

Obstacles to Breastfeeding to WHO Guidelines Among Rural Women in the Dindigul District of Tamil Nadu, India: An Exploratory Study

World Food Prize, M.S Swaminathan Research Foundation

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REFLECTION

The first thing I noticed when walking out of the Chennai Airport were the sheer amount of colors. I looked outside the cab in awe at the beautiful dress, street art, and flowers; that's when I finally realized that I was a long way away from Pittsburgh, Pennsylvania.

Life in Chennai was a magical experience. From making friends at the office and grabbing tea to being invited to an engagement ceremony in Kannivadi, I felt welcomed to a place halfway around the globe. Although the language barrier between English and Tamil was at times difficult to cross, I learned that when you slow down and develop a robust vocabulary of hand gestures, deep conversations often occur. It was these discussions on marriage, food, and education between my host family in Kannivadi and I that taught me more than I could ever learn from any book. Furthermore, working at the M.S Swaminathan Research Foundation was the perfect environment for growing as a student researcher. After my very first day, I felt supported and inspired by the passionate people around me, all working in different ways to fight food insecurity and promote sustainable development.

The ability to conduct both research and live in Tamil Nadu gave depth and an outlook on my research that would otherwise have been impossible to achieve. I learned firsthand that stories and statistics often convey a similar message yet do so very differently. It is one thing to see a spreadsheet about labor distributions with regards to gender, time, and wages. It is quite another to sit across from a forest worker, hear her stories about how she worked and raised her son of three years, and laugh over a cup of tea. The first, is dehumanizing, focusing only on the problem. It removes us from the situation as academics and limits the impact that research can have. The second, focuses on why the problem is important and who it affects. This is what made my experience with the Borlaug-Ruan Internship unique; I got to humanize the problems that are so often talked about in research and media and listened to the voice of those affected.

Coming back to America, I realized how many new outlooks I gained during my time in India. Food insecurity is a broad term- it can range from the food deserts next door to mass crop failures and water that only comes once a week. They are different in magnitude, yet both create ripples in the public health of a nation. To make meaningful change, we need to slow down and look for ways to facilitate communication. Afterall, basic conversations often teach the most if one takes the time to listen. For this lesson, I thank the M.S Swaminathan Research Foundation and the World Food Prize; thank you for providing the opportunity for the youth to grow as students, as researchers, and as global citizens.

ABSTRACT

Background: The World Health Organization has recognized the public health benefits of breastfeeding through the following guidelines: to feed within the 1st hour, exclusively for 6 months, and overall for 2 years. The adherence to such guidelines, however, is low in developing regions, such as the state of Tamil Nadu, India.

Objectives: To assess the challenges to breastfeeding according to WHO guidelines and the effectiveness of the governmental public health policies aimed at increasing breastfeeding, an exploratory study was conducted in the rural region of Dindigul in Tamil Nadu.

Methodology: A questionnaire to assess breastfeeding practice and difficulties was developed specifically for this study. A total of 30 women who had children in the past three years were interviewed using the questionnaire. In addition, five focus groups with the women from older generations (ages 40-60 and 60+) were conducted.

Results: The women who worked outside of home, had existing health issues (e.g., back pain, diabetes, and heart conditions), and/or had a C-section (50% of participants) were the most disadvantaged groups who were unable to fulfill the WHO guidelines. The policies meant to decrease financial burdens were accessible by 70% of participants, yet only a third of those eligible were able to utilize the funds for its intended purpose. Finally, information from the older generation revealed a disconnect between beliefs and practices, and communication gaps with the younger generation.

Limitations: Small sample size, limited geographic area, and imperfect recall in self-reporting.

Conclusions: Policy recommendation focus on creating a comprehensive maternal healthcare system that focuses on treating disease and lessening C-sections as a means of decreasing challenges to breastfeeding women. Future research on the effect of technology and media on breastfeeding attitudes and generational shifts among women working outside of home is also advised.

Keywords: breastfeeding, nutrition, maternal health, gender equality, health infrastructure

CHAPTER 1: BACKGROUND

I. Breastfeeding Benefits and Recommendations

The benefits of breastfeeding for both the baby and the mother are well-established. Colostrum, the first breast secretion following childbirth, has unique immune-protective properties due to high antibody and cytokine contents. Breastmilk itself delivers a perfect balance of easily digestible protein and fat for the baby's optimal nutrition. The abundant IgA antibodies in breastmilk protect the baby from diarrhea and pneumonia, the two main threats to children under one year of age in the developing world. It also protects the mother as it helps the uterus to shrink, inhibits menstruation, and can act as a natural contraceptive (Palmer. 2009). Breastfeeding triggers the release of oxytocin which acts to emotionally connect the mother and the baby (Murray. 2016). Continued breastfeeding is associated with cognitive benefits for the children such as higher IQ scores, better motor skills and verbal development (Isaacs, Fisher, Quinn, *et al.* 2011).

Breastfeeding support is integral to the health and comfort of both mother and child. The nutritional composition of breastmilk is linked to the mother's diet. Vitamin A, Vitamin C, and iron levels are most closely correlated to the mother's levels during pregnancy. A lack of Vitamin A in pregnancy has been shown to decrease the iron transporters in the mammary glands, decreasing the milk's iron content and posing a risk of anemia for the child (Lee & Kelleher, 2019). Although nutritional issues have not been shown to decrease the milk output, stress during the labor can delay the onset of the milk, straining the mother-child bond and making breastfeeding more difficult (Breastfeeding and Delayed Milk Production).

Recognizing the benefits of breastfeeding, the World Health Recommendation (WHO) recommends that the newborn baby be breastfed within the first hour of life, being breastfed exclusively for the first 6 months of life and for the overall length of 2 years (Breastfeeding, 2015). Good breastfeeding practices help realize the full benefits of breastfeeding. These include: giving colostrum to the baby, feeding breastmilk before the first hour, and feeding the baby on demand through day and night (Palmer. 2009).

II. Infant Feeding Patterns Among Rural Mothers in Tamil Nadu, India

Only 48.3% of infants in Tamil Nadu are exclusively breastfed (EBF) until 6 months of age, less than the already low overall rate of 54.9% in India. Instead, cow's milk is introduced as early as at three months as a substitute or supplement to breastmilk (Mayuri *et al.*, 2012).

Cow milk feeding is not considered optimal practice because cow's milk has too few vitamins and too much protein and chloride, which could damage kidney function in infants. Improper storage and dilution with water further compromise nutritional value and safety of cow milk; in one study of feeding practices, in 70% of the cases the milk was not boiled and was stored openly in a room, and in 49% water was added, creating risk of food born disease (Mayuri *et al.* 2012).

The pressures on working mothers to contribute financially create an environment that is not conducive to breastfeeding. In 1995, MSSRF conducted a survey of 1000 mothers who work in the unorganized sector in Tamil Nadu and have children under the age of six. Although the study focused on childcare strategies, breastfeeding practices were surveyed as well to gain a better understanding of the challenges faced by rural women. 72.6% of women farmers reported a lack of conducive working conditions, 26.3% a lack of time, and .9% a lack of interest for breastfeeding. Within the agricultural sector, poor conditions were the most prevalent and 39.2% of mothers began supplemental feeding before the six-month standard set by the World Health Organization (Arulraj. 1995).

Cultural factors that do not align with good breastfeeding practices have also been cited. In the tribal community of the Irula, 40% of mothers threw away colostrum (Saravanakumar , Anantharaman, *et al.* 2016). The cultural appreciation for boys in the family over girls may also lead to a gender gap in EBF. Within households lacking piped in water, the gender gap accounted for over 20% of excess female deaths between the ages of one and three (Jaychandran and Kuziomko, 2011).

Governmental programs that promote institutional delivery in Tamil Nadu also promote breastfeeding benefits among rural women. Since 2005, an incentive scheme pays women who give birth at a government hospital. An increase in institutional births has correlated with a rise in breastfeeding knowledge. A study carried out in the Government Medical College-Vellore-affiliated hospital, reported that 80% of women knew breastfeeding prevents disease and 76% were aware about the introduction of weaning foods at six months (Deenadayalan *et al.* 2017). Better breastfeeding practices at healthcare settings are still needed, however. In a government hospital of Puducherry, a significant gender gap was seen for breastfeeding on demand, and only 64.7% of mothers breastfed within one hour (Vijayalakshmi *et al.*, 2014).

III. Current Maternity Care Policies in Tamil Nadu

Review of National and Statewide Policies

Nationwide, several programs provide maternity leave and cash incentives to new mothers. Maternity Benefits Amendment of 2017 gives a six-month paid maternity leave at 100% salary for women involved in factories, plantations, mines, shops, or other private enterprises employing more than ten persons (Maternity Benefit Amendment. 2017). Pradhan Mantri Matruva Vandana Yojana of 2017 is a recently revised scheme promoting maternal health and nutrition. The program transfers Rs. 3000 in a first installment at the time of birth and a second installment of Rs. 3000 6-10 weeks after birth to the bank account of the mother, on conditional basis like obtaining a birth certificate and giving vaccinations (Yojana. 2018).

Other programs specifically target low-income mothers. The National Maternity Benefits Scheme of 2001 provides nutritional support to women below the poverty line and gives a one-time payment of Rs. 500 eight weeks before the due date (Yadav. 2016). The Maternity Benefit Programme of 2017 provides cash incentives to women below the poverty line as a means of incentivizing rest with the child. On the presentation of a complete application form available at government hospitals, bank information details, and an Aadhaar card women can receive Rs. 6,000 for their first child (Bhawan. 2017). Most relevant support for rural mothers is provided in Anganwadi Centers of the Integrated Child Development Services, a free public healthcare program. The centers help mothers qualify for governmental benefits, distribute food and dietary supplements, provide screenings for women of reproductive age, and basic health exams and vaccinations for children (Template).

Breastfeeding support is provided by The Mother's Absolute Affection, a nationwide program that began in 2016 in collaboration with UNICEF. It delegates 4.13 lakhs to districts to educate government nurses and ASHA workers about breastfeeding counseling. The program also encourages workers to make local community meetings about the benefits of breastfeeding for the whole family (Programme for the Promotion of Breastfeeding, 2016).

The state of Tamil Nadu has its open maternity leave policy for government employees. Women are given nine-months at full salary to spend with their infant and family (Maternity Leave Increased to 9

Months, 2016). This is the longest paid maternity leave available to any group of mothers in India. Tamil Nadu has also established the 108 for EMRI Policy. Women in labor can dial 108 for a free ambulance ride to and from the hospital for delivery. The state, as of 2016, had 20,000 women a month making use of this service and has allocated Rs. 55.13 crore to it in 2018 (PTI. 2016). Tamil Nadu also have its own maternity benefits scheme of Rps. 12,000 with the same criteria as that of the state (New Dr. Muthalekshmi Maternity Benefits Scheme Guidelines).

Difficulties in Accessing Maternity Benefits in Rural Areas

Women in rural areas and those working in unorganized sector either do not qualify or lack access to national or statewide maternity care policies in Tamil Nadu. The national six-month, 100%-paid maternity leave applies only to 10% of women, mostly in the organized sector. The program requires proof of employment for eighty days, twelve months before the delivery date. This excludes women of the unorganized sector who live in a state of constant job insecurity and lack of scheduled employment leaving only the PMMVY program available to casually laboring women (Gopolakrishnan & Brindha, 2017). The Unorganized Worker's Social Security Act of 2008 mandates that the central government creates a maternity benefits scheme for workers involved in home-based employment, self-employment, or in a business with less than ten employees. The act, however, still excludes women involved in the agricultural sector, seasonal workers, and construction workers (Unorganized Workers Social Security, 2008).

