital 3. Huge crowd in the public hospital 4. Difficult to access the facility 5. Unable to spent money 6. Others_____	
3.27	Did your health worker indicate that your pregnancy is at any risky (Pressure, Sugar, Previous LSCS)	1. Yes 2. No	
3.27 a	If yes , were you provided with counseling for treatment	1. Yes 2. No	
3.27 b	Who first informed you that your pregnancy has some risk?	1. government Health worker 2. Private hospital doctors 3. Relatives / Friends 4. Others ……	
3.27 c	During (any of) your antenatal care visit(s), were you told about the following signs of pregnancy complications?	1. Bleeding Yes No 2. Convulsions Yes No 3. Prolonged labourYes No 4. Abdominal pain Yes No 5. High bp Yes No 6. Gestational Diabetes Yes No	
3.28	If no, probe for earlier delivery (in case of second delivery, **probe** for	1. Yes 2. No	If Q1.16 >1

	whether they receive the above information earlier?)		
3.29	During this pregnancy, were you given any injection in the arm to prevent tetanus for mothers?	1. Yes 2. No 3. Don't Know	If no Go to Q 3.31
3.30	During this pregnancy, how many times did you get a tetanus TT injection?	Times ____ Don't know	
3.31	During this pregnancy, were you provided or did you buy any iron folic acid tablets or syrup?	1. Yes 2. No	If no Go to Q3.35
3.32	Where did you receive the tablets?	1. Government facility 2. Pharmacy 3. Private hospital 4. Others …….	
3.33	How many tablets did you receive/ purchased ?	_____	
3.34	If less than 90 What was the reason?	1. No stock available 2. Expensive 3. I don't like consuming it 4. I didn't consume IFA for previous pregnancy 5. Others	
3.35	How many tablets you consumed	…….	
3.36	During this pregnancy, did you receive any drug for removing intestinal worms?	1. Yes 2. No	If no go to Q 3.38
3.37	During which week of your pregnancy did you consume a deworming tablet?	_____Weeks	
3.38	Did you receive any supplementary nutrition from the Anganwadi center during this pregnancy at covid time?	1. Yes 2. No	

3.39	During your pregnancy (covid time) did you receive advice on the following (at least once)?	1. Institutional delivery - Yes / No 2. Cord care - Yes / No 3. Colostrum 4. Breastfeeding - Yes / No 5. KMC - Yes / No 6. Family planning - Yes / No 7. Covid care - Yes / No	
3.40	If multigravida, Have you received the information during your earlier pregnancy?	Yes No	If 1.16>1
3.41	Where did you deliver the baby (Name)?	1. PHC 2. Block PHC 3. District Hospital 4. Pvt. Hospital 5. Home 6. Others…….	If options is 5 go to Q 3.47
3.41 a	Were you allowed to have your companion with you during the delivery of child (Name)	Yes No	
3.42	Were you referred to a higher level facility due to COVID?	1. Yes 2 .No	If No go to Q 3.48
3.43	How many facilities you visited for the delivery	----------	
3.44	Because of the delay in reaching the closest facility and referral to another facility, were there any complications you / your child faced?	1. Yes 2. No	If no Go to Q 3.48
3.45	What were the complications you / your child faced ?	……	
3.46	What was the reason for referral?	1. HW is on COVID duty 2. HW is tested positive for COVID 3. My self / my family member is COVID +ve 4. I / My family members had symptoms of COVID 5. Other medical reasons 6. Any other ……	
3.47	If home delivery, Why did you have home delivery?	1. Planned for home delivery 2. Unable to reach the facility due to COVID 3. Emergency situation	

