

**"COMPARISON OF INFANT FEEDING PRACTICES
AMONG URBAN AND RURAL MOTHERS - A CROSS
SECTIONAL STUDY"**

By

REG.NO. BD0110001

Dissertation

Submitted to the
KLE University, Belgaum, Karnataka

In Partial Fulfillment of the requirements for the degree
of

DOCTOR OF MEDICINE (M. D.)
in
COMMUNITY MEDICINE

**DEPARTMENT OF COMMUNITY MEDICINE,
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Endorsement by the HOD, Principal/Head of the Institution

This is to certify that the dissertation entitled
**“COMPARISON OF INFANT FEEDING PRACTICES
AMONG URBAN AND RURAL MOTHERS - A
CROSS SECTIONAL STUDY”** is a bonafide research
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ABSTRACT

Background and Objectives

Optimal infant feeding practice ranks first among the most effective interventions to improve child health. Present study was undertaken to compare infant feeding practices among urban and rural mothers and to study the social factors and cultural practices influencing the infant feeding practices.

Methods

This one year community based cross-sectional study was done in urban area Khasbag and at villages namely Vantamuri, Kakati (A and B), Honaga and Bhutramanahatti, which are the field practice areas of department of Community Medicine Jawaharlal Nehru Medical College, Belgaum. By random sampling 400 urban and 380 rural mothers having one year old child were selected. Information on socio-demographic variables, infant feeding practices was recorded.

Results

In the present study majority of urban (65.00%) as well as rural mothers (64.21%) were between 20 to 24 years of age and were educated till high school (41.00% and 46.32% respectively)

Majority of the mothers in both urban and rural areas had given pre-lacteal feeds (54.25% and 57.11% respectively); the most common being sugar water. Many mothers in both rural and urban areas discarded the colostrum, (14.75% in urban v/s 25.79% in rural). Initiation of breast feeding after delivery was delayed by 24.50% of mothers in urban and 33.68% of mothers in rural

areas. Many mothers did not practice demand feeding (61.25% urban and 32.11% rural). Most of the mothers in both urban (73.75%) as well as rural (75.26%) areas had started giving water to the child along with breast milk before 6 months of age.

Majority of the mothers in the urban area started complementary feeds before the age of 6 months (69.20%) whereas in the rural areas, mothers started complementary feeds at the age of 6 months (42.11%). Exclusive breast feeding rate was 16.25% in urban and 15.26% in rural areas.

Conclusion and interpretation

Present study revealed that various inappropriate infant feeding practices are prevalent in both urban and rural areas. Age of the mother, education, socioeconomic status, type of family, place of delivery and education about benefits of breast feeding given in the hospitals influenced the infant feeding practices. Elder's advice played an important role in shaping the infant feeding practices.

Keywords

Infant feeding practices, breast feeding practices, complementary feeding.

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LIST OF ABBREVIATIONS USED

ASHA	-	Accredited Social Health Activist
AWW	-	Anganwadi Workers
BCG	-	Bacillus Calmette Guerin
BFHI	-	Baby Friendly Hospital Initiative
DF	-	Degrees of Freedom
DPT	-	Diphtheria Pertusis Tetanus toxoid
EBF	-	Exclusive Breast Feeding
G	-	Gram
IEC	-	Information Education and Communication
Ig	-	Immunoglobulin
IMNCI	-	Integrated Management of Neonatal and Childhood Illness
Kgs	-	Kilogram
MF	-	Multiplication factor
ml	-	Milli litre
NFHS	-	National Family Health Survey
NGO	-	Non Governmental Organization
NICU	-	Neonatal Intensive Care Unit
OPV	-	Oral Polio Vaccine
PHC	-	Primary Health Centre
PROBIT	-	Promotion of Breastfeeding Intervention Trial
PUC	-	Pre University College
RCT	-	Randomized Control Trial
UIP	-	Universal Immunization Program
UNICEF	-	United Nations Children's Emergency Fund

USA	-	United States of America
WHO	-	World Health Organization
x^2	-	Chi Square

INTRODUCTION

Nation marches on the tiny feet of the infants nurtured by the mothers. Infants, that is children in the age group of 0 – 1 year constitute 2.92% of the total population in India.¹ Health of these infants is quiet fragile with increased vulnerability to infections and other diseases. Hence, the major responsibility of a mother is to maintain and improve her child's health. Optimal infant feeding practice ranks first among the most effective interventions to improve child health. Infant feeding practices are infinitely varied in a country like India, some are appropriate, while others are not. A great asset in India is that an average Indian mother although poor in nutritional status, has a remarkable ability to breast feed her infant for prolonged periods. Appropriate infant feeding practice means early initiation of breast feeding, no pre-lacteal feeds, feeding colostrum, giving only breast milk till 6 months of age, initiating semisolid complementary foods at 6 months of age followed by various mixes (double, triple and quadruple) subsequently with continued breast feeding till at least 2 years of age.

Infant feeding practices depend on the mother's education, her socio-economic status, her access to information regarding infant feeding, feeding taboos and so on. Urban mothers are generally better educated, have better socio-economic status and easier access to information regarding infant feeding compared to their rural counter parts. Feeding taboos are also quiet different between urban and rural mothers.

Under-nutrition is a major disabler, preventing children from reaching their full developmental potential. It is a major killer as well, being associated

directly or indirectly with at least 35.00% of child deaths.² Early nutritional deficits are also associated with long-term impairment in growth and health. There is evidence that adults who were malnourished in early childhood have a low intelligent quotient and hence impaired intellectual performance.³

Breast milk alone provides the best nutrition for infants till 6 months of age. There after additional food is needed apart from breast milk to meet the infant's need for energy and nutrients. Hence WHO and UNICEF in their global recommendations set out

1. exclusive breast feeding till 6 months of age and
2. nutritionally adequate and safe complementary feeding starting from the age of 6 months with continued breastfeeding up to 2 years of age or beyond as appropriate infant feeding practice.⁴

Exclusive breastfeeding means that infant receives only breast milk from his or her mother or a wet nurse, or expressed breast milk, and no other liquids or solids, not even water, with the exception of oral rehydration solution, drops or syrups consisting of vitamins, mineral supplements or medicines. To enable mothers to establish and sustain exclusive breastfeeding for 6 months WHO and UNICEF recommend - initiation of breast feeding within one hour of life, no top feeds till 6 months of age and no use of bottles, teats or pacifiers.⁴

Pre-lacteal feeds carry the risk of infection and also delay the establishment of lactation. The colostrum contains antibodies and vitamins like A, E and K which protect the infant against respiratory infections and diarrhoeal diseases.⁵ Discarding the colostrum deprives the infant of necessary anti infective substances and increases their susceptibility to infections. In NFHS 3 it was shown that 50.20% of urban and 59.80% of rural mothers gave pre-lacteal feeds.⁶

Exclusive breast feeding takes care of two essential elements of newborn care – nutrition and infection control. A study done way back in 1984 found that the risk of death from diarrhoea of partially breastfed infants between 0–6 months of age was 8.6 times the risk for exclusively breastfed children.⁷ Only 69.00% of children under two months of age are exclusively breastfed. Exclusive breastfeeding drops to 51.00% at 2 to 3 months of age and 28.00% at 4 to 5 months of age. Overall, slightly less than half of children under six months of age are exclusively breastfed.⁶

Exclusively breastfed infants, feed 8 to 12 times a day.⁵ It is assumed that the baby knows how much milk it needs and hence it is advised that the baby should dictate the number, frequency and length of each feed, commonly known as demand feeding.²

Use of bottles, teats and pacifiers lead to nipple confusion.⁵ They also increase the risk of infection if not kept clean. Introduction of complementary feeds before 6 months of age dilutes the benefits of exclusive breast feeding. Complementary feeds were started before 6 months of age by 25.30% of mothers as per NFHS 3 data.⁶

Complementary foods need to be nutritionally adequate, safe, and appropriately fed, in order to meet the young child's energy and nutrient needs. However, complementary feeding is often fraught with problems like foods being too dilute, not fed enough or fed in too small amounts and the like. Even after complementary foods have been introduced, breastfeeding remains a critical source of nutrients for the young infant and child. It provides about one half of an infant's energy needs up to the age of one year, and up to one third during the second year of life.²

Though breast feeding is a natural act and practiced almost universally, exclusive breast feeding is rarely practiced. Various health initiatives like baby friendly hospital initiative etc are functional, yet achievement of appropriate infant feeding practices is far from reality. Infant feeding practices are shaped by the beliefs of a community and are further influenced by the social, cultural and economical factors. These factors vary widely from urban to rural areas.