Many women remain unaware of or have no means of receiving the benefits they are eligible for. One study found that women involved in construction work without a permanent employer do not know their rights and have no means of collective bargaining. 90.6% were unaware of the maternity benefits available to them and 100% of the 78 respondents did not receive any cash benefit after their delivery. Many women in poverty do not own bank account information; combined with the lack of timely distribution mechanisms in the government procedures, it makes obtaining the benefit funds nearly impossible for these women (Gopolakrishnan & Brindha, 2017).

Therefore, while many breastfeeding-friendly policies are in place in Tamil Nadu, women who are most in need are excluded from coverage and must return to work early, leaving the baby with a caregiver and compromising the breastfeeding relationship.

OBJECTIVES

With over half of the infants in Tamil Nadu not being breastfed according to the WHO standard, it is imperative to look into practices that hinder quality nutrition and optimal caregiving.

Analyzing the challenges to exclusive breastfeeding, the factors that influence the duration and quality of the breastfeeding, and breastfeeding-related institutional policies are key to understanding how to create a conducive environment for breastfeeding among rural women in Tamil Nadu.

The present study aims to address the following research questions:

- I. What are the sources of stress in the health of rural women which can impede breastfeeding?
 - a. General state of health
 - b. Labor and delivery circumstances
- II. What other lifestyle factors influence breastfeeding?
 - a. Time Poverty: affects feeding on demand, length of feeding
 - a. Cultural Factors: colostrum feeding, gender inequality
 - b. Employment and Financial Constraints: affects being able to spend time with the baby
- III. What is the effectiveness of current maternity benefits policies in rural Tamil Nadu?

CHAPTER 2: METHODOLOGY

I. Designing the Questionnaire and Assembling the Study Group

A breastfeeding practice questionnaire was designed to access the following factors during individual interviews: the mother’s work status, diet during pregnancy and after birth, her breastfeeding practices, her ability to bring her children to work and breastfeed in public, her connections to other women in community institutions, and the financial and cultural pressures she faces (see *Appendix 1*). The answers to interview questions were analyzed qualitatively and quantitatively.

Stress level indicators were identified from literature review and used to quantitatively assess mothers’ stress levels relevant to breastfeeding (Table 1).

Table 1. Indicators of Maternal Stress Levels Relevant to Successful Breastfeeding.

Stress Level	Factor and Description	Score	Reasoning	Source
High	Delivery Complications (Breech birth, nuchal cord, c-section)	2	Maternal and fetal distress, delayed skin-to-skin contact, delayed first nursing likely	Dietche et al., 2018
High	Prolonged labor (first time mothers >20 h., multiparous >14 h.)	2	Maternal and fetal distress, risk of maternal blood loss and oxygen deprivation for baby	American Pregnancy Association, 2018
High	Return to work before 6 months postpartum	3	Before the baby’s EBF age recommended by WHO	Fieg, 2011
Medium	Return to work 6-10 months postpartum	2	Past the baby’s recommended EBF age; 40-week mark of maternity leave is associated with the lowest infant mortality in studies	Ruhm, 2000
Low	Return to work 10-24 months postpartum	1	Baby can be weaned to mostly eat solid food; 24 months is within WHO’s recommended total breastfeeding time guideline	Fieg, 2011

Thirty women who had children in the past 3 y.o. were interviewed using the breastfeeding practice questionnaire. For proper comparison, equal numbers of working vs non-working women, as well as women working in organized vs. unorganized sector were interviewed. Women were contacted with interview requests via local Self-Help Groups and Integrated Child Development Services (ICDS) centers. The ICDS records were also used to collect information on the nutritional status of children. The 3-year cutoff for the age of children was chosen for the following reasons: uniformity of the sample, large number of eligible families, better maternal recall, and the availability of ICDS records. Participants gave verbal consent.

To provide context for the mothers’ experiences and understand the available nutritional and healthcare advice, individual interviews of three healthcare workers were also conducted.

Additionally, focus group sessions for working and non-working mothers of different generations were conducted to assess cultural and social norms surrounding their breastfeeding experience as well as access to various government schemes.

II. Field Work: Testing the Questionnaire and Interview Techniques

The questionnaire and the interview process were tested in the Poryaipur village of Puducherry. Puducherry is a coastal region with only 31% of its 1M inhabitants living in the rural areas; of those, one-

third works in agriculture (Census 2011 Data: Puducherry, 2011). The climate is tropical wet and dry with temperatures from 28°C to 40°C.

Within the rural regions, a number of groups promote gender equality through the establishment of microcredits. The Pondicherry Corporation for the Development of Women and Handicapped Persons is sponsors Self-Help Groups throughout the rural villages. The villages are also part of a system of unelected Panchayats that are led by men and enforce community norms (Gopalan. 2005).

The area is served by 39 primary care centers and 75 sub-centers across the rural region, providing birth control, diagnoses of diseases, and referrals to specialty doctors (Health Facilities). Data collected from clinics in 2016, found that 31.8% of children under five were stunted and 16.3% of children under five were experiencing wasting. Of the women in the reproductive age, 62.9% were found to be anemic (NFHS-4 Pondicherry, 2016). Thus, undernutrition is prevalent, affecting morbidity rates, earning potential in agrarian work, and livelihoods in the community.

Following this visit, the original questionnaire was redesigned, as it severely underestimated the openness of rural women in sharing their childbirth experiences. With a chronological structuring and very specific questions, women often interrupted each other's stories. Thus, the second version of the survey was organized by topic with clusters of questions. This gave the maximum flexibility to the woman to tell the story and for the researcher to ask follow-up questions. The data were taken down by hand in the notebook and then transcribed into the computer, to better connect to the participants on a personal level. This approach has been successful.

III. Field Work: Collecting Study Data

The primary research was conducted in a less developed area of Dindugal, a landlocked district with a tropical climate and a rainy monsoon season from October to December. Out of 2 million inhabitants, 62.6% live in primary rural areas. Agriculture is central to the livelihood of many and the most common crops farmed are paddy, millets, and pulses (Census 2011: Dindigul District).

Dindugal consists of 14 Panchayat blocks and 306 villages overseen by an individual Panchayat. Resources in the villages include 960 Self Help Groups which provide business opportunities, skill trainings, and services to women and their families. There is still a literacy gap between men and women with the rates of 84.2% and 68.3%, respectively (Census 2011: Dindigul District).

Even though the region is mostly rural, only 0.5% of births were attended by a traditional home assistant. 12 government hospitals and 47 primary health centers are heavily utilized. Eighteen 108-EMRI free ambulances are available in the region, indicating emphasis on institutional deliveries (NFHS-4, Dindigul).

The interviews were conducted in the villages around the town of Kannivadi, part of Riaddachatram Bloc in Oddanchatram, a sub-district of Dindigul. The statistics surrounding Oddanchatram show a picture of disadvantage: only 58.9% of the population has access to drinking water, 65.6% of households have indoor plumbing, 70% of women take iron tablets, and 12% of adolescent girls are able to take folic acid supplements. 35.5% of children under five are stunted and 25.7% experience wasting (NFHS-4, Dindigul). Here, quality nutrition through breastfeeding to WHO guidelines may be critical to lowering malnutrition rates and protecting against disease.

RESULTS

I. Demographics of Riaddachatram Bloc

The total of 30 women were interviewed; of those, 15 were working productively outside of home and 15 were not. Of those working outside of home, 8 worked in unorganized sector while 7 worked in organized sector. The average age of participants was 26.9 years, with working women being slightly older than non-working women. Conversely, the average age of the first pregnancy was 21.9 with a lower age for working than non-working women (Table 1.1).

Even though the working vs. non-working samples were comparable, it is important to note that finding working women was difficult. While many women worked before marriage, working afterwards was uncommon; as an example, nearly half of the non-working women held a job prior to marriage. As stated by one woman, getting married meant having children, receiving a family planning operation (tube ligation), and then working as a seamstress. It is important to note that throughout the study the terms “working” and “non-working” are used to describe women involved in economically productive labor and not, respectively. If the terms “working” and “non-working” are used, they indicate the previous, more precise words that recognize domestic labor as work that is simply not accounted for in GDP.

The working women sample is also split almost evenly between members of a scheduled caste and a backwards caste. Amongst non-working women, however, there is a much higher proportion of participants in a scheduled caste (Table 1.1). Such a discrepancy might be another subtle factor influencing the differences between economically active and not economically active women.

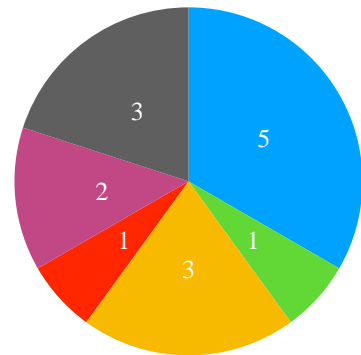
The women interviewed were spread across four demographic regions in Dindigul. The Village of Sevenakkayaranpatti was larger with better quality housing and sanitation than other villages. Almost half of the total respondents, all scheduled caste members, came from this region, with nearly half of the women being involved in some type of labor. Ottakovilpatti was another village made up of scheduled caste members and it accounted for 20% of the sample size; only one of the women, however, was in the labor force. The villages of Pudupatti and Pupankulam were both made up of respondents in backwards castes who accounted for 13.3% and 3.3% of the sample, respectively. Finally,

Table 1.1 Demographics and Background of the Study Participants

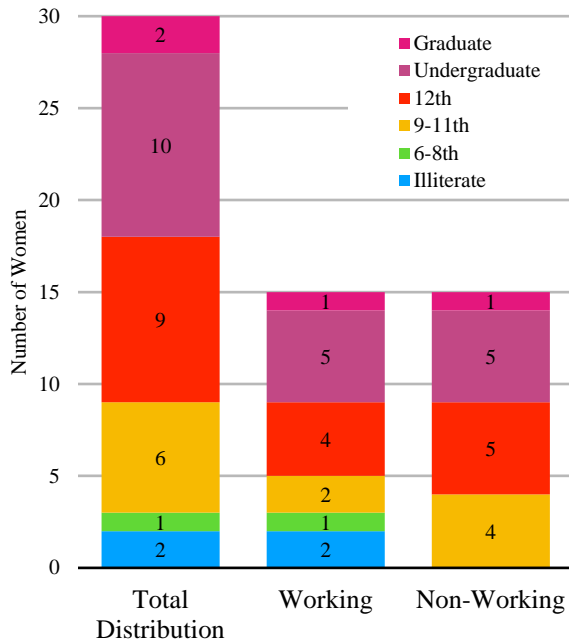
Factor	Total	WEA	WNEA
Religion	28 Hindu, 2 Christian	13 Hindu, 2 Christian	15 Hindu
Part of an SHG	15	10	3
Scheduled Caste	22	8	14
Sevenakayaranpatti Proportion	16	7	9
Ottakovilpatti Proportion	6	1	5
Pudupatti Proportion	4	3	1
Pupankulam Proportion	1	1	0
Kannivadi Proportion	3	3	0
Current Age	26.9	27.6	26.2
Age of 1st Pregnancy	21.9	21.5	22.3
Mode # Children	2	2	2
Work B/f Marriage	22	15	7
Complications; n=15	15	10	5
Complications in Priv. Hosp.	8	6	2
Normal Birth Stress; n=3	3	1	2

- Casual Labour Private
- Ag. Labour
- Hospital Nurse
- Teacher
- Shop
- Other

Distribution of Work. Chart 1.1



Educational Distribution Chart 1.2

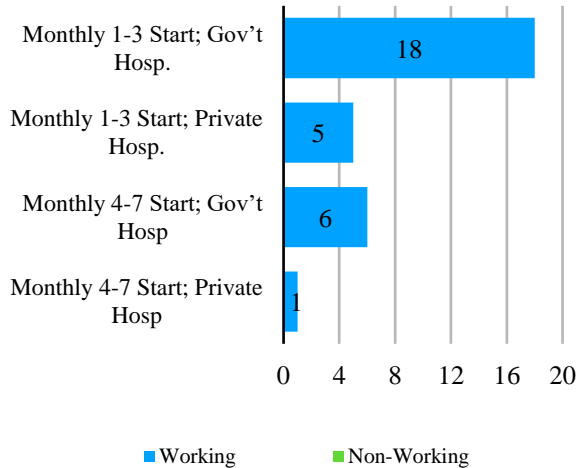


the town of Kannivadi accounted for 10% of the sample and only working women were interviewed (Table 1.1).