		4. Vehicle not available 5. Others _____	
3.48	Who assisted the delivery?	1. Doctor 2. ANM / VHN/ Nurse 3. Other health care workers 4. Dai (TBA) 5. Friends / Relatives 6. Others……	If options 1-4 go to Q 3.50
3.49	If other than Health workers? What was the reason?	1. Health worker not available in the station 2. Emergency 3. COVID fear 4. others (Mention).....	
3.50	Was the infant weighed at birth in the facility?	1. Yes 2. No	
3.51	What was the weight of the child at birth?	_____ gms or kg	
3.52	What was the mode of transportation used by you to reach the health facility for delivery?	1. Government ambulance 2. Other ambulance 3. Jeep / car 4. Two-wheeler 5. Bus / Train 6. Tempo / tractor/ auto 7. by walk 8. Others	
3.53	Who arranged the transportation to take you to the health facility for delivery?	1. Doctor 2. VHN 3. AWW 4. ASHA 5. NGO 6. Family members_____ 7. Other	
3.54	Approximately how much you spent during delivery for: i. Hospital stay ii. Tests done iii. Medicine iv. Other cost v. Transport	No money paid i. Rs. _____ ii. Rs._____ iii. Rs. _____ iv. Rs._____ v. Rs_____	

3.55	How did you meet the out-of-pocket expenditure?	1. Bank account / savings 2. Borrowed from friends / relatives 3. Sold a property 4. Sold Jewelry 5. Insurance 6. Others	
3.56	Did you receive any financial assistance for delivery care?	1. Yes 2. No 3. Don't know	
3.57	How many days after delivery did you receive the financial assistance under JSY?(1500 Rs)	Days_____ Don't know	
3.58	How many days after registration did you receive the financial assistance under MRMBS?	1. First installment (Rs.2000) Days --------- 2. Kind (Nutrition kid) (Rs.2000) Days------ , NR 3. Second installment after 4 months (Rs.2000) Days ----- , NR 4. Kind (Nutrition kid) Days , NR 5. After Delivery (Rs.4000) Days , NR 6. After 3rd dose of OPV/ROTA/PENTA (Rs. 4000) Days , NR 7. After Measles 9th month (Rs.2000) Day , NR 8. Not applicable	
3.59	How was the baby delivered?	1. Normal 2. C-section	
3.60	How long did you stay in the health facility?	……(in days)	
3.61	If less than 2 days/ 48 hours of facility stay. What was the reason for the early discharge?	1. Discharged soon after delivery by the Health Facility because of covid 2. Family members influenced to discharge due to covid 3. Others_____ (Specify)	
3.62	Have you had any complications for you/ your child within a day of leaving the hospital?	1. Yes 2. No	IF no Go to Q 3.64
3.63	What are the complications you/ your child had after leaving the facility?	1. Jaundice 2. ARI 3. Bleeding	

		4. Cord Infection. 5. others ……	
3.64	Did you get free food during your hospital stay?	1. Yes 2. No	
3.65	Did you face any problems in the health facility during the delivery and stay during covid time?	1. Yes 2. No	If no go to Q 3.67
3.66	If yes, what were the problems?	1. Lack of doctors / nurses in delivery ward 2. Too crowded 3. No social distancing 4. Lack of sanitation 5. Delay in providing food 6. Others _____ (Specify)	
3.67	Did you face any problems in getting the delivery services?	1. Yes 2. No	If no go to Q3.69
3.68	If yes, Mention the problems faced to receive the services?	1. Unable to visit the facility 2. Unable to get the 108 on time 3. Long waiting time 4. Unable to clear doubts over phone 5. Others_____	
3.69	Did any health care workers check /visit after being discharged from the health facility to check you / and your child's health?	1. Yes 2. No 3. Enquired over phone	If no go to Q 4.1
3.70	If yes, how many days/ after? discharge your next checkup for you / your baby?	…….(in Days)	If n < 7 days go to Q 3.72
3.71	If the visit/ check up _over phone is after 7 days ? What was the reason for the delay?	1. Unable to visit the facility 2. Unable to get the 108 on time 3. Long waiting time 4. Unable to clear doubts over phone 5. Others__	
3.72	Who has done the postnatal check up?	1. Doctor 2. VHN 3. ASHA 4. AWW 5. Others	
3.73	What was the checkup done/ information given during the visit/ Phone call.	1. Examine the cord 2. Measure the child temperature 3. Counsel on danger signs for newborns 4. Counsel on breastfeeding	