The knowledge regarding differences in infant feeding practices among rural and urban mothers and also the factors influencing these practices can be used to plan measures that concentrate on improving prevalent infant feeding practices by targeting the socio-cultural and economic determinants. Mothers can be benefited by the first hand knowledge given through health education during such a study regarding advantages of breast feeding. They can also be taught what constitutes an appropriate complementary food, how and when it should be given in order to sustain optimal growth and development of their children. Community will be benefited when the findings of the study form basis for a health education program.

Many studies have been done in this regard in different places. However, no such study has been done in the below mentioned study area. With this background a study has been conducted to know the differences in infant feeding practices among rural and urban mothers and also the factors influencing these practices.

OBJECTIVES

The objectives of the present study were;

1. To compare infant feeding practices among urban and rural mothers.
2. To study the social factors and cultural practices influencing the infant feeding practices.

REVIEW OF LITERATURE

BACKGROUND^{8,9}

Lactation, which is the characteristic of the mammalian species, is the ideal way of providing nutrition to the young ones. Human beings are no exception to this. Breast feeding has a unique biological and emotional influence on health of mother and child. However, human lactation is a neglected area of scientific research, especially regarding beliefs and practices that prevent successful lactation.

DEVELOPMENT OF FEMALE BREAST⁸

Development of mammary glands is apparent in-utero by 6th week of gestation. In puberty, with the onset of gonadotropin secretion by anterior pituitary, there is maturation of Graffian follicles in the ovaries which secrete estrogen, which in turn stimulates the development of mammary glands. Complete development of breasts in size and structure and also the pigmentation of areola require combined action of progesterone and estrogen. Although the differentiation of breast tissue continues throughout a woman's life, pregnancy causes the major change.

During early months of pregnancy, ductular growth and proliferation are pronounced under the influence of estrogen. After 3 months of pregnancy, proliferation of alveoli is pronounced under the influence of progesterone. Thereafter progressive increase in prolactin stimulates glandular activity and secretion of colostrum.

PHYSIOLOGICAL BASIS OF BREAST-FEEDING

COLOSTRUM AND MATURE MILK^{2,10}

Colostrum is the special milk that is secreted in the first 2–3 days after delivery. About 40 to 50 ml is produced on the first day. It is rich in white cells and antibodies, especially secretory IgA and contains large amounts of proteins, minerals and fat-soluble vitamins like A, E and K. Colostrum provides important immune protection to an infant when he or she is first exposed to the micro-organisms in the environment, and epidermal growth factor helps to prepare the lining of the gut to receive the nutrients in milk.

Milk starts to be produced in larger amounts between 2 and 4 days after delivery, making the breasts feel full; the milk is then said to have “come in”. From day 7 to 14, the milk is called *transitional*, and after 2 weeks it is called *mature milk*.

COMPOSITION OF BREAST-MILK^{1,2,11}

Breast milk contains 3.5g of fats per 100ml which provides about one half of energy required and it is mainly linoleic acid. About 7 g of carbohydrates are present mainly in the form of lactose in 100ml of breast-milk. Around 0.9 g of protein per 100 ml of breast-milk is present primarily as casein, which forms much softer, more easily-digestible curds and also small amounts of alpha-lactalbumin are also present. Adequate amounts of all vitamins except vitamin D and minerals like iron, calcium, phosphorus and zinc are present if the mother is not deficient. Anti-infective factors like *secretory immunoglobulin A* which coats the intestinal mucosa and prevents bacteria from entering the cells, *white blood*

cells which can kill micro-organisms, *whey proteins* (*lysozyme* and *lactoferrin*) which can kill bacteria, viruses and fungi and *oligosaccharides* which prevent bacteria from attaching to mucosal surfaces are also present. Other bioactive factors like *bile-salt stimulated lipase* which facilitates the complete digestion of fat and *epidermal growth factor* which stimulates maturation of the lining of the infant's intestine are present.

HORMONAL CONTROL OF MILK PRODUCTION^{11,12}

There are two hormones that directly affect breastfeeding, they are *prolactin* and *oxytocin*. Prolactin is necessary for the secretion of milk by the cells of the alveoli. Oxytocin makes the myoepithelial cells around the alveoli contract and hence makes the milk, which has been collected in the alveoli, flow along and fill the ducts.

REFLEXES IN THE INFANT NEEDED FOR BREAST FEEDING⁵

There are three important reflexes related to breast feeding and they are rooting, sucking and swallowing.

When something touches a baby's lips or cheek, the baby turns to find the stimulus, and opens his or her mouth, putting his or her tongue down and forward. This is the *rooting reflex* and is present from about the 32nd week of pregnancy. When something touches a baby's palate, he or she starts to suck it. This is the *sucking reflex*. When the baby's mouth fills with milk, he or she swallows. This is the *swallowing reflex*.

SIGNS OF GOOD ATTACHMENT ²

More of the areola is visible above the baby's upper lip than below the lower lip, the baby's mouth is wide open and the lower lip is curled outwards with the baby's chin touching the breast.

Despite the fact that breast milk is tailor made for the infant, there are various good and bad infant feeding practices. These practices are determined by a wide variety of advices given to the new mother regarding infant feeding. These advices come from varying sources that include maternity units and health visitors, general practitioners and pediatricians, relatives and friends, child-care books, and manufacturers of infant foods. Hence it was realized that mothers need active support during pregnancy and following delivery, not only by the family but by the entire health system to be able to initiate and establish breast feeding successfully. The Baby-Friendly Hospital Initiative (BFHI), launched in 1991, was an effort by the UNICEF and the WHO to ensure that all maternities become centers of breastfeeding support.

TEN STEPS OF BABY FRIENDLY HOSPITAL INITIATIVE ¹³

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.

5. Show mothers how to breastfeed and maintain lactation, even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming in, that is, allow mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

COMPLEMENTARY FEEDING¹⁴

After 6 months of age, it becomes increasingly difficult for breastfed infants to meet their nutrient needs from breast milk alone. Mixtures of family foods can meet the extra needs of young children during this vulnerable time. These foods, given in addition to breast milk, are called ***complementary foods***. Complementary foods have to be started at this optimum age. It is hazardous to start it early as well as start late.

Giving complementary foods too soon is dangerous because they may displace breast milk and become difficult to meet the child's nutritional needs. The child receives less of the protective factors in breast milk, so the

risk of illness increases and the risk of diarrhoea also increases because complementary foods may not be as clean as breast milk.

Starting complementary feeding too late is also dangerous because a child does not get the extra food needed to fill the energy and nutrient gaps. As a consequence of this child stops growing, or grows slowly and the risk of malnutrition and micronutrient deficiencies increases.

GUIDING PRINCIPLES OF COMPLEMENTARY FEEDING²

1. Practice good hygiene and proper food handling.
2. Start at 6 months of age with small amounts of food and increase the quantity as the infant gets older, while maintaining frequent breastfeeding.
3. Gradually increase food consistency and variety.
4. Gradually increase the number of feeds.
5. Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed.
6. Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, favorite foods.
7. After illness, give food more often than usual and encourage the child to eat more.