The women’s educational attainment ranged from illiteracy to Master’s Degrees often within the same village. The distribution shows that the majority of the women interviewed were literate and had at least completed 12th Standard; two illiterate women were present in the working sample only (Chart 1.2).

Nearly 40% of working women were casual laborers in the private sector, ranging from factory and forest jobs to agricultural labor. Of those in the section labeled “Other”, one woman worked in a daycare facility, another as the local Village Health Nurse, and another, a student in a Master’s Program, was a teacher’s assistant (Chart 2.4). Given that hospital nurses, teachers, and workers in shops are all hired on a salary bases, these women are not a part of the unorganized sector.

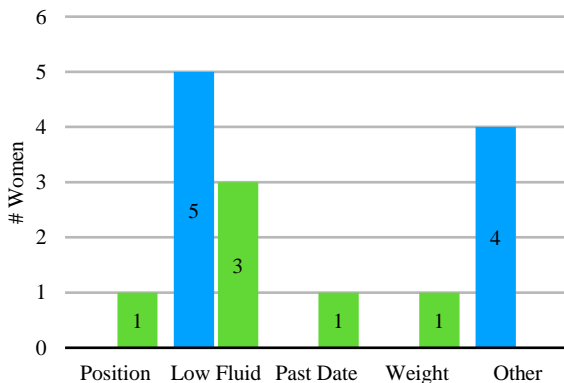
Antenatal Checkup Distribution Chart 1.3



All of the women interviewed gave birth within the last three years. Most women employed in the workforce worked until the date of delivery, and nearly all worked until the 3rd trimester.

All of the women had access to antenatal checkups where they received pregnancy care and supplements. Most of the women started their checkups around the 3rd Month of pregnancy and utilized the services at the Government Hospitals in Kannivadi or Dindigul. (Chart 1.3). The use of such services may increase the knowledge about health benefits of breastfeeding as identified in other studies.

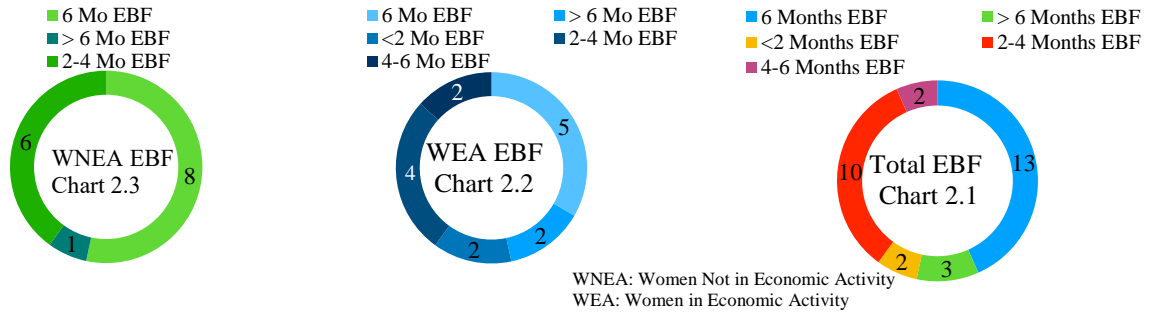
Causes for C-section Chart 1.4



Half of the study participants experienced some type of complication that led to a C-section, affecting specifically 8 of 15 working women. Conversely, the stress of an abnormally long normal birth affected only 3 respondents. Of the C-sections, the majority occurred in a private hospital, which affected 9 of 15 working women who underwent C-sections and 6 of 15 non-working women (Table 2). Feelings that private hospitals over-prescribed C-sections were common, with one mother wishing she went to a government hospital to avoid a C-section. Other women reported that C-sections were prescribed by the healthcare staff without first trying any other non-intrusive measures. Numerous diagnoses of low amniotic fluid may be caused by spotty antenatal care or be overdiagnosed, common in facilities without proper imaging equipment (Chart 1.4).

II. Breastfeeding Experiences and Trends

Exclusive Breastfeeding to WHO Guidelines

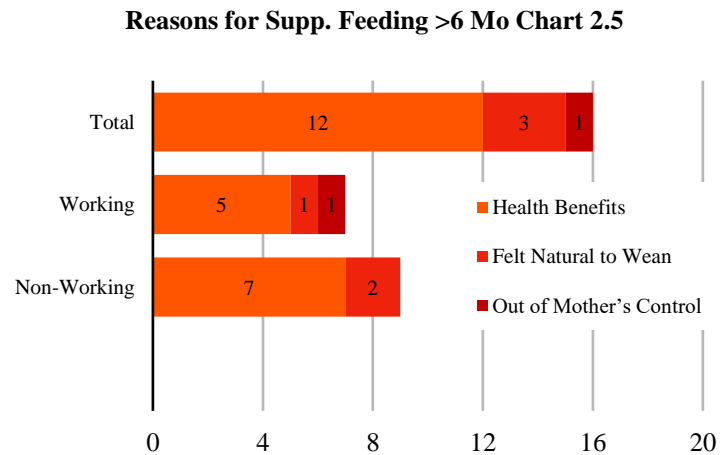
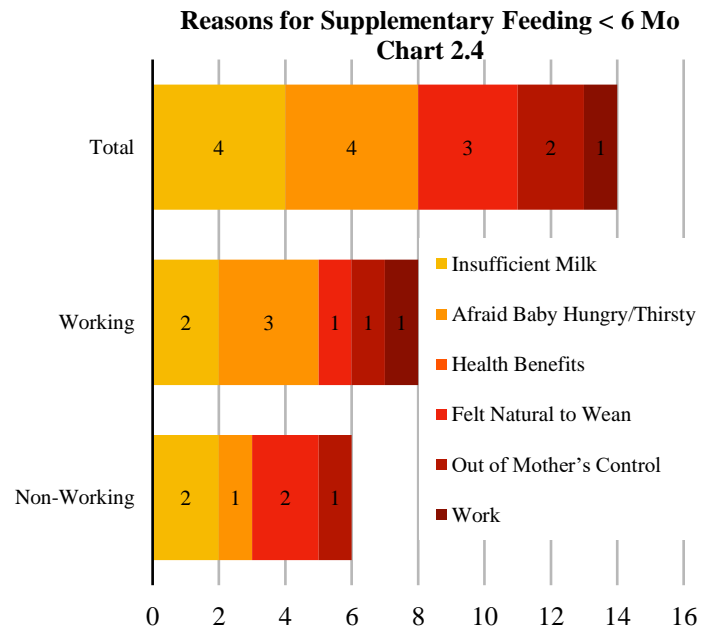


Approximately 53% of the study participants were able to practice Exclusive Breastfeeding (EBF) for at least 6 months, higher than reported rates in Tamil Nadu and consistent overall in India. The distribution of the cessation of EBF, however, is uneven, with nearly 40% of women stopping EBF before four months in the overall sample (Chart 2.1).

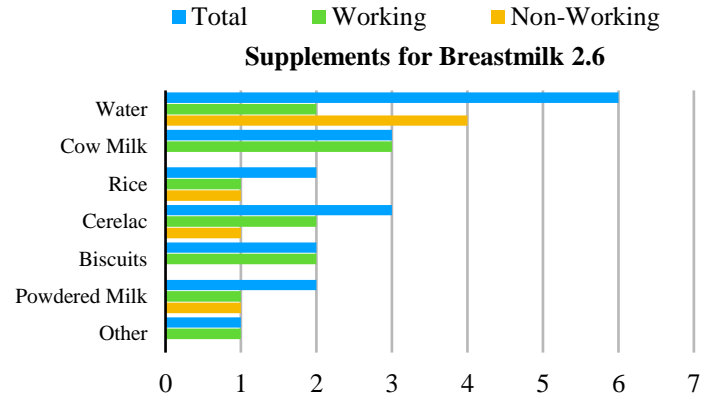
Of the working women, 7 of 15 EBF for at least 6 Months, while 9 of the 15 non-working women reported doing so (Chart 2.2 and Chart 2.3). This difference was not statistically significant ($p=.72$). The difference, however, is still scientifically important as it may show a trend that will become more apparent in a larger sample (Charts 2.2 and 2.3).

The self-identified reasons for ceasing breastfeeding are shown in Chart 2.4. For those who stopped before 6 months, the top three reasons were: 1) insufficient milk, 2) fear that the baby is hungry or thirsty, and 3) that it just felt natural to wean the child at the time. Importantly, working mothers cited the baby's hunger more while non-working mothers cited the natural feeling of weaning at the time.

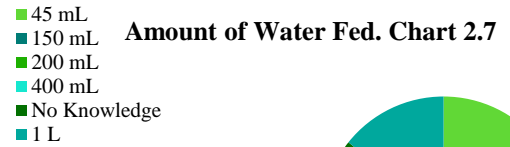
Among women who were able to EBF past 6 months, the top reasons for supplementary feedings were: 1) health benefits, 2) that it felt natural to wean, and 3) that it was out of the mother's control (Chart 2.5). In one case, the woman wished to exclusively breastfeed past six months; however, her mother urged her to introduce cow's milk at this time, saying that otherwise the baby would never take to it. This is an example of a familial dynamic that is in conflict with good breastfeeding practice and medical advice.



Of the 14 women who stopped EBF prior to 6 months, the most common supplements were water, cow milk, and Cerelac, an infant formula brand (Chart 2.6). Water was preferred by non-working women while Cerelac was used by working women. When asked the reason behind choosing Cerelac, a product that would not be readily available in the village, all three women said that they saw the advertisement on TV. Many women also used cow milk as a supplement to breastmilk. The amount of water given by all mothers is large relative to the baby's stomach volume (750 mL), with the majority falling into a range between 150mL and 1L a day (Chart 2.7).



For the supplements as a whole, 29% fell in the 400 mL range and 14% in the 200 mL range. Many women could not recall the amount of supplement given; this could indicate that the amount was too small to remember or that it was completely depended on the baby's demand (Chart 2.8).

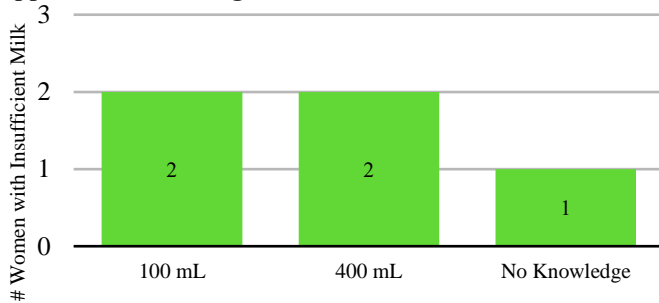


Most mothers with insufficient milk supplemented either 100mL or 400 mL (Chart 2.9).