		5. Others----	

	Section 4 : Child health services		
4. 1	How long after birth did you start breastfeeding?	1. Immediately 2. Within one hour 3. More than hours _____ (mention the hours) 4. Days …….. 5. Others_____	
4.2	Did the child have any complications after birth?	1. Underweight 2. Premature baby 3. Jaundice 4. Baby has not cried immediately 5. Others 6. No	If no go to 4.9
4.3	Have you practiced any home remedies suggested by the Health worker while discharged from the facility?	1. Yes 2. No	
4.4	Have you informed VHN/AWW/ASHA about your child's illness?	1. Yes 2. No	
4.5	Did the child get the treatment for the problems without delay?	1. Yes 2. No	
4.6	If not, what were the reasons for the delay?	1. Referral to multiple hospital due to covid 2. Lack of health professionals 3. Lack of ambulance services 4. Others	
4.7	Were there any consequences because of this delay?	……	
4.8	How long did it take to recover?	—---------- days/weeks	
4.9	Was the child given vitamin A dose in the first six months? (Orange color drops through oral)	1. Yes 2. No	

<table>
<tr><td>4.10</td><td>Was there a delay in getting child vaccination during COVID ?</td><td>1. Yes
2. No</td><td>If no Go to 4.12</td></tr>
<tr><td>4.11</td><td>If yes, mention the number of days of delay.</td><td>_____days</td><td></td></tr>
<tr><td>4.12</td><td>Whether the child received all the Vaccination (Till measles)

Copy from MCP card with Respondent / VHN

Take a photo (ODK)

IF MCP card not available _ cross verify with VHN</td><td>
<table>
<tr><th></th><th>Vaccine Name</th><th>Expected</th><th>Provided</th></tr>
<tr><td>1</td><td>OPV- 0</td><td></td><td></td></tr>
<tr><td>2</td><td>Hep B</td><td></td><td></td></tr>
<tr><td>3</td><td>BCG</td><td></td><td></td></tr>
<tr><td>4</td><td>OPV-1</td><td></td><td></td></tr>
<tr><td>5</td><td>Penta-1</td><td></td><td></td></tr>
<tr><td>6</td><td>Rota-1</td><td></td><td></td></tr>
<tr><td>7</td><td>PCV-1</td><td></td><td></td></tr>
<tr><td>8</td><td>IPV-1</td><td></td><td></td></tr>
<tr><td>9</td><td>OPV-2</td><td></td><td></td></tr>
<tr><td>10</td><td>Penta-2</td><td></td><td></td></tr>
<tr><td>11</td><td>Rota-2</td><td></td><td></td></tr>
<tr><td>12</td><td>OPV-3</td><td></td><td></td></tr>
<tr><td>13</td><td>Penta-3</td><td></td><td></td></tr>
<tr><td>14</td><td>Rota-3</td><td></td><td></td></tr>
<tr><td>15</td><td>PCV-2</td><td></td><td></td></tr>
<tr><td>16</td><td>IPV-2</td><td></td><td></td></tr>
<tr><td>17</td><td>MR-1</td><td></td><td></td></tr>
<tr><td>18</td><td>JE-1</td><td></td><td></td></tr>
<tr><td>19</td><td>PCV-Booster</td><td></td><td></td></tr>
</table>
</td><td></td></tr>
</table>

		20 Vitamin A1	
4.13	Did your child ever have diarrhea during the covid time?	1. Yes 2. No 3. Don't remember	If no Go to 4.21
4.14	Have you informed VHN/AWW/ASHA about your child's illness?	1. Yes 2. No	
4.15	Did you get the ORS from the health worker during the Covid time?	1. Yes 2. No 3. Don't know	if no go to 4.16
4.16	If not, why?	1. Bought from the shop 2. AWC closed due to covid 3. Unable to meet AWW / VHN 4. Others	
4.17	Did you get counseling from a health worker about how to prepare ORS at home?	1. Yes 2. No	
4.18	Did you seek treatment from any health facility for the diarrhea episode?	1. Yes 2. No	
4.19	If yes , which facility did you get treatment for your child?	1. Government 2. Private 3. Others _____	
4.20	Why did you choose that facility ?	1. Govt Health worker referred 2. Came on our own 3. Family/ friends suggested 4. others	
4.21	Did your child ever have ARI during the covid time?	1. Yes 2. No	If no Go to 4.27
4.22	Did your child receive treatment at the right time?	1. Yes 2. No	
4.23	Did you seek treatment from any health facility?	1. Yes 2. No	