Quality, frequency and amount of food to offer children 6–23 months of age who are breastfed on demand ⁵

Age	Quality	Frequency	Amount at each meal
6 – 8 months	Thick porridge or well	2 – 3 meals	3/4 th of a 200 ml cup
	mashed food	1 – 2 snacks	
9 – 12 months	Finely chopped or mashed	3 – 4 meals	Full of a 200 ml cup
	food that baby can pick up	1 – 2 snacks	

Main source of calories in a weaning food will be the local staple or cereals like rice, wheat, ragi, jowar or rava. Single cereal based foods will be deficient in certain nutrients. Hence mixture of cereals, pulses, animal proteins and vegetables mainly green leafy vegetables is advisable, so that their nutrients complement each other. Double mix contains cereals with pulses or animal proteins or vegetables, triple mix contains cereals with pulses and vegetables or animal proteins or cereals with vegetables and animal proteins, and quadruple mix contains cereals with pulses, vegetables and animal proteins.¹⁵

Indicators for assessing infant feeding practices ¹⁶

Of the many core and optional indicators the important ones used for this study are described below.

Early initiation of breastfeeding: Proportion of children who were put to the breast within one hour of birth.

Exclusive breastfeeding under 6 months: Proportion of infants who are fed exclusively with breast milk till 6 months of age.

Continued breastfeeding at 1 year: Proportion of children aged 12 months who are fed breast milk.

Introduction of solid, semi-solid or soft foods: Proportion of infants who receive solid, semisolid or soft foods between 6 to 8 months of age.

Minimum dietary diversity: Proportion of children who receive foods from 4 or more food groups between 6 to 12 months of age.

Minimum meal frequency: Proportion of breastfed and non-breastfed children aged 6 to 12 months, who receive solid, semi-solid, or soft foods the minimum number of times or more.

Minimum acceptable diet: Proportion of children 6 to 23 months of age who had at least the minimum dietary diversity and the minimum meal frequency.

Predominant breastfeeding under 6 months: Proportion of infants who were predominantly breastfed between the ages of 0 to 5 months.

A cross sectional study was done among 100 mothers attending infant welfare clinic in St. Mary's hospital, London way back in 1973 to know the age at which the first solid complementary feeds were given to the infant and it was seen that the commonest age was as early as 3 – 4 weeks by 18.00% of the mothers, followed by 5 – 6 weeks by 15.00% of the mothers.¹⁷

In the year 1980, a longitudinal study done in rural Meheran, Comilla, Bangladesh showed that 100.00% rural, 98.00% urban poor, and 78.00% urban elite mothers breastfed their babies at birth. At 1 year 97.00% rural, 90.00% urban poor, and 25.00% elite continued breastfeeding. However, in this study it was not clear when the initiation of feeding, after delivery was. It was also seen that 3.00% of rural, 21.00% of urban poor and 60.00% of urban elite

supplemented their infants with cow's milk from birth. At the age of 3 months, 11.00% of rural, 6.00% of urban poor, and 12.00% of urban elite infants received rice and wheat supplements in the form of liquid or semi solid preparations. It was an interesting finding in this study that none of the rural children received vegetables till 15 months of age.¹⁸

A pooled analysis done on effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries by *WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality* observed that the prevalence of breast feeding was different in different countries. It ranged from 84.00% at 0 – 1 month of age to 26.00% at 9 – 11 months of age in Brazil, 100.00% at 0 – 1 month of age to 96.00% at 9 – 11 months of age in Ghana and Gambia, 98.00% at 0 – 1 month of age to 80.00% at 9 – 11 months of age in Pakistan, 80.00% at 0 – 1 month of age to 26.00% at 9 – 11 months of age in Philippines and 100.00% at 0 – 1 month of age to 99.00% at 9 – 11 months of age in Senegal.¹⁹

A randomized control trial conducted to know the effect of culturally appropriate nutrition education on infant feeding and growth in Rural Sichuan, China by Guldan et al showed that only 23.00% of mothers in the education group and 18.00% in the control group initiated breast feeding within 1 hour of giving birth. Among the mothers who did not initiate breast feeding within 1 hour, 38.00% said there was no milk secretion and hence they did not initiate. In the Education group, 91.00% fed colostrum and in the Control group 80.00% fed colostrum. Mothers in the education group gave significantly better complementary foods than the mothers in the control group.²⁰

Another cross sectional, questionnaire based study was done among mothers of infants aged less than 7 months in rural and urban Morogoro, Tanzania. In this study, it was seen that 82.00% of urban and 52.00% of rural mothers initiated breast feeding within an hour of giving birth and 51.00% of rural and 89.00% of urban mothers gave breast milk as the first feed to their infant. Colostrum was discarded by 43.00% of rural and 10.00% of urban mothers.²¹

Promotion of Breastfeeding Intervention Trial (PROBIT), a randomized trial in the Republic of Belarus was done and it showed that the proportion of women exclusively breastfeeding at 3 months was 7-fold higher in the experimental group and more than 12-fold higher at 6 months. Nearly twice as many women in the intervention group were predominantly breastfeeding at 3 months and nearly 7 times as many at 6 months.²²

A study undertaken in rural and urban areas of Burkina Faso showed that 92.50% of urban and 60.80% of rural mothers fed colostrum to their infants. As many as 68.20% of urban and 90.00% of rural mothers gave top feeds from birth to their infants.²³

A prospective cohort study titled “Association of Breastfeeding With Maternal Control of Infant Feeding at Age 1 Year” by Taveras et al showed that at 6 months postpartum, 24.00% of the mothers were exclusively breastfeeding, 25.00% were practicing mixed feeding, 41.00% had weaned, and 10.00% had fed their infants formula feeds only. The mean duration of breastfeeding was 6.3 months.²⁴

A comparison of breastfeeding among Han, Uygur and other ethnic groups in Xinjiang, PR China was done and it was found that any breastfeeding rates in Han, Uygur and 'other minority' groups at discharge were 88.50%, 94.30% and 97.10% respectively, and at six months 76.70%, 54.70% and 87.60% respectively. While exclusive breastfeeding rates in the Han, Uygur and 'other minority' groups at discharge were 78.00%, 34.50% and 83.10% respectively, at six months they had fallen to 4.80%, 0.40% and 16.80% respectively. The median duration of exclusive breastfeeding of Han, Uygur and other minority groups were 1.5, 0.1 and 2.5 months respectively.²⁵

A cohort study of infant feeding practices in city, suburban and rural areas in Zhejiang Province, PR China showed that pre-lacteal feeds were given by 62.00% of urban, 36.60% of suburban and 39.00% of rural mothers and more than 95.00% of mothers in each location initiated breast feeding. However, it was not mentioned that what time after delivery the feeding was initiated. Any breastfeeding rates were 96.50% in city, 96.80% in suburban area and 97.40% in the rural area but exclusive breastfeeding rates were as low as 38.00%, 63.40% and 61.00% respectively.²⁶

According to a study conducted in rural Bangladesh, 8.00% of mothers gave pre-lacteal feeds to their infants and 92.00% gave colostrum. The proportion of infants who were breast fed ranged from 78.30% at one month of age to 10.70% at 6 months of age.²⁷

A qualitative study conducted to understand infant feeding beliefs and practices with Somali mothers in the USA showed that a majority of the Somali mothers breastfed for roughly 1 year, although most did not breastfeed

exclusively and majority had a traditional belief that ‘the first milk in the breast makes the baby sick’ Most mothers supplemented breast milk with formula early on because they believed they did not have enough milk in their breast.²⁸

A study on dietary patterns in infancy showed that about a third of the mothers (38.00%) started complementary feeds before the age of 4 months, among these, proportion of mothers who gave solid foods was very low.²⁹

Another study was conducted to understand the infant-feeding practices of mothers and the nutritional status of infants in the Vhembe District of Limpopo Province. It was shown in this study that only 7.60% practiced exclusive breastfeeding, while 43.20% had introduced solid foods at three months and 15.00% before two months. The weaning food given by most of the mothers was maize-meal soft porridge.³⁰

A cross sectional study was done to know the maternal and child characteristics associated with infant and toddler feeding practices and it was observed that mothers with college education were more likely to have better child feeding behaviors like early initiation of breastfeeding and breastfeeding the child to age 6 and 12 months, respectively.³¹