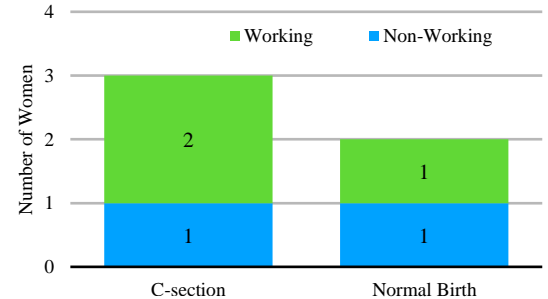


Examining prenatal factors and insufficient milk may also give insight into the effect of stress on lactation. Of the 5 women with insufficient milk, 3 had a C-section which is classified as high stress. A slight majority of productively working women also experienced insufficient milk (Chart 2.10). While the sample is too small to find statistical significance, it is still an insight into the stress a woman undergoes as C-section have a longer recovery time and make bonding difficult by prolonging the time of first feeding.

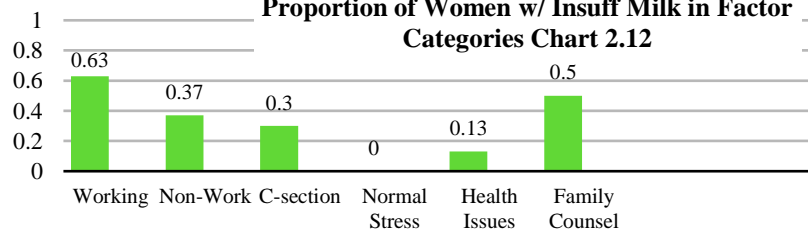
Supp. Amounts among Mothers w/ Insuff. Milk Chart 2.9

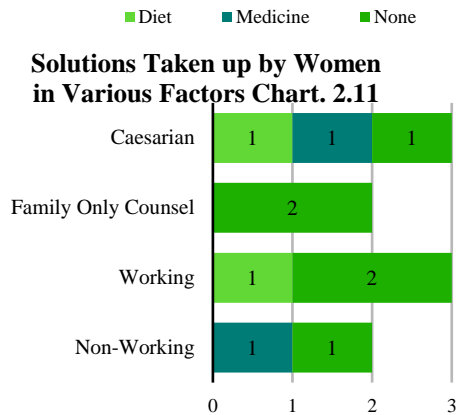


Birth Type w/ Insuff. Milk Chart 2.10



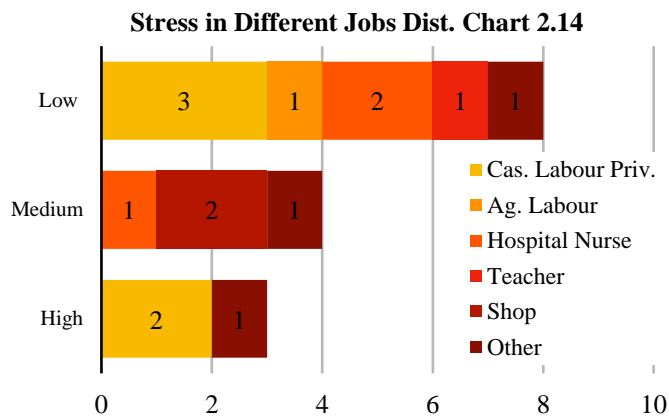
Proportion of Women w/ Insuff Milk in Factor Categories Chart 2.12





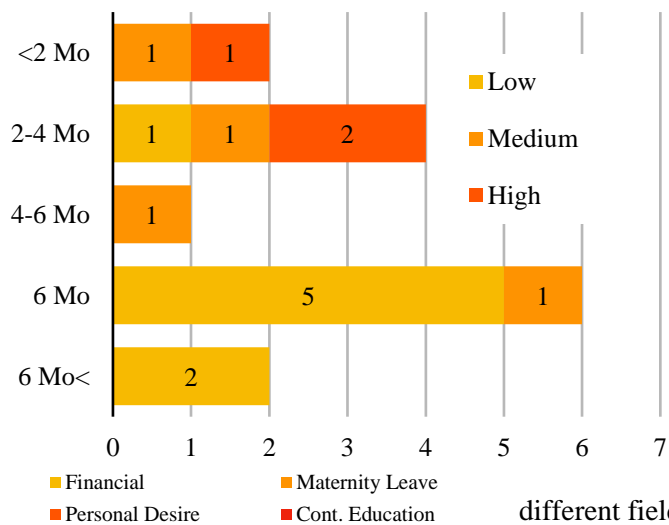
The proportion of women who were a part of each “category” (e.i C-section) were found to see if there was a particularly represented group among those with insufficient milk. Although many women in the categories overlapped, the highest proportion was found among those who were working and those who only took family counsel (Chart 2.12). The stress from a C-section or a particularly long normal birth were found in 30% and 0% of women, respectively.

Most women did not attempt any solution for their insufficient milk and none gave their baby to another woman or handpumped to try stimulate production (Chart 2.11).



Of the 15 working women in the sample, the majority went back to work after the baby was 10 months, therefore exhibiting low stress for breastfeeding since at this point the baby was eating weaning foods. Another 4 left to go back to work after the six-month mark, therefore having enough time to exclusively breastfeeding their infant, leaving only 3 working women in the high stress marker of women who were trying to work and exclusively breastfeed (Table 2.1).

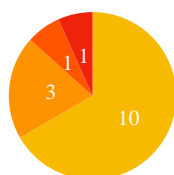
Stress Categories Distribution Across Feeding Lengths. Chart 2.15



The reasons for going back to work among the women were overwhelmingly financial; the women’s income was needed by the family or her maternity leave was ending at that time. Many of the women often left their job as a means of being with their child until after ten months and then joined another job since the maternity leave was either too small or nonexistent (Chart 2.13).

Within the high stress category, casual laborers were overrepresented. Among the women of the medium stress category, the majority worked in a shop or some other type of formal employment. The low stress category was the most diverse because most women quit their job and then got a new one in the same or

Reasons for Return Chart 2.13



different field, therefore pulling women from all sectors (Chart 2.14).

Of the women in the high stress category, none were able to breastfeed past four months. Those who were in in the low stress category for the most part also EBF for at least six

Table 2.1

	N=15	Low Stress	Medium Stress	High Stress
Return to Work Time	8	4	3	

months. For women who went back at six months, however, a very diverse array of responses was seen with roughly equal numbers being weaned at various times prior to and at six months (Chart 2.15).

i. Discussion

Many women began to introduce breastmilk supplements prior to six months in large quantities within the 100-400 mL range. The baby prior to six months, however, will consume an average of 750 mL of breastmilk daily; this means that a large portion of the diet becomes said supplement. Ingestion of a supplement early on exposes the underdeveloped immune system to pathogens, hinders nutrient absorption, and causes the baby to feel full and reduce suckling, contributing to insufficient milk in the mother. The issue of insufficient milk was widely cited; this might be connected to the large dose of supplement which causes a loop of less suckling to even less milk production. The women who were most at risk were those who were working and who only sought family counsel; the latter was such a small sample with so much overlap, however, that it might be negligible.

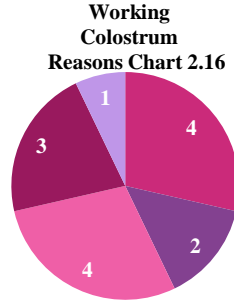
The solutions undertaken by current mothers afflicted with insufficient milk reveals a lack of hand-pumping and resources of donated breastmilk from other women. This is a notable difference between the current mothers and those of the previous generations. One woman (48 years) revealed that after her birth her milk was coming in slowly so another woman who gave birth at the same time breastfed her child for a while. Another woman experienced pain in her breast, so she hand-pumped until it went away and during that time gave her child to another woman to breastfeed. Given that many of the older generation advise their daughters it is surprising that so few current mothers utilized the same solutions to a common problem. An additional disconnect is in the motivation behind introducing the supplementary foods. As an example, the older generation began giving water at three months to clean out the intestine. Current mothers, however, wished to give water because they feared their baby was thirsty. The amounts among the older generation was also close to two teaspoons, not the hundreds of milliliters used by current mothers. Another example of a disconnect is that older women did not give cow's milk until after breastfeeding was finished for fear that the child would not return to the breast. Cow's milk, however, was commonly used by current mothers in addition to breastmilk.

The reasons for returning to work were diverse with only one of the mothers stating that they returned due to work pressures. She had to go back due to the end of her three-month maternity leave; this was given to her despite her status as a casual laborer. For her, taking advantage of the unamended Maternity Benefits Act (3 months) was possible because she worked at the same facility for 80 days 12 months prior to her date of delivery, entitling her to the benefits as decided by *Municipal Corp of Delhi vs. Female Workers* in the year 2000 (Ahmad, 2017). The other two women who went back due to the end of their maternity leave did so at six months because of the amended Maternity Benefits Act. For those whose maternity leave was nonexistent or inadequate, the mothers left their jobs, contributing to the large number of women experiencing low stress. This shows that women without a steady income have the ability to take off more than 10 months from work, alluding to support mechanisms that are beyond government policy. It is also important to note that the effects of maternity leave may have changed overtime; while the mothers interviewed had children in the past three years, the MBA was only amended in the past year. Since the act now calls for six months of maternity leave, the number of women going back to work in the after six months may increase since women would no longer have to quit their job to be with their child for a period longer than three months. The Chart 2.15, however, lends credit to the hypothesis that time poverty effects breastfeeding times; for all women in the high stress category of going back to work, none were able to breastfeed past four months. Given that this is scientifically significant, looking into support systems and causes behind this is a point of future research.

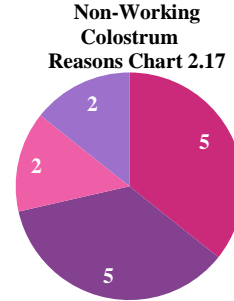
Good Breastfeeding Practices with Regards to WHO Guidelines

The WHO recommends breastfeeding within the first hours to receive colostrum and necessary skin-to-skin contact. Within the study, 24 of the 27 women (who were able to recall) fed colostrum to their babies. For those unable to feed, the baby was often in the ICU. In one case, however, a mother was unconscious following her C-section and her mother-in-law squeezed the colostrum out of her breast.

- Immunity
- Healthworker Advise
- Natural Process
- Child in ICU
- No Knowledge



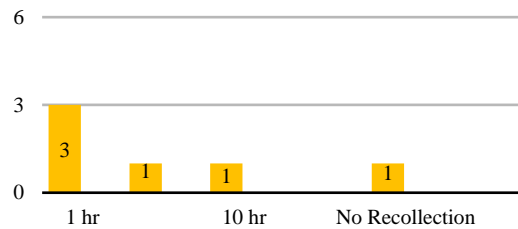
- Immunity
- Healthworker Advised
- Natural Process
- Child in ICU



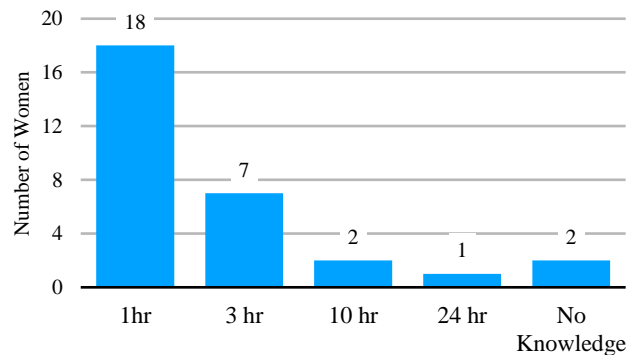
For the rest of the women, however, the most cited cause for feeding colostrum was knowledge of its immunological benefits. Another reason was a lack of realization that Colostrum was separate from breastmilk. Many women believed that it was simply a natural process and fed their baby the very first product (Charts 2.16 and 2.17).

Analyzing the times of first feeding reveals that only 18 of 30 women were able to feed breastmilk within the first hour and 25 of 30 by the third hour (Chart 2.18). Of those who were not fed soon after birth, however, were fed much later nearly 10 hours later in the case of a woman who only took health advice from family (Chart 2.19). Women who had C-sections also disproportionately had more difficulty feeding within the first hour (Chart 2.20).