4.24	Have you informed VHN/AWW/ASHA about your child's illness?	1. Yes 2. No	
4.25	If yes , which facility did you get treatment for your child?	1. Government 2. Private 3. Others _____	
4.26	Why did you choose that facility ?	1. Govt Health worker referred 2. Came on our own 3. Family/ friends suggested 4. Others	
4.27	Was your child weighed regularly	Yes No	If no go to 4.29
4.28	After your child was weighed, did you ever receive counseling from the Anganwadi/ICDS worker or ANM about underweight/ Undernourished?	1. Yes 2. No 3. Don't remember	
4.29	When you were pregnant with your child (name) , did you receive any benefits from the anganwadi/ICDS center?	1. Yes 2. No	
4.30	Did you receive any of the following benefits from the health workers?	1. Supplementary food 2. Health check ups 3. Health and nutrition education	

Section 5: Contacts /Services by Health care workers			
5.1	During the Covid time have you met any health worker like VHN/ ASHA/AWW/CHW?	1. Yes 2. No	
5.2	During the visits / contacts of health care workers, what were the different services that were provided and matters talked about?	1. Family planning 2. Immunization 3. ANC care 4. Delivery care 5. Birth preparedness 6. Complication readiness 7. Postnatal care	

		8. Corona care 9. Corona treatment 10. Treatment for sick child 11. Supplementary food 12. Growth monitoring of child 13. Early childhood care 14. Preschool education 15. Nutrition / Health education 16. Menstrual hygiene 17. Other ___- (Specify)	
5.3	How were the services provided by the health care workers during covid 19?	1. Very good 2. Alright 3. Not so good 4. Bad	If 1-2 go to 5.5
5.4	If not so good / bad provide the reasons?	1. Difficult to access 2. Improper care due to covid duty 3. Not responded properly 4. Not responded Timely 5. Unable to spend time 6. Others_____	
5.5	On a scale of one to five please rate the following? 1 Strongly Agree 2 Agree 3 Neither Agree Nor Disagree 4 Disagree 5 Strongly disagree	Based on your experience, During Covid Time: 1. Government provided timely/ effective services ..1 2 3 4 5 2. VHN fulfilled her roles and responsibilities to her best 1 2 3 4 5 3. The Medical Officer provided his or her best services 1 2 3 4 5 4. The messages/ information from the Government was factual 1 2 3 4 5 5. I would recommend Government facilities for pregnancy and delivery care 1	

Annexure II

IMPACT OF COVID – 19 ON UTILISATION OF REPRODUCTIVE MATERNAL AND CHILD HEALTH SERVICES IN SELECTED DISTRICTS OF TAMIL NADU: A MIXED METHOD STUDY

The Operational Research Program of the Tamil Nadu health system Reform Program (TNHSRP)

QUALITATIVE SURVEY CHECKLIST

Respondent I: Mothers' who have conceived, delivered during COVID 19 Endemic (during first and second wave of COVID 19).

Respondent II: Reproductive age women (15-49 years).

Primi Mothers: First Pregnancy

Key informants: Village Health Nurse (VHA), Anganwadi Workers (AWW) and Accredited Health Social Activist (ASHA).

1. **RMNCH Services before and during (first and second lock down period) COVID-19 Endemic.**
    a. What is your perception about COVID-19 Endemic?
    b. How it can affect your pregnancy process? (eg: Monthly checkup, travel, accessibility to the Health Centre, availability of the medicine etc.
    c. What are the difficulties did you faced during the lockdown in the family level.
    d. What are the precaution did you used to avoid COVID-19.
    e. During pregnancy how about the doctors care or treatment.
    f. COVID-19 affected pregnancy woman experience both mental, physical and social perceptions
    g. What are the symptoms that you have felt?
    h. Home remedies or hospital treatment did you undergone