A study of factors associated with initiation and duration of breastfeeding in Italy showed that higher social class was positively associated with early initiation of breastfeeding, negative association between duration of breastfeeding and pacifier use, and a positive association with a higher level of maternal education.³²

Yet another similar study done to know the factors associated with the duration of breastfeeding amongst women in Perth, Australia by Scott et al

showed that the duration of breastfeeding had a positive association with maternal education and age.³³

A cohort study was done as an effort to understand the factors associated with the duration of breastfeeding in New Zealand by Vogel et al and it was seen that breastfeeding was initiated by 97.40% of the mothers, the median duration of breastfeeding was 7.6 months, and 30.00% were continuing some breastfeeding at 12 months.³⁴

An inquiry into infant milk feeding practices in the Netherlands and associated factors was done and was found that 78.00% of mothers initiated breastfeeding, at 1 and 4 months, respectively, 51.00% and 25.00% of infants were fed primarily on human milk; after 6 months, only 15.00% of mothers still provided human milk as the only source of milk feeding. Women initiating breastfeeding and feeding for long were more likely to be higher educated and primiparous.³⁵

A cross sectional survey regarding infant feeding practices in Bhaktapur, Nepal was conducted and it showed that 91.00% of mothers gave colostrum and 57.00% started breast feeding within one hour of birth. The prevalence of exclusive breastfeeding at 1, 3 and 6 months were 74.00%, 24.00% and 9.00%, and partial feeding was initiated in 15.00%, 38.00% and 79.00% babies, respectively. The main reason, according to the mother, for introducing other foods before six months of age was insufficient breast milk. In logistic regression analyses, mother's knowledge on how long child should be given only breast milk and not living in joint families were associated positively with exclusive or predominant breastfeeding for four months or beyond.³⁶

A cross-sectional study involving 682 mother-infant pairs showed that the prevalence of exclusive breastfeeding among mothers with infants aged between one and six months was 43.10%. In the multivariate model exclusive breastfeeding was positively associated with rural residence, non-working mothers and multi-parous mothers. Mothers from rural area were more likely to exclusively breastfeed compared to mothers from urban area.³⁷

A study undertaken to know the breastfeeding practices among working mothers in Nairobi showed that the prevalence of breast-feeding found to be 94.10%, the lower socio-economic group exhibited a higher prevalence of breast-feeding (99.00%).³⁸

A KAP study of breast feeding practices that was done in Bihar by Yadav et al showed that about 29.00% of the mothers started breastfeeding within 24 hours of giving birth, two thirds of the mothers discarded colostrum among whom one thirds did so as per the advice of their elders, about 55.00% of mothers started supplements between 6 months to 1 year and others started it earlier because they felt mothers' milk was insufficient.³⁹

A cross sectional study regarding breastfeeding, weaning practices and nutritional status of infants of tea garden workers of Assam was done by and it was showed that 100.00% breast-feeding rate was maintained throughout 0 to 12 months though exclusive breast feeding rate was 69.35% up to 6 months of age. A majority (56.25%) of the mother started complementary feeding between 9 – 10 months of age which is quiet delayed introduction of complementary feeds.⁴⁰

Another study conducted in urban and rural areas of Latur and Osmanabad districts of Maharashtra showed that 49.00% of urban and 37.00% of

rural mothers practised exclusive breast feeding. It established the influence of socioeconomic status, mother's literacy, age at marriage and parity on exclusive breast feeding practice.⁴¹

Yet another study was conducted in urban and rural Maharashtra and Gujarat. It showed that the difference in age of introduction of supplementary foods to the infants in urban and rural areas was statistically significant. A total of 13.70% of urban and 10.40% of rural mothers started giving supplementary feeds to their infants by 3 to 6 months of age. Influence of factors such as income, religion, type of family, birth order of the child, education and employment status of mothers on age of introduction of supplementary feeds was studied.⁴²

It was revealed by a study conducted in urban Allahabad that 44.20% of mothers initiated breast feeding after 6 hours of delivery, as many as 54.80% of mothers did not give colostrum to their newborn, only 23.50% of mothers practised exclusive breast feeding and proper complementary feeding was done by 38.70% of mothers.⁴³

The results of a study conducted in Shabar tribal community in Orissa showed that 55.90% of urban and 57.90% of rural mothers initiated breast feeding after 24 hours of delivery. Exclusive breast feeding for less than six months of age was practised by 47.10% of urban and 55.30% of rural mothers. It stated that factors like mother's education, occupation, age at child birth, birth order and sex of the child influenced delayed initiation of breast feeding and exclusive breast feeding for less than 6 months.⁴⁴

The reasons for inappropriateness in timing, quantity and consistency of complementary foods were studied by Aggarwal et al in Delhi. Among the 200

children aged 6 months to 2 years studied 16.00% were not started on complementary feeds at all, only 17.50% had started giving complementary foods from 6 months of age and only 3.50% of the mothers started complementary feeds at proper time, in adequate quantity and in proper consistency. The knowledge regarding appropriate timing and consistency varied significantly with maternal and paternal education. The most common reason for delayed feeding was “tried but did not eat, vomits everything” (52.00%).⁴⁵

A cross sectional study regarding breast feeding practice and influence of literacy and cultural factors on breast feeding practices was done in Kalamboli, Navi Mumbai among mothers attending immunization clinic, Mahatma Gandhi Memorial hospital. It was seen that 36.10% of mothers gave pre-lacteal feeds, 70.20% practiced exclusive breast feeding, 61.30% of literate and 43.70% of illiterate started breast feeding within 6 hours of delivery and 1.90% of literate and 25.00% of illiterate mothers discarded colostrum. A significant association was found between giving pre-lacteal feeds and the place of delivery.⁴⁶

Another cross sectional study was done using multistage random stratified cluster sampling in 30 urban and 50 rural clusters of Agra. A total of 540 mothers having children less than 1 year were chosen. The practice of exclusive breast feeding was done by only 18.30% of the mothers, 83.10% of the rural mothers and 78.90% of the urban mothers gave pre-lacteal feeds, most common pre-lacteal feed being honey and jaggery in rural area and ghutti in urban area. Only 16.00% of the mothers started breast feeding within 1 hour of delivery. Most of the mothers (73.00%) gave water to their children since birth. A total of 52.90%

of rural and 44.80% of urban mothers had not given top feeds before the attainment of age for complementary feeding that is 6 months.⁴⁷

Yet another study regarding feeding practices in urban slum of Kolkata by Roy et al showed that 16.67% of the mothers initiated breast feeding within 1 hour of birth, 90.00% of the mothers gave colostrums to the infants, 29.16% gave pre-lacteal feeds, 28.33% practiced exclusive breast feeding, initiation of complementary feeds before 6 months of age was done by 12.50% of mothers whereas 15.84% of mothers initiated it after 6 months of age. Significant associations were found between literacy status of the mothers and the practice of exclusive breast feeding and also between the mother being informed about exclusive breast feeding practice and giving pre-lacteal feeds.⁴⁸

A cross sectional study showed that 61.60% of the mothers initiated breast feeding within half an hour of delivery, 22.20% were given within 1 hour. Some mothers (26.30%) gave other food and drinks to the baby.⁴⁹

Another cross sectional study regarding new born care practices in urban slums of Lucknow city showed that only 36.60% of the mothers initiated breast feeding within 1 hour of delivery; the most common reason for late initiation among the rest of the mothers being family customs or belief (52.10%). Colostrum was not given to the baby by 56.50% of the mothers; the most common reason for this being the belief that colostrum is harmful to the newborn (66.90%).⁵⁰

A RCT conducted in Harayana showed that almost 41.00% of the caregivers in the intervention clusters reported starting breast feeding within an hour of birth, compared with 11.20% in the control clusters. The proportion of

infants exclusively breast fed at 4 weeks of age in the IMNCI clusters was more than twice that in the control clusters.⁵¹

A cross sectional study was done to characterize early infant foods in rural northern Malawi and it was seen that 65.00% of the children were given complementary foods in their first month, and only 4.00% of the children were exclusively breastfed for 6 months. Mzuwula and dawale (two herbal infusions), water, and porridge were common early foods.⁵²