Effects of Fam. Counsel of 1st Hour



1st Feeding Distribution Times. Chart 2.18



Total Length of Breastfeeding

Within the survey it was found that only 12 of the 30 women were able to breastfeed for the recommended two years; of those a statistically significant ($p < .024$) difference between productively working and non-working women was seen (Table 2.2). An anomaly in the data is found in generational differences. Of the young women who sought family counsel, one 1 of the 6 was able to breastfeed for 2 years. Members of the older

Distribution of First Feeding and Birth Type Chart 2.20

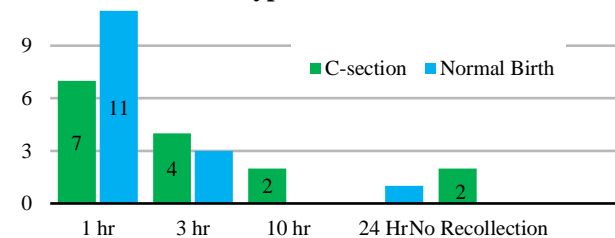


Table 2.2

	# BF 2 yrs
Total	12
Working	1
Non-Working	1
Health Issues	3
C-section	4
Fam. Counsel	1

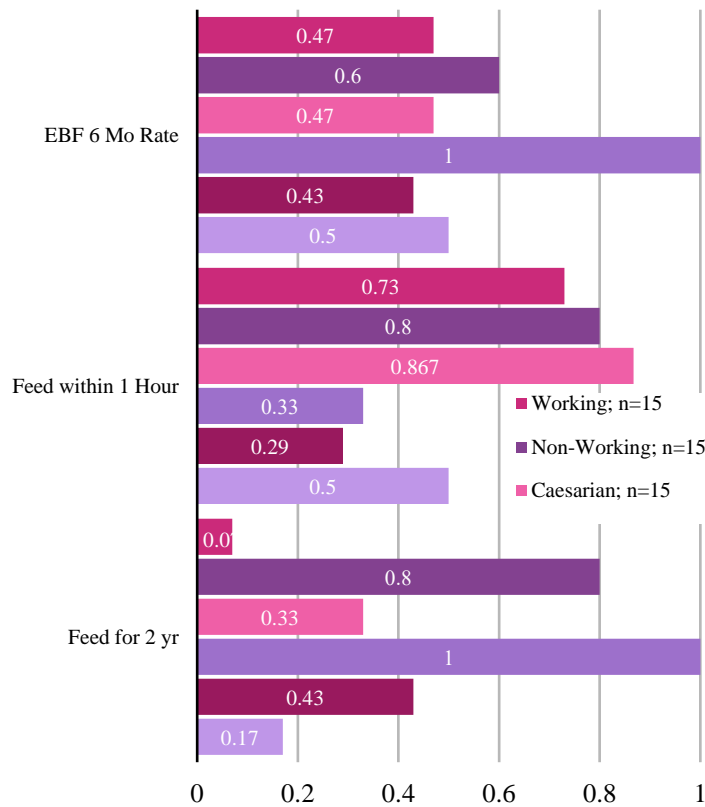
generation, from whom they took counseling, regularly breastfed until 2 or 3 years. These older women also worked in the fields for ten-twelve hours a day at the time, much like the current working mothers who are unable to breastfeed overall for two years.

Other Factors and Breastfeeding

The factors identified that may influence breastfeeding following the survey are described as: work, C-sections, normal birth stress, health issues, and taking counseling only from family members. One of the problems with such a small sample size and so many factors, however, is that populations will overlap. There are very few individuals who fall in only one group, making it difficult to draw any conclusions.

Therefore, the purpose of this section is to merely illustrate the complexity of the many issues facing mothers.

Proportion of Women in Selected Categories able to fulfill WHO Guidelines Chart 2.21



In Chart 2.21 each of the factors is illustrated with the proportion of women who were able to fulfill each category. For Exclusively Breastfeeding for 6 Months, 100% of those who experienced Normal Birth Stress were able to EBF for 6 Months. The group that had the most difficulty adhering to the WHO guidelines was that of women experiencing health issues; only 43% of women were able to EBF for 6 months. Among women, common issues were diabetes, high blood pressure, conditions necessitating surgery, and back pain from multiple anesthetic injections prior to C-sections. Given that women with pre-existing health issues often need C-sections, this category often overlaps with the other. From this section of the chart, one can find that working women and women with Health Issues— especially if they get a C-section— are the most likely to have trouble breastfeeding exclusively for 6 Months. Health issues, in general, seem to be more prominent among the current mothers; focus groups of women in their

30's described most of their peers having joint and back pain. Of those in their 50's and over 60 no such widespread issues were described during their childbearing years.

With regards to feeding breastmilk— and colostrum— within the first hour, women with health issues were least likely to do so (29%). Those who had a stressful normal birth also had a small proportion. Breastfeeding for 2 years is important for proper cognitive development, however only 7% of working women were able to do this when compared to the 73% of non-working women; this was previously shown to be highly statistically significant. Those who received only family counsel were also less likely to breastfeed their child for two years.

ii. *Discussion*

Given that many mothers fed colostrum to the child soon after birth, the practice is regular in the Dindigul community. This sentiment was reflected, for the most part, across the older generations. Feeding within the first hour, however, was not always possible; for women who were unable to do so, many were patients undergoing C-sections. In this invasive surgery, the mother is unconscious and does not have power to give her baby the breast immediately. Therefore, feeding times are completely dependent on the healthcare atmosphere and the healthworker. For other cases, the baby was placed in the ICU or the mother had low milk production; one mother’s milk would not come in until 10 hours after birth so until that time she gave cow’s milk to her infant despite the protests of the doctor. This anecdote, although positive in the woman’s power to make her own health choices, shows a lack of donated breastmilk in hospitals for babies whose mothers do not have milk yet.

For women breastfeeding over two years, involvement in economic activities was found to make a statistically significant difference for those working and those not. Yet, this also reveals a generational difference; previously all women worked in a field for ten to twelve hours a day, but it was common to breastfeed until at least two years. The difference was that all women of the older generation were able to bring their children with them, place them in a hanging cradle-wrap with another relative (generally an adolescent female relation) watching over them; when the baby would cry, the older mothers would simply breastfeed and go back to work. Amongst current mothers, only two who were still breastfeeding were able to bring their baby to work with them. One woman would simply go into a small creche facility made by her employer to breastfeed while another, who worked in forest jobs, took turns with other women to watch over all the children and breastfeed both her own and other children if they cried. While these are healthy stories, they are rare; if women are working in the current environment, bringing children with them was uncommon and breastfeeding while at work even more so.

Varying breastfeeding outcomes may also be connected to other generational differences. Among the older generation, women would commonly breastfeed in public by either turning towards a wall if men were present or simply by not wearing a blouse under their sari. Current mothers, however, are generally shy about public breastfeeding and prefer to do it in private with only one other female present. Such perceptions about breastfeeding, if changed, may remove barriers surrounding women about both breastfeeding in the workplace and in everyday life. Another difference was in the prevalence of health issues. Women of the older generation did not have any health issues until their middle age; current mothers, however, commonly have relevant health problems like diabetes, high blood pressure, heart problems, or just simple joint pain that one would not expect to see in women of their late twenties. Given that these women are the most disadvantages in adhering to the WHO guidelines, comprehensive maternal healthcare that prevents and treats such issues is necessary to increase the overall standard of living.

V. Social Pressures Surrounding Breastfeeding

i. *Gender Inequality in Feeding*

For women with two children of different genders and who had no variation in milk production for the two children, the times of breastfeeding for each child were asked. When compiled into a table there seems to be little variation in the breastfeeding times for sons and daughters. Although this is a very small sample of only 9 women, the result is not statistically

Statistical Significance Gender EBF

P= .598	6 Mo<	< 6Mo
Boy	7	2
Girl	6	3

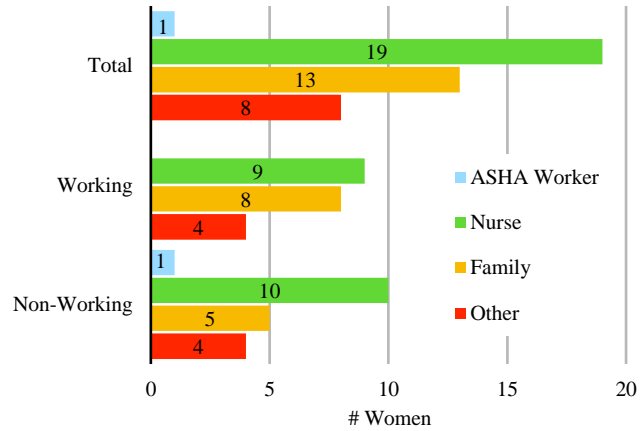
significant. Within the interviews, mothers preferring sons over daughters never surfaced with the only instance drawing similarity being a woman waiting to get her family planning operation because she still wanted to conceive a son.

P= .637	2 yr <	< 2yr
Boy	4	5
Girl	5	4

ii. Health Counseling

Most of the women surveyed received health counseling from a nurse in both the productively working and non-working populations. The secondary source of information was often the family; whether it be solely family council in conjunction within advice from health professionals, many women tend to place more stock on family advice. It is important to note, however, that sometimes health advise is not valued. One mother who works as a nurse and advised other women to exclusively breastfeed until six months yet introduced weaning foods to her own infant at 5 months.

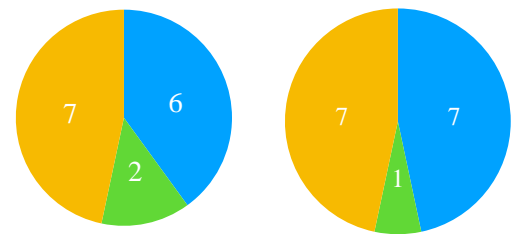
Health Counseling Distribution Chart 5.1



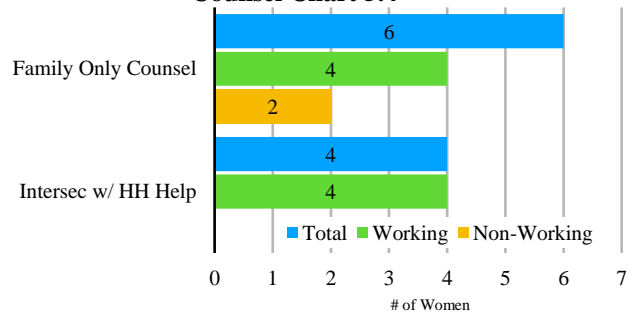
iii. Household Pressures

The woman’s triple or double role in the village as a breadwinner, housewife, and child caregiver create an environment that is very stressful. Within the regions survey the average time for household work was 2.3 hours a day; this included daily cooking and various cleaning tasks. The amount of help women got with their household work was surveyed as a means of assessing the support system available. Of the working women surveyed roughly 47% had help from other women such as sisters, mothers, and mother-in-laws for household activities while the other 40% completed all housework on their own. For Non-working women equal proportions (47% each) of women were helped by other female family members and did all the work by themselves. In both cases husbands rarely helped.

Working HH Help Chart 5.2 **Non-Working HH Help Chart 5.3**



Household Work Help and Family Only Counsel Chart 5.4



To see any relation between those receiving household help and health counseling, the two groups were contrasted. Of the women who received health counseling only from family members, the majority were also helped by family members in the house. It is important to note that these are all working women. This is indicative that possibly the involvement of family at other levels of support can translate into healthcare support. Therefore, targeting interventions at other female members in the family is a viable way of helping the mother.