2. **Direct and indirect impact of COVID-19 on Utilization of RMNCH Services.**
    a. When did you register your pregnancy? Did you delay your registration during the Endemic? If yes, why please explain and share your experiences.
    b. What are the RMNCH services available during Covid-19 Endemic?
    c. List all the services that you accessed / received during this period? (**Probe about all the services / schemes and its utilization elaborately)**
        - 4 antenatal (ANC) Checkup (1-3 months, 4-6 months, 7-8 months and 9th month of the pregnancy
        - Hb, BP,Urine, Weight & Abdomen
        - Tetanus Toxoid (TT)
        - Albumin & Sugar
        - Hemoglobin level
        - 100 Tablets of Iron and folic acid
        - Diet during Pregnancy
        - Hygiene
        - Rest & Family support
        - Postpartum Care (48hours to stay in Health facility, Health Worker 3rd day, 7th day and 6 weeks after delivery, Baby Vaccination, Counseling)
        - New born care – Kid, (Amma Thai Sei Pettakam, Nuts)
        - Immunization At birth to 16 years TT.
        - Entitlements - Janani – Shishu Suraksha Karyakram
        - JSY – Janani Suraksha Yojana
        - Muthulakshmi
        - (18,000 = 14,000 + 4000 (Nutrition Nuts box+)
        - Family Planning (Services and Counseling)

    d. Have you had any difficulty in accessing the services? If yes, please elaborate the challenges faced
    e. Have you observed any changes in accessing / providing services during this period? If yes, what are they and state reasons for the changes?
    f. Explain about the safety measures followed in the facility to provide RMNCH services?
    g. Explain the challenges/barriers you experienced accessing RMNCH services during this period?
    h. How Covid 19 has influenced your / family routine work?
    i. How it impacted your child health? (work, income, nutrition to be probed)

3. **Factors that facilitates and hamper to access RMNCH services during the COVID-19 Endemic.**
    a. What are the factors impacts you to consult hospital
    b. Motivation factors – Family Influences
    c. Planned Pregnancy
    d. Private Hospital
    e. Sterilization

4. **RMNCH Services and identify the most affected level of care during COVID-19 Endemic.**
    a. What are the major RMNCH services/ problems you have challenged during COVID-19 Endemic
    b. ANC/PNC/Schemes
    c. Immunization Affect
    d. Three Tire system (Sub Centre, PHC, CHC, Block Hospital, District Hospital and Medical Hospital).

5. **Context specific factors that influences the utilization of RMNCH Services.**

    a. Inaccessibility, lack of transport, or fear of contagion from big institutes. Widespread disruption of the healthcare system, the stay-at-home policy, and how RMNCH Services reduced access to hospitals
    b. Socio-Cultural aspects, Environment, Belief system, Pattern of every day routine, Your World view about RMNCH Services.

COVID – 19 Positive Mothers

1. When do you diagnosed with Covid 19? Explain about the care, treatment provided during the period.
2. Have you undergone any complications due to Covid during pregnancy? If yes, please elaborate your experiences
3. Did you receive the RMNCH services after the diagnosis? Is there any delay in accessing / providing the services due to the occurrence of the disease?
4. What services were given in the Covid ward? Would you explain quality of services, care given etc.,
5. Difficulties / challenges faced due to Covid 19 during pregnancy.
6. Do you think Covid 19 has impacted your / child health? If yes, please elaborate the impact
7. How it influenced the routine of your family activities? Could you explain further?
8. Social isolation impacts like Psychological mental depression anxiety

Respondents: Service providers (Medical officers, AWW, VHN and ASHA)

1. What are the protocol did you followed during Covid 19 Endemic.
2. Kindly explain about Covid 19 Endemic? How it impacted the routine work especially RMNCH services.
3. Could you tell us about how you managed the preparation for facing the Endemic in your institution?
4. Do you think facility had enough manpower / adequate supplies to provide the services during the Endemic?
5. Were there referrals during the Endemic?
6. Is there any services (RMNCH) were affected due to Covid 19? If yes, which service and state the reasons?
7. Kindly list the services that were accessed by the antenatal mothers during the Endemic.
8. Were there RMNCH outreach services carried out during the Endemic as like before? Is there any changes happened due to the Endemic in outreach services?
9. How was the immunization services were carried out? Were there any strategies used to provide RMNCH services during the Endemic?
10. Have you observed any changes in accessing / providing services during this period? If yes, what are they and state reasons for the changes?
11. What are the safety measures followed in the facility to provide RMNCH services?
12. Is there any delay in providing services? If yes, explain about the coping strategies / mechanisms adopted.
13. What are the challenges /barriers the facility has experienced in providing RMNCH
    services during this period?