The knowledge and practices of breastfeeding amongst mothers in a rural population of North India was assessed and it was observed that 30.00% and 10.00% of the mothers exclusively breastfed their infants till 4 and 6 months of age, respectively. Lack of breastfeeding counseling was significantly associated with decreased rates of EBF at 4 months and 6 months.⁵³

A cross sectional study was done in rural areas of Dehradun regarding breast feeding practices of the mothers and associated malnutrition in children. The study observed that pre-lacteal feeds were given nearly to 74.00% of infants in the form of honey, sugar water or ghutti. Giving pre-lacteal feeds were associated with the age of the mother – 78.26% of the mothers aged less than 20 years gave pre-lacteal feeds. Significant association was also found between the starting of supplementary feeds at 6 months of age and the age of the mother. Overall 60.50% of the infants received supplementary feeds after 6 months of age. Only 28.95% of the mothers had practiced exclusive breast feeding.⁵⁴

A prospective study was carried out in the under five clinic of King Edwards Medical hospital Mumbai to recognize the factors associated with faulty feeding and it was seen that 92.11% of the infants were exclusively breastfed

while 2.63% were predominantly breastfed and demand feeding was practiced by 73.68% of the mothers.⁵⁵

A hospital based cross sectional study was carried out to know the infant feeding practices particularly of multi-parous women and found that only 19.79% started it within first hour of birth and majority of mothers resorted to demand feeding (65.62%), complementary feeds were started before 6 months by 12.82%, at 6 months by 32.48% and after 6 months by 37.60% of the mothers. Significant association was found between residence and pre-lacteal feeds, residence and type of the infant feeding and also between working status of the mother and the type of infant feeding.⁵⁶

A survey of infant feeding practices was done in selected villages of Pantnagar by Sinha et al and was observed that pre-lacteal feeds were given by 90.00% of the mothers and only 46.00% of the mothers gave colostrum.⁵⁷

Factors that influenced the infant feeding practices of the mothers in Baijnath Block of Himachal Pradesh was studied and it was seen that majority (81.00%) of mothers gave top milk to infants besides breast milk, cow's milk was the most commonly used for top feeding. A wide majority of mothers (44.40%) gave water as a pre-lacteal feed to infant, half of the mothers started commercial feeds as the complementary feeds. Family income level had significant association with commercial foods for infants.⁵⁸

Infant feeding practices of the urban mothers was studied in Cuttack and found that pre-lacteal feeds were given by 37.40% of mothers, of them, 32.50% had given artificial milk followed by boiled water (22.50%) and honey (20.00%). Within 1 hour of delivery only 11.20% mothers had initiated breast feeding.

Exclusive breast feeding was practiced by only 49.50% of the mothers at 4 months and 13.10% at 6 months. The reasons given by the authors for not exclusively breast feeding the infants were scanty secretions (29.90%), working mothers (4.70%), and ill health of the mothers (2.80%). Demand feeding was given by 90.10% mothers. It was also seen that 51.40% had started weaning at the appropriate time and rest had started either early or late.⁵⁹

A study was done in Kengeri PHC catchment area in rural Bangalore and it showed that 44.00% of mothers initiated breast feeding within 30 minutes of birth. Pre-lacteal feeds were given and the colostrum was discarded by 19.00% of mothers. Only 40.00% of mothers did exclusive breast feeding. It was noted that 53.00% of mothers breastfed their infants for less than 6 months.⁶⁰

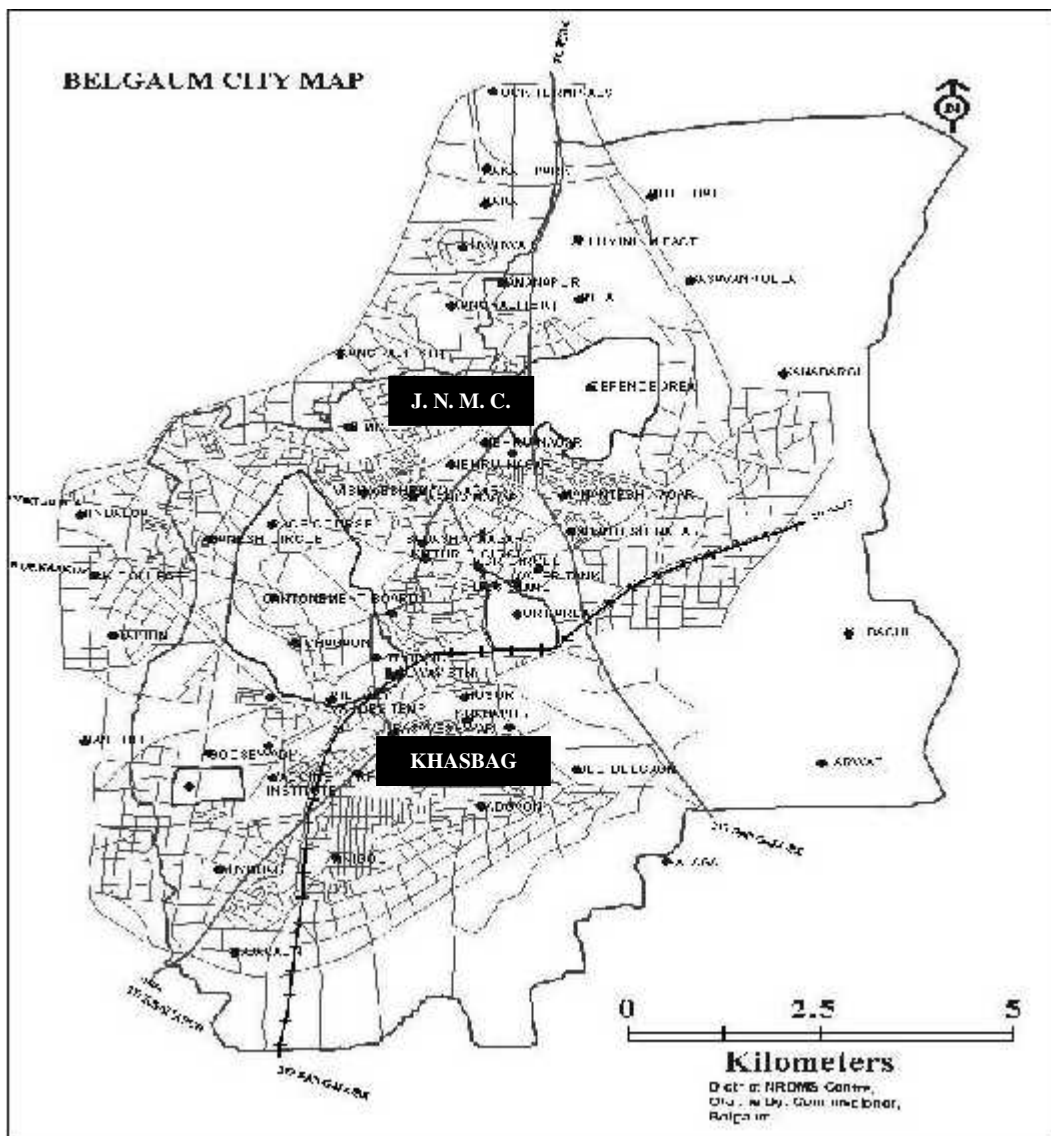
Breast feeding practices in villages of central Karnataka was studied by and it was found that of the 1050 infants studied, only 3 babies were offered breastfeeding within one hour of birth, Administration of pre-lacteal foods was practiced by 100.00% of the mothers, rejection of colostrum was done by 28.60% of the mothers, exclusive breastfeeding rate at 4 months was 61.20%, predominant breastfeeding rate at 4 month was 24.80%, timely complementary feeding was started by 57.30% of the mothers.⁶¹