VI. Focus Group Data

A total of five focus groups were assembled based on the age of participants and their cast. Within Pudupatti, three focus groups were conducted with women ages 20-40 (6), 40-60 (5), and 60+ (3); Within Sevenakkayaranpatti, two focus groups were conducted with women ages 40-60 (6) and 60+ (6). Discussions took place in a free-flow format, and the results were analyzed qualitatively.

Cast difference were observed in the place of delivery: while in Pudupatti all women gave birth in a hospital, 7 women from ages 40-70 in Sevenakkayaranpatti gave birth at home with the help of a traditional birth assistant. The women of Pudupatti stated that the reason behind their choosing of a hospital was a personal connection to a nurse. Coincidentally, the said nurse did not advise the women to feed colostrum while the traditional birth assistant insisted upon it.

Otherwise, the stories and basic patterns of infant feeding were similar between casts. The older women in both villages introduced supplementary foods at 3 months because it felt natural. Small amounts of hot water were introduced to clean the baby's intestines. Cow's milk, however, was introduced only after breastfeeding was finished in most cases.

Remarkably, the outcomes were different among generations, with most of the older women from the focus groups able to breastfeed their child for over 2 years. This reveals a generational disconnect given that the younger women were rarely able to breastfeed for 2 years, especially if they worked outside of home. The older generation gave only small amounts of water compared to significant amounts given by the young generation. Also, the young generation gave cow's milk along with breastmilk.

A notable difference in working condition was observed in the oldest age group. Women over sixty in the scheduled caste village stated that they worked in the fields and forests 10-12 hours a day. They had a shared care arrangement in which they were able to bring their children to work with them and place them in a hanging cradle-wraps nearby. A relative, generally a teen daughter or niece, watched over the children; when a baby cried, the mother would simply breastfeed and go back to work. Amongst young mothers, only two women working outside of home and still breastfeeding could bring their babies to work with them. One woman visited her child at a small creche facility provided by her employer to breastfeed. Another young mother who worked in forest jobs took turns with other women to watch over all of the children and breastfeed both her own and other children if they cried. Otherwise, if women were working, bringing children with them was uncommon and breastfeeding while at work even more so.

The attitude towards public breastfeeding was also notably different between older and younger participants. Among the older generation, women would commonly breastfeed in public by either turning towards a wall if men were present or simply not wearing a blouse under their sari. Current mothers, however, were generally shy about public breastfeeding and preferred to do it in private with only one other female present.

The most pronounced disconnect was observed in health issues. During and immediately after their child-bearing years, many women in their 20's and 30's complained about joint pain, back pain, and general health issues such as heart conditions and diabetes. The younger focus group participants reported that most of their peers have similar issues as well. This was unexpected and alarming, given their young age. In the older generation, even though they did more physically demanding work, such problems were unheard of, only surfacing with age. This difference in the overall health of women gives more support to the working hypothesis that pre-existing health conditions are linked to the breastfeeding rates.

VII. Healthcare Workers Interview Data

The three Healthcare Workers interviewed included a retired Anganwadi teacher of the Papunkalum village who had served for 27 years and gained medals in recognition of her efforts, a nurse who worked

five years at a private hospital, and a government nurse currently employed at the Kannivadi Hospital. They were asked questions about their work in a free-flow format.

The Anganwadi worker revealed that the center's primary purpose was food and supplement distribution according to the various regional government schemes. Ten years after she started her work there, the ICDS center also began counseling on maternal health issues. The most prominent topic was the proper age of marriage, taught with the intent of decreasing child marriage rates and early pregnancies. The sessions also taught the importance of infant vaccination, colostrum, and that cow's milk should not be given to the child younger than 1 y.o. The ICDS center did not provide women with resources on how to boost insufficient milk, the proper time to introduce water as well as its amounts. Importantly, none of the surveyed mothers stated that they got health counseling from an ICDS center.

Both the private and government nurses stated that as part of the health counseling provided, the woman was told not to introduce cow milk, water, or any other foods to the baby prior to 6 months of age. The nurses also did not recommend a timed feeding schedule, leaving breastfeeding to the baby's demand. For the Kannivadi government hospital, in cases when the baby was admitted to the ICU, expressed milk from the mother or a glucose IV was given to the baby. It was noted, however, that many babies born prematurely or abandoned that needed such ICU care were transferred to the Dindigul Government Hospital which inaugurated a Hospital Breastmilk Bank. These babies were fed expressed breastmilk as formulas were banned within the hospital. Within the private hospital, a baby was fed either a glucose serum, expressed breastmilk, or transferred to another hospital. The nurse who worked at a private hospital noted, however, that when she gave birth at a different private hospital the only advice the nurses gave her were not to put a bindi on her child and to ensure that the child did not wear the color yellow as it might invite the evil eye. Thus, the advice from different practitioners may not be standardized. This might account for an inconsistent message of EBF for 6 Months received by mothers.

VIII. Reaction to Breastfeeding Hypotheticals

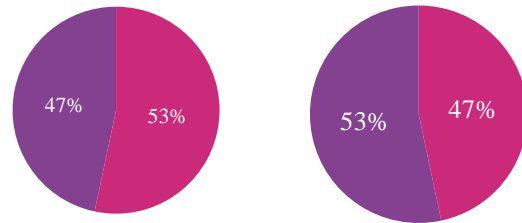
Increasing breastmilk availability, be it from the mother or another woman, is a method of creating a support network. During the survey, women were asked about their openness to breastfeeding another child or having their child breastfed by another woman as a means of establishing the success of a milk donation program and support system. Among working women, the majority were open to donate their own milk by directly breastfeeding, or by expressing it and donating. For those who would not donate, however, a common reason identified was the belief that if another child was breastfed, then there would be less milk available for the woman's own baby. Some working women already had an informal program of breastmilk donation and reception. One woman who worked casual forest jobs had her baby

breastfed multiple times by other woman and breastfed other babies when they cried. This culture may explain the increase in women who would be open to having their baby breastfed by another woman.

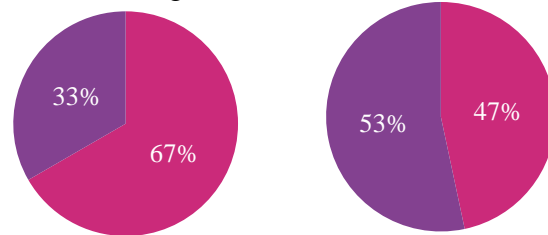
Non-working women, in general, were more open to donating milk and were equally open to receiving milk for their baby as working women. Less of these women, however, had previously taken part in either activity, therefore, it is unlikely that such an informal support system exists non-working women.

Increasing good breastfeeding outcomes is possible by providing counseling and support to the entire family, not just the mother. By encouraging other members in the family to attend antenatal checkups with the woman, learn about hand pumping, and be a part of local health groups an informal and formal network of support can be created for the woman, reducing pressure and creating a consistent recommendation.

■ Open to Donate
■ Not Open to Donate
■ Open to Receive
■ Not Open to Receive



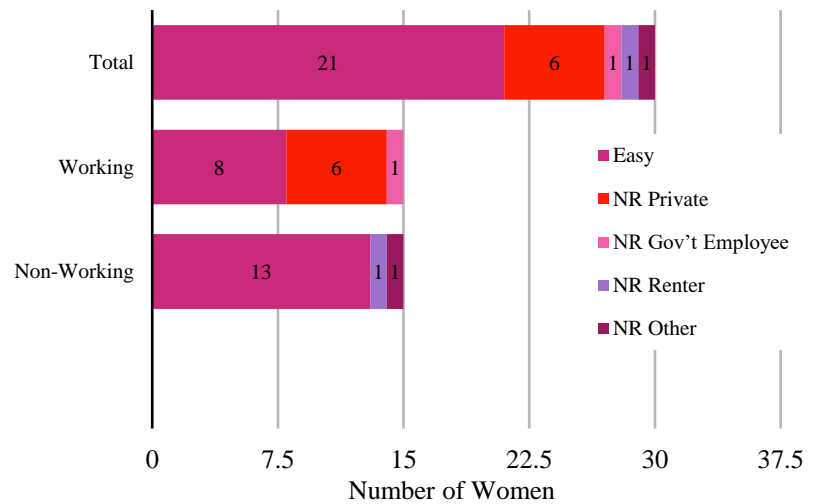
■ Open to Donate
■ Not Open to Donate
■ Open to Receive
■ Not Open to Receive



IX. Policy Availability

The purpose of the various Government Cash-based Schemes is to encourage institutional deliveries and allow for the women to take leave after birth. While many of the schemes are geared only towards women in the organized sector, some are still available to those in the unorganized sector and those who do not work. Within the survey knowledge of the schemes was present among all respondents who learned about them from government nurses, or in the case of working nurses were already aware prior to pregnancy.

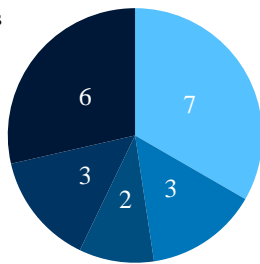
Cash-Scheme Access Chart 7.1



Of the 30 respondents, 21 were able to access the full installment of their respective cash scheme, most applying to the Tamil Nadu State-specific scheme. The most common reasons for being unable to access the scheme was if women gave birth in a private hospital, failure to provide a proof of residence, and the lack of an Aadhaar card. In cases where the respondent worked as a government nurse, they were also ineligible to apply for the cash scheme. One woman who had a baby of 5 months, however, was given 9 month fully paid maternity leave as an employee of the government of Tamil Nadu. Women who had more than children, or whose children died after birth were also ineligible for the scheme.

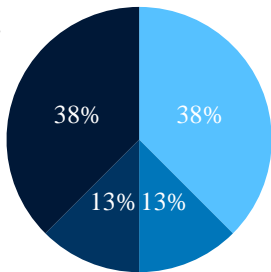
- Household Expenses
- Business
- Husband Used
- Saved
- Jewelry
- Hospital Expenses

Total Cash-Scheme Use



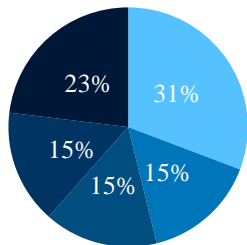
- Household Expenses
- Business
- Husband Used
- Saved
- Jewelry
- Hospital Expenses

Working Cash-Scheme Use



- Household Expenses
- Business
- Husband Used
- Saved
- Jewelry
- Hospital Expenses

Non-Working Cash-Scheme Use



The use for such cash varied greatly with the majority of women allocating funds to household (33%) and Hospital expenses (29%), the latter being common for women who underwent C-sections or whose child was in the ICU. Among working women, the number using the cash scheme for household expenses was equal to that of use for Hospital expenses. This is likely due to the increased number of C-sections in this population that correlate to greater health expenditures. Among Non-Working women household expenses (31%), hospital expenses (23%), and jewelry for children (15%) were the most common uses of the cash schemes. The hospital expenses referred to in public hospitals— which are made to be free by the Central Government— are incurred from indirect costs of transportation, lodging, food as well as emergency costs for special scans and tips to nurses and doctors. In both populations it was common for the husband to utilize the cash as well. Two women said that their husband was an alcoholic and he used the cash for his habit; given the sensitive nature of this information and the prevalence of alcoholism in the region, it is possible that the amount the husband used is underreported by respondents.

CHAPTER 4: CASE STUDY

Presentation of Subject

The subject is a 29-year-old woman who is remarkable for her breastfeeding pattern and had experienced challenges with personal health, healthcare, child-rearing, and extended family dynamics that are representative of those encountered by other women surveyed. She is a lifelong resident of Sevenakkarayanpatti Village and has two daughters aged 11 and 2. Although she had her first child at the age of 17, she finished 12th grade before then and began working as the local Village Health Nurse.

Results

During her first pregnancy, she worked an average of 8 hours per day. She had reduced food consumption in the first trimester due to morning sickness but increased her food intake as she felt better in the second and third trimester, consuming 3-4 meals daily. She followed a regular non-vegetarian diet; her family also insisted upon her eating goat liver at dinner, believing that she was carrying a son. She received folate supplements and an iron tonic from an ICDS center; those gave her hair loss and nausea.

She gave birth to her first daughter in the Kannivadi Government Hospital 6 km away. She was transported there on a back of a two-wheeler. Due to the weight of the baby and her pain levels, the health staff chose to do a C-section. Because of her unconscious state after the surgery, she was unaware of the time of first feeding breastmilk. She did ensure that the baby had colostrum due to its immune benefits. Almost immediately after giving birth, however, she developed jaundice. The family believed that this would be harmful to the child and forbade her from breastfeeding, giving the child powdered milk. Due to the lack of suckling, the mother stopped lactating, and powdered milk was continued until the 3rd month when biscuits and water were introduced.

The mother returned to work after 8 months due to financial reasons. She was unable to take her baby to work with her. Since she was not breastfeeding at the time, she easily left the child with her mother who fed the baby the regular amounts of foods and powdered milk. Her mother further supported her by doing two or more hours of housework after she came from her work day.

Within the ten-year gap between her children, the mother used Copper T intrauterine device as a contraceptive. She conceived a child, however, and had a miscarriage at two months. This event led her to discontinue the contraceptive. Later on, she conceived her second daughter. For this pregnancy, however, she was diagnosed with Diabetes Type II. Due to the inadequate care that she received in the Government Hospital and her health condition, she chose to attend a private hospital instead.

For her second pregnancy, her health condition forced her to have a controlled diet of leafy greens and fewer sweets as a means of decreasing her insulin needs. She also had to attend a greater number of antenatal checkups than her first pregnancy required. Her condition and her previous Caesarian birth caused her to have another planned C-section. She felt that her recovery from this was particularly painful given her increased age and the complex nature of the surgery.

The woman did not develop jaundice after her second delivery and was permitted by the family to breastfeed. She stopped at the 3rd month and began to introduce water and biscuits because she believed the baby's throat to be dry and because she felt that it was a natural time to stop breastfeeding, despite being aware of the benefits of EBF for 6 months. The water given to the baby was fed on an unsterilized spoon and was unboiled; the mother did this to ensure that her child built up immunity from an early age.

The woman received her health counseling from her mother, mother-in-law, and the nurses at the hospital. For her first birth, she was able to retrieve the cash-scheme benefit; the bank account used by herself and her husband was linked to an ATM, making withdrawal easy. For her second birth, she went to a private hospital, making her ineligible for the government schemes and forcing her to pay entirely for all of the care; given her health condition and the C-section, it was a considerable financial strain.

Discussion

This study participant has encountered multiple breastfeeding challenges. The cultural perceptions of jaundice transmission, as well as feeling that the baby was of age to receive solid food, were the primary determinants of the mother's short breastfeeding time. Jaundice in a young mother can be a result of either a hepatitis infection or a pregnancy-related liver and gallbladder disease. Since the mother did not report being diagnosed and treated for an infection, it is more likely that her jaundice was not due to a communicable disease. Even for infectious hepatitis, however, medical guidelines do not forbid breastfeeding as long as the mother's nipples are not bleeding (Hepatitis B or C Infections). Therefore, the child was not at risk of getting sick. The family's influence to stop breastfeeding, however, indicates a power imbalance in the mother's ability to make her own healthcare decisions. The belief that water was necessary to help the baby not be thirsty is found in some form in previous generations. While older women also often gave water at the 3-month mark, it was boiled and meant to clean out the baby's intestine. Thus, the advice given by the family might have been misinterpreted due multiple sources of health counseling.

The mother's health issues also reflective of the community as a whole. C-section rates are high in rural villages where the hospital is a few kilometers away and the main route of transportation is by bus or bike. Having a C-section can contribute to difficulties in the next pregnancy. It can also delay milk production and incur breastfeeding difficulties. This could have contributed to the powdered milk diet for the first child and short breastfeeding time for the second. Type II diabetes is rising in India even in rural populations. It is an indicator of a general compromised health, possibly due to poor diet and inadequate physical activity to help balance the intake of sugars. Regardless of the exact cause, such a pre-existing health issue cause strain on the mother, making breastfeeding of her child a secondary concern.

Recommendations

Given that the mother experienced both health issues and family pressure, addressing and supporting her health is integral to empowering her own health choices. The burden of illness made it impossible for her to return to work after her second child and causes her pain daily. Therefore, breastfeeding for the recommended time simply was not possible given her condition. General health support for the mother would lessen this burden, allowing her to be more independent, continue her job if she wished, and reduce the physical barriers to breastfeeding her child. Additionally, counseling and support to the family, none of whom attended antenatal checkups or health counseling with the mother, might help curb the pressures to supplement feedings prior to six months and ensure a uniform message in health recommendations.

CHAPTER 5: CONCLUSIONS

STUDY LIMITATIONS

The sample size of the women was small (n=30) and the distribution across villages was highly uneven. Because of this, it is difficult to find statistical significance and generalize the challenges and solutions to all rural Tamil Nadu. The number of women who also experienced multiple complications and therefore had many factors affecting them made it impossible to draw causality, although trends were still seen. Another limitation was the reliance on recall of information that was three years old; or in the case of focus groups, decades old. Finally, it was difficult to conduct truly individual interviews; whenever a participant was interviewed, many other women in the village would come and listen and sometimes offer answers. Thus, the responses of participants who heard the stories of others or were subject to social pressure during the interview may have influenced the validity of the responses.

FUTURE RESEARCH DIRECTION

Considering the complex social and health-related context in which breastfeeding is practiced, a larger exploratory study should be completed throughout other parts of Tamil Nadu, with greater numbers and more individual interviews with elders. Studies on the effects of media and technology on breastfeeding perceptions should also be conducted as means of trying to assess the cause behind generational disconnects. Finally, by implementing policies and working with local communities, comprehensive maternal health and education may also help create uniform health advice that is accessible and trusted.

POLICY RECOMMENDATIONS

i. Increasing Investment in Government Hospitals

Targeting additional investments toward Government Hospitals will increase quality of care making them competitive with their Private counterparts and therefore increasing the number of women eligible for the government cash schemes.

Investment into the hospital's supporting infrastructure will reduce such medical cost burden on women (lodging of family members, food, transportation, tips for nurses and doctors), and will allow the women to utilize the benefit cash for its intended purpose: the costs of daily life as a substitute to lost income.

Within the hospital, the investments should be directed to imaging equipment and training for health staff, with the goal of reducing or maintaining lower C-section rates and providing competent follow-up care. As C-sections are costly, yet not the first choice for many mothers, this complex of measures will decrease healthcare expenditures per patient while providing better and more competitive service.

ii. Special Markers on Cash

To ensure intended use of the cash from current schemes, it should be marked by the distributing banks to only allow acceptance for purchases for healthy daily expenses. An alternative is for the government to deposit the cash to a dedicated EBT/Debit card, which the stores would only take for acceptable use. Steep fines should be instituted for alcohol distributors who take cash from benefit schemes for alcohol purchases.

iii. Expansion and Implementation of Statewide Breastmilk Banks

To increase availability of expressed breastmilk for babies, the existing seven breastmilk banks in the Tamil Nadu should be expanded to a program with the presence in every Hospital (similar to that in the state of Rajasthan). The program across Tamil Nadu would be unique from others implemented for three reasons: 1) It would mandate the creation of breastmilk banks in Government Hospitals and incentivizes Private Hospitals to do the same through tax breaks, 2) The breastmilk available in the banks should be advertised as multipurpose, with the breastmilk being used for children in the ICU, those without mothers, and for everyday use by community member families, and 3) Smaller breastmilk banks that utilize the refrigerating infrastructure already created for the storage of vaccines should be localized in ICDS centres, making expressed breastmilk available for a short time in the village and also serving as advertisement for the larger programs in Hospitals. This makes it possible for breastmilk, in some form, to still be available while the mother is facing the challenges of daily life.

iv. Comprehensive Women's and Maternal Health Care

A comprehensive women's health care program will aid in prevention, detection, and treatment of health issues affecting women in the reproductive ages is critical to establishing good breastfeeding patterns in motherhood. The first stage of comprehensive women's health care should begin at puberty. Forging relationships between nurses and adolescent girls via recommended well checks or groups programs will improve health advice delivery. In maternity, antenatal care must go beyond understanding the progression of the pregnancy, focusing on the mother's general health, identifying pre-existing or occurring health problems. The third stage of the program should focus on increased follow-up and communication with the providers during delivery and postpartum.

v. Village Health Groups

In the same way that Self-Help Groups have empowered women through the creation of a community and connections to resources, the creation of Village Health Groups (VHG) will strive to create a breastfeeding support community and connect women to other lactating mothers.

The VHG should be open to women of all ages. This will help integrate advice and support from the older generation as well as ensuring that the adolescent girls learn about good breastfeeding practices from an early age. The community would also be a safe-space for public breastfeeding, creating a community of supportive mothers. Women who experience insufficient milk or time poverty with regards to feeding would be connected through the VHG to other mothers who would be willing to breastfeed their child. In such a community, there would also be social circumstances that elevate positive breastfeeding role models. Such a social environment may also contribute to an increase in good breastfeeding practices.

The group could be based at the local Anganwadi Center, utilizing the existing infrastructure, and incorporate health advice from ASHA workers. Meetings and seminars can focus on healthy diets, the pregnancy stages, contraception, and proper breastfeeding techniques, encouraging a greater awareness of the reproductive process and supporting mothers.

vi. A Beneficial Relationship: Media and Breastfeeding Awareness

With the state government providing free color televisions to those below poverty line, access to visual media has skyrocketed across urban and rural Tamil Nadu. A series of TV ads, daytime show placements, and themed programs can be utilized for a breastfeeding promotion campaign to encourage

EBF for 6 Months, breastfeeding immediately after birth and for 2 years total. While women are made aware of the benefits of breastfeeding, a media campaign will make such advice socially acceptable and create positive peer pressure. Media campaigns should also show mothers breastfeeding in public: this might reduce the shyness that women experience as well as provide positive breastfeeding role modeling.

vii. Funding and Feasibility

Increased funding and communication about breastfeeding-friendly initiatives should be conducted in cooperation with local NGO's and Panchayats. The financial feasibility of the programs may be accomplished in the following three ways: 1) Consolidate all national maternity cash-benefit schemes into one program, 2) Given that state maternity benefit schemes tend to be more popular than national ones, the proportion of the budget for central schemes not utilized should be evenly divided amongst the states for the next fiscal year to utilize in the local cash-benefit schemes, 3) The central government should levy a Tobin-style Currency Transaction Tax, a flat rate on all currency transfers and exchanges from rupees to a foreign currency. The latter proposal will not only raise funds for healthcare investment but also promote investment in domestic economy by encouraging Indian citizens to hold, and use, their cash reserves in Indian currency rather than foreign currency in banks overseas (e.g., Switzerland). This is a prominent issue that is being discussed currently (Singhal, 2017). The tax, however, will focus only on the conversion into foreign monies so as not to discourage foreign direct investment into India and Tourism, both industries that are critical to the GDP. Such financial measures, if enacted with transparency, would increase the feasibility of the recommended policies and may also help stabilize the Indian Economy.