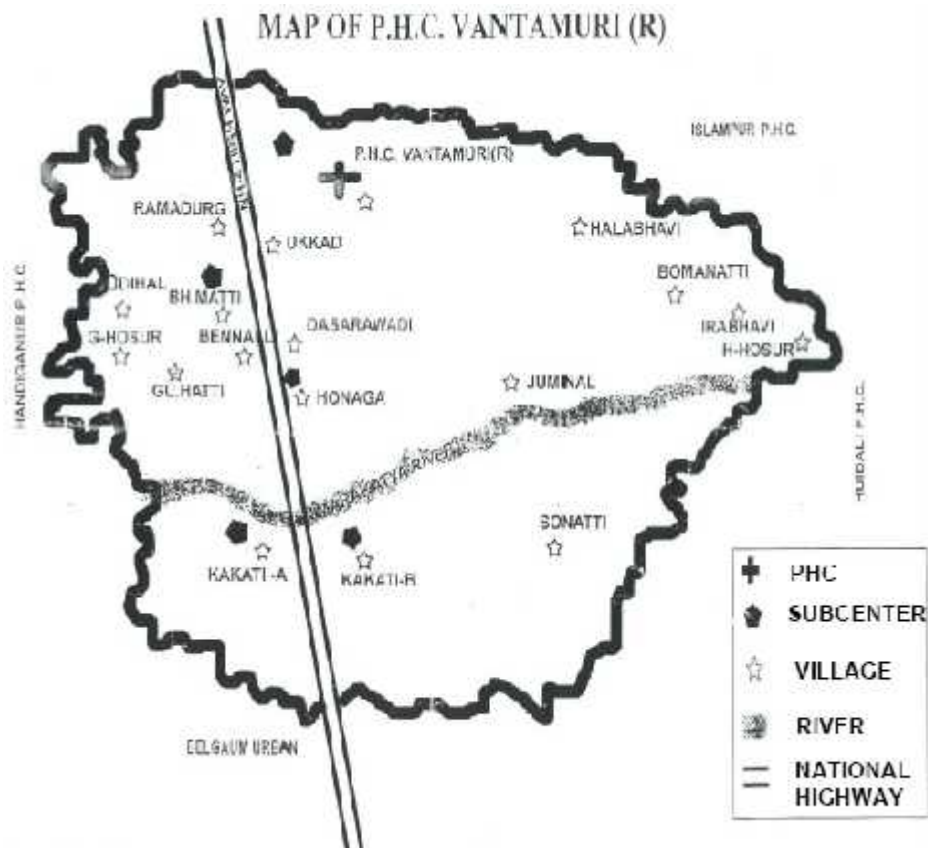
METHODOLOGY

Study area:

Urban study area was the field practice area of Urban Health Centre, Khasbag.

Rural study area was the field practice area of Primary Health Centre, Vantamuri. There were 17 villages under Primary Health Centre, Vantamuri. Among these, by using simple random sample method, 5 villages namely Vantamuri, Kakati (A and B), Honaga and Bhutramanahatti were chosen.





Study design:

A community based cross sectional study.

Study period: One year - January to December 2011.

Source of data

The study was conducted on mothers in the above mentioned study areas having child aged one year.

Sample size:

Prevalence of exclusive breast feeding in urban area was 49.00% and in rural area was 37.00%.⁴¹

Absolute error of 5.00% was considered.

Using the formula

$$n = 4pq/d^2$$

Sample size in urban area was **400** and in rural area was **380**.

Sampling: Simple random sample method.

In urban area, information regarding the births between January to December 2010 were collected in January 2011 from 39 Anganwadis. There were a total of 664 mothers having a 1 year old child. By simple random sample method, using random number tables, 400 mothers were selected. They were interviewed in the month in which their infants completed one year in order to minimize recall bias.

In rural area similar procedure was followed and information was collected from the birth register of the 5 sub centers. There were 679 mothers with a less than 1 year old child and 380 mothers were selected using random number table. They were also interviewed in the month in which their infants completed one year.

Ethical Clearance

The present study was approved by Institutional Ethics Committee on Human subjects' Research. (Ref: MDC/PG/2241 dated 08/10/2010)

Method of collection of data:

Mothers of children aged 1 year were eligible for the study. Residential addresses of these mothers were collected from Anganwadi workers in the urban area and from female health worker of sub-centers in the rural area. Mothers were interviewed using a pre-designed, pre-tested questionnaire (Annexure III) regarding socio-demographic factors and infant feeding practices. In both urban

as well as rural areas if the mothers were not present at the time of visit, they were revisited for a maximum of three times. Despite three visits if they were unavailable then next number was chosen.

Health education was given to the mothers regarding importance of early initiation of breast feeding, exclusive breast feeding till 6 months of age, continuation of breast feeding till 2 years of age and age appropriate complementary foods when and how to be given. Health education was given during interview as well as in some selected Anganwadis.

. Inclusion criteria:

1. Mothers having children aged 1 year.

Codes were prepared for each options of the questionnaire. Data was entered in Excel sheet to prepare master chart. SPSS version 18.0 software was used for analysis of the data. Tables and graphs were prepared by using Microsoft Windows 2007 software.

Analysis:

- Numerical socio-demographic variables were analyzed by means and standard deviations and comparison between urban and rural mothers with respect to numerical data was done using independent t test. Categorical data regarding socio-demographic factors and infant feeding practices were summarized using rates and were compared among urban and rural mothers using Chi square test.
- Chi square test was also used to study the factors influencing the infant feeding practices.

Definition of study variables

Residence⁶²–

Urban area – area with a population of 50,000 or more where population density exceeds 1,000 inhabitants per square mile.

Rural area – area with a population of 5000 or less where population density is less than 1,000 per square mile

Religion: The subject’s religion was noted and was grouped as “Hindu”, “Muslim”, and “Christian”.

Age - Age was recorded to the nearest completed years.

Educational status

- Illiterate - A person who cannot read and write.
- Primary school – Person who has studied from 1st to 7th standard.
- High school – Person who has studied 8th to 10th standard.
- Pre-university / Diploma – Person who has studied up to PUC 2nd year or a diploma course.
- Graduate– Person who has obtained any degree.

Occupation

- Housewife – A woman who takes care of the household day to day duties.
- Agriculturist – A person who works in farm field.
- Daily wage worker – A person who makes living on daily wage basis
- Weaver – A person who works in a cloth weaving factory.

- Any other Profession – A person who is employed in any profession other than these like teacher, tailor, clerk, receptionist etc.

Socio-economic status:

Information regarding per capita income (in Rupees / month) was collected and socio-economic status was classified using Modified B G Prasad's classification for the study period (2011 – 12) and it was calculated by Multiplication factor with 1961 Prasad's classification values.⁶³

Average consumer price index for year 2011 – 12 = 887⁶⁴

Modification was done with the aid of multiplication factor (M.F), which was obtained as below:

Average consumer price index for the study period (2011 - 12)

$$\text{M.F.} = \frac{\text{Average consumer price index for the study period (2011 - 12)}}{100} \times 4.93$$

$$= 887 / 100 \times 4.93 = 43.73$$

Social-economic class.	Prasad's classification 1961 (per capita income in Rs/month) ⁶³	Modified Prasad's classification In study period 2011 - 12 (per capita income in Rs/month)
I	100 and above	4373 and above
II	50—99	2187 – 4372
III	30-49	1312 – 2186
IV	15-29	656 – 1311
V	<15	655 and below

Type of family¹

Nuclear family: household where married couple along with their dependent children live in the same house.

Joint family: household where many married couples and their children who live in the same household. Males are blood relatives and females of the family are related by either marriage or blood relation.

Three generation family: household where representatives of three generations related to each other by direct descent live together.

Birth spacing – grouped as less than 2 years, 2 to 3 years and more than 3 years for those who had 2 children. Adequate birth spacing is having atleast a gap of 3 years between 2 successive pregnancies.⁶⁵

Birth weight – information regarding weight recorded at birth in kilograms taken from the mothers.

Immunization⁶ – noted as ***complete*** if given all the vaccines as per UIP schedule that is one dose of BCG, 3 doses of OPV, DPT and hepatitis B each and one dose

of measles and one dose of vitamin A. **Partial** if taken as some of the vaccine but not all. **Non-immunized** if not taken any of the vaccines.