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APPENDIX I

Interview of Mothers

1. Demographic Information Collected (hopefully pre-interview)
 - a. Name
 - b. Age
 - c. Age of first pregnancy
 - d. Number of Children— Male/Female
 - e. Educational Level/literacy: Number of years of schooling
 - f. Engaged in Productive work: Yes/No
 - i. (If Yes) Type of Work: Farming, Agricultural Labourer, Casual Labourer private, casual Labourer public, self-employed, others (specify)
 - g. Are you a member of SHG?— Yes/No
 - h. Religion—Hindu/Muslim/Christian/Other
 - i. Are you part of a scheduled caste?

- II. Pregnancy
 2. I would just like to start by talking about your most recent pregnancy experience, is that alright?
 - a. Recent Pregnancy experience: Easy/Difficult
 - i. Explain reasons for response:
 - b. Till how many months of your pregnancy did you work?— months
 - i. Did you give birth in the winter or non-winter months?
 - c. How many hours did you work when pregnant?— average hours of work per day
 - d. Did you attend any antenatal checkups?—Yes/No
 - i. How many?
 - ii. Where?
 - e. How did your recent pregnancy feel compared to your other pregnancies?—Better/Worse Same
 - i. Explain reason for response:
 - ii. Did you work the same number of hours?- Yes/No

- III. Childbirth
 - f. Moving on to the birth, could you tell me about your experience?
 - i. Where was the delivery?—Government Hospital/ Private Hospital/ Primary Health Center/Other (specify)
 - ii. How did you get there? (Testing for use of free ambulance service)
 - iii. Was it normal or a C-section?— Normal/C-Section
 - a. Why C-Section? 1. Position, 2. Cord around Neck, 3. Less Fluid, 4. Any other complications (specify)
 - b. (If Normal) How long did it last?
 3. How did your most recent birth compare to your previous births?—Better/Worse/ Same
 - a. Explain Reasons for Response:

- IV. Mother's Diet at Pregnancy
 4. Now, I was hoping to focus a little on your eating habits. When you were pregnant how many times a day did you eat?— times per day
 - a. Was this the same as your normal habits?— Yes/No
 - b. Did you eat anything special for meals?— Yes/No
 - i. If so, what?

- c. Was it vegetarian or non-vegetarian?— Veg./Non-Veg
- d. Did you fast at all during your pregnancy?—Yes/No
- e. Was this a similar diet as with your other pregnancies?— Yes/No
 - i. Explain deviation, if any:

V. Mother's Diet Post Childbirth:

- 5. After childbirth, what types of foods did you eat?— regular diet/ special diet
 - a. (If special) what was it that you had extra?
 - b. Can you explain why you had this special diet?
- 6. With your other children, did you also eat similar foods in the same quantities?
 - a. Did you fast when you were lactating?
 - b. Did you breastfeed during the fasting period?

VI. Supplements

- 7. Did you have access to any supplements during your last pregnancy?—Yes/No
 - a. What types?
 - b. What instructions were you given about taking them?
 - c. Where you able to follow these?— Yes/No
- 8. Did you take any supplements after childbirth?
 - a. What types?
 - b. What instructions were you given about taking them?
 - c. Were you able to follow these?—Yes/No
- 9. Was your use of supplements similar with your other children?— Yes/No
 - a. Explain deviation, if any:

VII. Maternal Health

- 10. How would you rate your current health condition?—Satisfied/ Not satisfied
- 11. How easy was it for you to conceive?
 - a. Time span for first pregnancy?— months/years
- 12. When did you get your first enter into puberty?- age
 - a. Were your periods regular?
 - b. After childbirth, when did you get your first period?— months after
 - a. How about for your previous children?
 - c. Were these the same or different as your previous periods?
- 13. (If at some point difficulty conceiving) Have you ever taken any kind of fertility treatment?— Yes/No
 - a. Yes: What kind of treatment?
 - i. Did you see any results?
 - b. No: Explain reasons.

VII. Breastfeeding Practices

- 10. I was hoping to now speak about your breastfeeding practices.
 - a. What was the time gap between the birth of the baby and the first feeding?
 - b. Did you feed it the thick yellow liquid from your breast (colostrum)?— Yes/No
 - i. Explain reasons for response:
- 11. When did you first give the baby a liquid other than breastmilk?—Less than 6 months/ More than 6 months/ At 6 months (Testing for exclusivity)

- I. (If less than six months of age)
 - a. What did you use as your supplement to breastmilk? Cow Milk/Water/Honey Water/ Milk Powder/ other (specify)
 - i. (If only water) Was the water given instead of breastmilk?
 - ii. In what amounts? In what frequency?
 - iii. Did you prepare the water? If so, how?
 - b. What was the primary reason for using this?— No Milk/ Inadequate Milk/ Time pressure/ Pain/ Other (specify)
 - i. (If fear of inadequate milk) What steps did you take to correct this?— None at all/hand pumping/ supplements/ special diet/others (specify)
 - ii. (If Pain) What steps did you take to correct this?— None at all/ Visit of Healthcare Clinic/ special diet/ other (specify)
12. How did you feed the supplement to the baby?— Bottle/Spoon/Other (specify)
 - a. How often do you sterilize the bottle?— Everytime before use/ Once a day/ Twice a day
 - b. Did your baby every have a problem with going back to the breast after having the supplement?
13. (If applicable) Was this whole process the same with your previous children?— Same/DifferentNone
 - a. Explain reason for response:
14. Were you made aware about the health benefits of exclusively breastfeeding for six months?

VIII. Social Norms

15. How long did you give only breastmilk to your son? (If applicable)
 - a. How long did you give only breastmilk to your daughter? (If applicable)
16. Overall, how long did you breastfeed for your last child?
 - a. How long did you breastfeed overall for your son? (If applicable)
 - b. How long did you breastfeed overall for your daughter? (If applicable)
 - c. (If currently breastfeeding still) ow long do you plan to continue?
17. Who do you go to for health counseling?— ASHA worker/ Nurse at Hospital/ Mother/ Mother-in-law/ SHG Sessions/ other (specify).
 - a. Who advised you to breastfeed?— ASHA worker/ Nurse at Hospital/Mother/ Mother-in-law/ SHG Sessions/ Other (specify)
 - b. For how long were you advised to do so?— months

IX. Work Pressure/Time Poverty

18. How old was your baby when you got back to work? — Less than 6 months/ Between 6 and 10 months/ More than 10 months
 - a. What was the primary reason for getting back to work?— Financial/ No Maternity Benefit/ Pressure from family/ Other (specify)
 - b. How many hours do you spend at the workplace?
19. Are you able to carry your baby to the workplace?— Yes/ No
 - a. (If yes)
 - i. What support mechanisms are available to take care of the baby while you are working?— Crèche/ Elders/ Siblings/ Other women/ Others (specify)
 - ii. Are you able to breastfeed the baby at the workplace?— Yes/ No
 - iii. (If no) Explain reasons for this response: restrictive clothing/ stigma/ no private space/ others (specify)
 - b. (If no)

i. Who takes care of your baby when you are away?—Mother/ Husband/ Older children/ Neighbor/ Other (specify)

20. (If working) Do you have any off days?— Yes/No

i. (If Yes) How many?

21. Who is responsible for the household work at home?— Me alone/ Me with support from other women in Household/ Me and my husband/ external support.

a. How many hours of Household work do you do on a working day?— hours

b. (If applicable) How many hours of household work do you do on off days?— hours

22. How many times is the baby breastfed on a working day?

a. Roughly, how long is each feeding?

23. (If applicable) How many times is the baby breastfed on an off day?

a. Roughly, how long is each feeding?

X. Entitlements Related to Pregnancy and Childrearing

24. Did you ever hear about any cash-benefit schemes?—Yes/No

a. From who?— ASHA worker/ Nurse at Hospital/ Mother/ Mother-in-law/ SHG Sessions/ Other (specify)

25. Were you able to access any of those schemes?—Yes/No

a. (If yes)

i. How did you receive the cash?—My bank account/ My husband's/ Joint account/ Post

ii. How did you withdraw it?

iii. What were the funds used for?

iv. Did you experience any difficulties?— timing of funds/ difficulty with application/ Other (specify)

b. (If No)

i. What was the challenge?—Number of appointments/ transportation to gov't hospital/ bank account/ funds never came/ other (specify)

X. Reactions to Hypotheticals

26. Show Pictures of Various Baby Carriers on Women:

a. Can you imagine doing your work while wearing this with the baby?

b. Do you think your supervisor would approve of wearing this (if applicable)?

c. When it comes to breastfeeding, would you be open to having your child breastfed by another woman?

d. Would you ever feel comfortable feeding another woman's child?



Key Interview: Health Centre Staff—ASHA worker/ Village Health Nurse/ Nurse at Hospital

Demographics: name, age, educational level (literacy), religion

1. Thank you so much for taking the time to talk to me.....etc.etc.
2. How long have you worked in the health center?
 - a. Can you please tell me about your routine on a typical day?
3. How many births do you help with in a week?
4. How long do you know each of the women for? The families (husband and extended)?
 - a. Can you describe to me what type of prenatal care you provide?
 - b. What about postnatal care?
 - i. In general, to whom do you provide the most counseling- the woman, the family, or the husband?
 - c. Could you describe your routine for the birth?
 - i. What do you do if there is a breech baby?
 - ii. How do you cut the cord?
 - iii. Can C-sections be done here?
 - iv. If not, where do women go?
 - d. How long do you recommend the woman rest after giving birth?
5. So when the baby is born, what do you do?
 - a. What distance do you normally advise between the mother and the baby?
 - b. How is this done?
 - c. Do you usually wash the baby following the birth?
 - i. How long does this take?
 - d. Within how much time do you recommend breastfeeding?
6. What do you tell the woman to do with the very first yellow liquid that comes from the breast (colostrum)?
 - a. (If discarded) What do you give as an alternative?
 - b. How long do you recommend the mother only give breastmilk?
 - c. Do you ever recommend that a liquid other than breastmilk be given before six months?
 - i. What is the substitute you recommend?— Cow milk/ Water/ Honey water/ Other (specify)
 - ii. Why?
 - e. When do women begin the weaning process?
7. How do you advise the mother for sore breasts?
 - a. What is the best way to achieve proper latching?
8. What do you recommend if the mother has less milk?
 - a. Do you teach hand pumping?
 - b. Is there a community of women who would share breastfeeding?
 - c. What is the protocol for babies born and immediately taken to an ICU
9. With regards to supplements, which government nutritional programs are you a part of?
 - a. How much of each supplement is available to every woman?
 - b. What do you think is the rough percentage of the women who take advantage of this?
 - c. What are the difficulties in running these programs?
10. Are you a part of any government breastfeeding promotion schemes?
 - a. Which ones?
 - b. What type of activities do you do?
11. Thank you so much for all of your time...etc...etc

Focus Group Discussion: Among women of the 40-60 Age Group and 60+ age group to get a multigenerational perspective of breastfeeding. The questions are simply talking points to start conversations among the participants.

1. Could you describe your pregnancy experience?
2. What kinds of foods did you eat and were advised to eat during pregnancy?
3. How was your birth experience? Where did it take place?
4. What kinds of foods were eaten right after birth?
5. When did you first give your baby breastmilk after birth?
6. Did you feed colostrum? Reason for answer + who advised
7. When was the first time you gave your baby a something other than breastmilk? Reason, who advised, amounts...
8. How long overall did you breastfeed your children?
9. From who did you take health advise?
10. When did you return back to work (for those in the group who worked)?
11. What were the strategies for taking care of children when at work?
12. Where there ever instances of having other women breastfeed other children?
13. Where there times when you or other women had insufficient milk and what were your solutions?
14. What were common health issues back when you were raising your kids?
15. Did you ever breastfeed in public and was that socially acceptable?
16. Thank you very much for your time.....etc.etc