Prelacteal feeds² - feeds given before breastfeeding is established.

Colostrum - special milk that is secreted in the first 2–3 days after delivery.

Initiation of breast feeding⁵ - early initiation means initiating the breast feeding within one hour after a normal vaginal delivery and within four hours after a caesarean section. Considered as delayed initiation of breast feeding if started after 4 hours of delivery.

Demand feeding² – feeding the infant as often and for as long as he or she wants, both day and night.

Age at initiation of complementary feeds² – recorded as at six months, before six months or after six months

Complementary feeds¹⁴ – foods given in addition to breast milk.

Pacifiers⁶⁶ – A rubber or plastic nipple or teething ring to suck or chew on to pacify the infant.

Type of breast feeding^{2,5} –

Exclusive breast feeding – receives only breast milk from his or her mother or a wet nurse, or expressed breast milk, and no other liquids or solids, not even water, with the exception of oral rehydration solution, drops or syrups consisting of vitamins, minerals supplements or medicines.

Predominant breast feeding – water and other ritual feeds are given along with breast milk.

Partial breast feeding – high partial means > 80% of infant feeds are breast feeds, medium partial means 20 to 80% of infant feeds are breast feeds, low partial means <20% of infant feeds are breast feeds.

Token breast feeding – feeding from either one or both breasts for less than 15 minutes per day to console the crying infant.

RESULTS

The present study was conducted in the urban field practice area of Urban Health Centre, Khasbag and rural field practice area of Primary Health Centre, Vantamuri of Department of Community Medicine, Jawaharlal Nehru Medical College, Belgaum on 400 urban and 380 rural mothers during the period of January 2011 to December 2011. The data obtained was tabulated and analyzed under following headings as below

- I. **Socio-demographic variables**
- II. **Infant feeding practices**
- III. **Association of various socio-demographic factors with infant feeding practices**

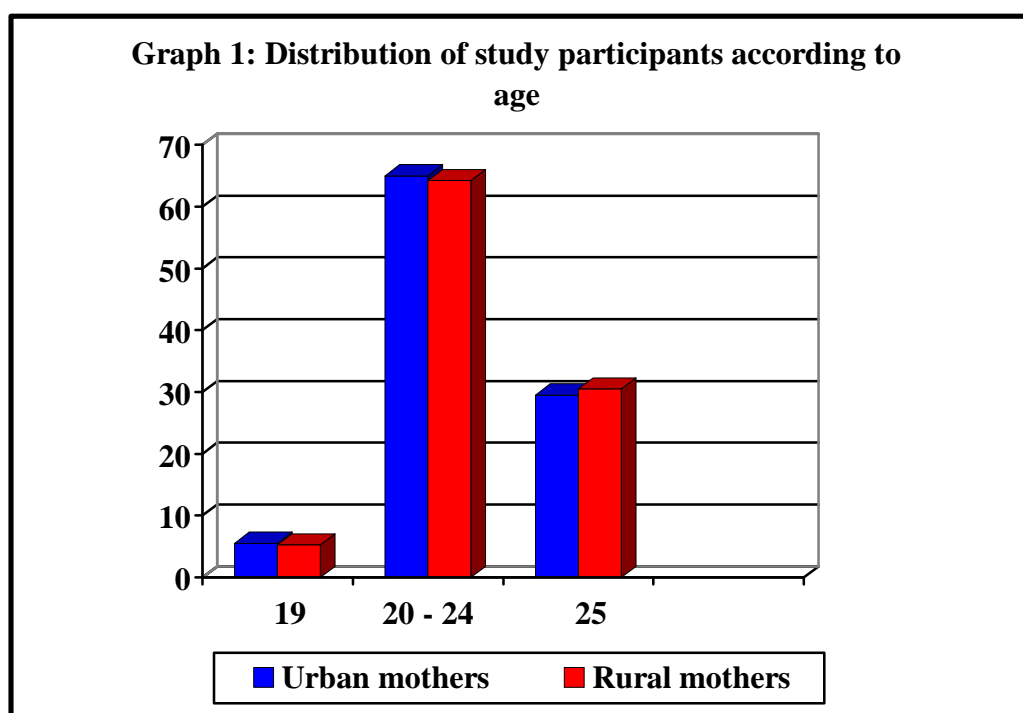
I. SOCIO-DEMOGRAPHIC VARIABLES

Table 1: Distribution of study participants according to age

Age (years)	Urban area		Rural area	
	No	%	No	%
19	22	5.50	20	5.26
20 – 24	260	65.00	244	64.21
25	118	29.50	116	30.53
Total	400	100.00	380	100.00

In the present study, a majority of 260 (65.00%) urban as well as 244 (64.21%) rural mothers were between 20 to 24 years of age. The mean age among the study population was 23.45 ± 2.34 years for urban mothers with a range of 17 to 31 years and 23.20 ± 2.64 years for rural mothers with a range of

18 to 32 years. Difference in the mean ages of urban and rural mothers was not statistically significant ($t=1.945$, $DF=778$, $p=0.052$).



Religion

Table 2: Distribution of study participants according to religion

Religion	Urban area		Rural area	
	No	%	No	%
Hindu	331	82.75	322	84.74
Muslim	69	17.25	56	14.74
Christian	0	0	2	0.52
Total	400	100.00	380	100.00

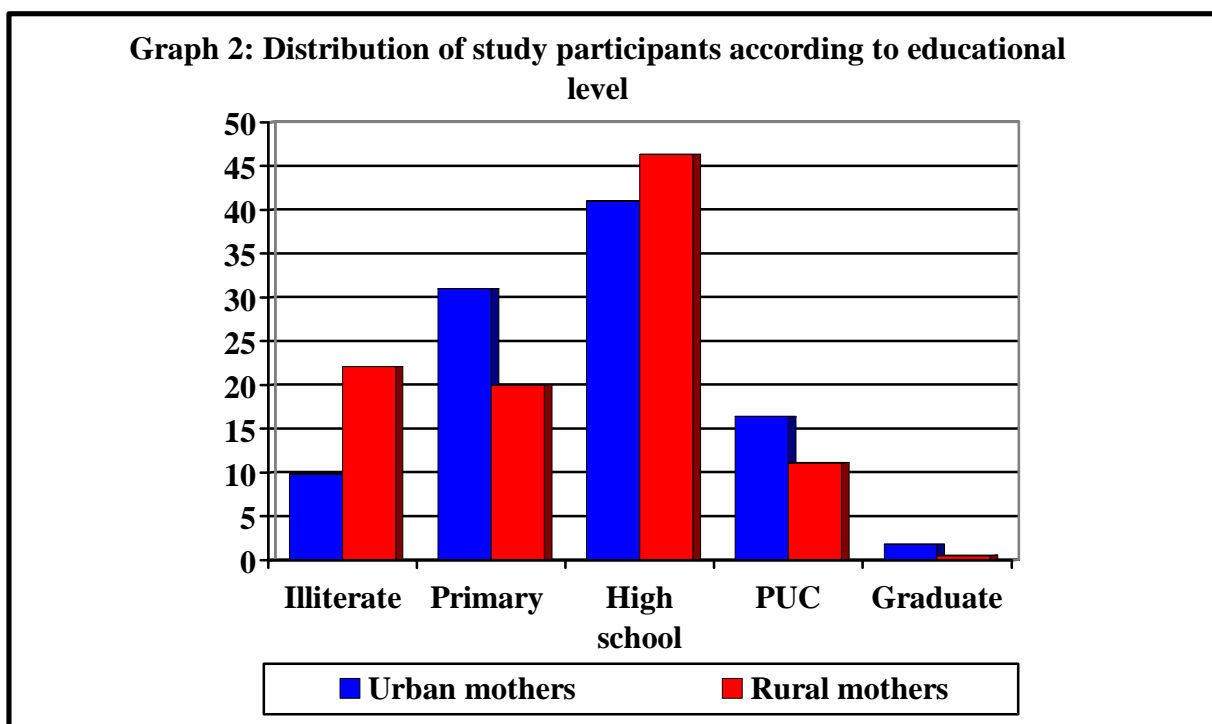
As many as 331 (82.75%) mothers in urban and 322 (84.74%) mothers in rural areas were Hindus and 69 (17.25%) in urban and 56 (14.74%) in rural area were Muslims.

Table 3: Distribution of study participants according to educational level

Educational status	Urban area		Rural area	
	No	%	No	%
Illiterate	39	9.80	84	22.10
Primary school	124	31.00	76	20.00
High school	164	41.00	176	46.32
PUC / Diploma	66	16.40	42	11.05
Graduate	7	1.80	2	0.53
Total	400	100.00	380	100.00

$\chi^2=36.029$, $DF=4$, $p<0.001$

Though a large majority of 164 (41.00%) urban and 176 (46.32%) rural mothers were educated till high school, as many as 84 (22.10%) mothers in the rural area were illiterates. Hence, this difference in the educational status of urban and rural mothers was statistically significant ($p<0.001$).



Occupation

Table 4: Distribution of study participants according to occupation

Occupational status	Urban area		Rural area	
	No	%	No	%
House wife	377	94.20	336	88.42
Agriculturist	0	0	36	9.47
Daily wage worker	3	0.80	6	1.58
Weaver	13	3.20	0	0
Others	7	1.80	2	0.53
Total	400	100.00	380	100.00

$\chi^2=54.659$, DF=4, $p<0.001$

In the present study, 377 (94.20%) urban mothers were housewives compared to 336 (88.42%) rural mothers. Difference in the occupational status of urban and rural mothers was statistically significant ($p<0.001$)

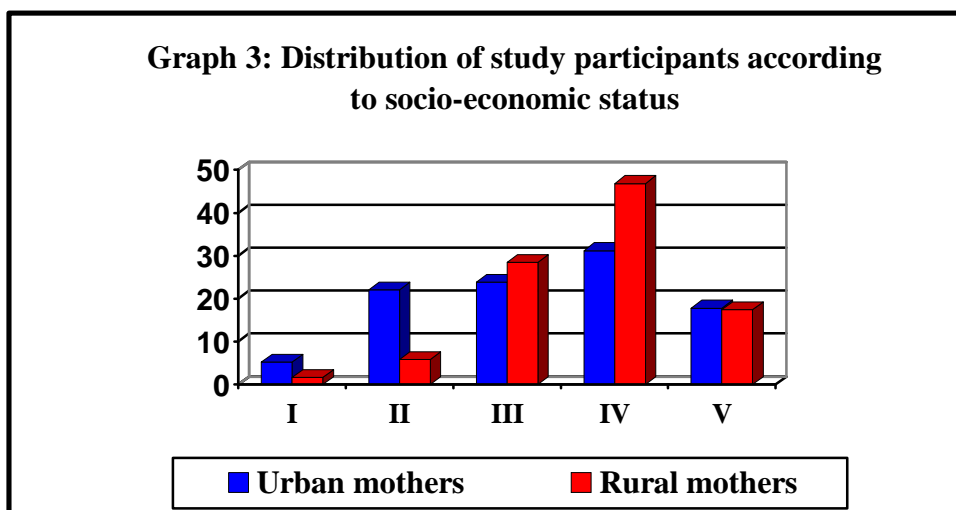
Socio-economic status

Table 5: Distribution of study participants according to socio-economic status

Socio-economic status	Urban area		Rural area	
	No	%	No	%
I	21	5.20	6	1.58
II	88	22.00	22	5.79
III	95	23.80	108	28.42
IV	125	31.20	178	46.84
V	71	17.80	66	17.37
Total	400	100.00	380	100.00

$\chi^2=57.744$, $DF=4$, $p<0.001$

Majority of 125 (31.20%) urban and 178 (46.84%) rural mothers belonged to socio-economic class IV. However, in this study a statistically significant difference was found in the socio-economic status of urban and rural mothers with more number of urban mothers being in classes I, II and III and rural mothers being in classes III, IV and V ($p<0.001$).



Type of Family
Table 6: Distribution of study participants according to type of family

Type of family	Urban area		Rural area	
	No	%	No	%
Nuclear	210	52.50	236	62.11
Joint	167	41.75	110	28.95
Three generation	23	5.75	34	8.94
Total	400	100.00	380	100.00

$\chi^2=14.865$, $DF=2$, $p<0.001$

In this study, 210 (52.50%) urban and 236 (62.11%) rural mothers belonged to nuclear family followed by 167 (41.75%) urban and 110 (28.95%) rural mothers to joint family. Difference in type of family in urban and rural areas to which the study participants belonged was statistically significant ($p<0.001$).

Age at marriage:**Table 7: Distribution of study participants according to age at marriage.**

Age at marriage	Urban area		Rural area	
	No	%	No	%
19	193	48.25	290	76.32
20 – 24	205	51.25	86	22.63
25	2	0.50	4	1.05
Total	400	100.00	380	100.00

Mean age at marriage in the urban area was 19.39 ± 2.05 years with a range of 16 to 27 years whereas in the rural area it was 18 ± 1.88 years with a

range of 15 to 26 years. This difference was statistically significant ($t=9.860$, $DF=778$, $p < 0.001$).

Birth order:

Table 8: Distribution of study participants according to birth order of the present child

Birth order	Urban area		Rural area	
	No	%	No	%
1	188	47.00	153	40.26
2	164	41.00	144	37.89
3	44	11.00	68	17.89
4	4	1.00	15	3.96
Total	400	100.00	380	100.00

$\chi^2=15.900$, $DF=3$, $p=0.001$

Majority of 188 (47.00%) urban mothers and 153 rural mothers (40.26%) had child birth order one. Birth order of two was seen in 164 (41.00%) and 144 (37.89%) urban and rural mothers respectively.

Birth spacing:

Table 9: Distribution of study participants according to birth spacing.

Birth spacing (years)	Urban area		Rural area	
	No	%	No	%
<2	35	16.51	66	29.07
2 – 3	122	57.55	100	44.06
>3	55	25.94	61	26.87
Total	212	100.00	227	100.00

$\chi^2=12.755$, $DF=3$, $p=0.005$

Out of 400, 188 (47.00%) urban mothers and out of 380, 153 (40.26%) rural mothers had only one living child, hence not included in analysis of birth spacing. Out of the remaining mothers, as many as 122 (57.55%) urban and 100 (44.06%) rural mothers had birth spacing of 2 – 3 years.

Place of delivery:

Out of the 400 mothers in the urban area, all had delivered in a hospital whereas in the rural area, out of 380 a total of 348 (91.58%) had delivered in a hospital and 32 (8.42%) of them had delivered at home.

Mode of delivery:

A total of 255 (63.75%) mothers in urban and 334 (87.89%) mothers in rural areas had normal vaginal delivery.

Told about benefits of breast feeding in hospital after delivery:

Among the mothers who had delivered at a hospital, as many as 370 (92.50%) mothers in urban and 294 (84.48%) mothers in rural areas were told about the benefits of breast feeding in the hospital. ($\chi^2=27.327$, $DF=1$, $p<0.001$)

Sex of the child:

As many as 163 (40.75%) urban and 226 (59.47%) rural mothers had male children and 237 (59.25%) urban and 154 (40.53%) rural mothers had female children.

Birth weight:**Table 10: Distribution of study participants according to birth weight of the infant.**

Birth weight (kg)	Urban area		Rural area	
	No	%	No	%
Unknown	0	0	48	12.63
<2.5	173	43.25	48	12.63
2.5 – 3.0	218	54.50	270	71.06
>3.0	9	2.25	14	3.68
Total	400	100.00	380	100.00

Median birth weight in urban area was 2.5 kg with a range of 1.75 to 3.80 kg and in rural area it was 2.75 kg with a range of 1.5 to 4.00 kg. Difference in the mean birth weights of urban and rural children was statistically significant ($t=7.402$, $DF=730$, $p<0.001$).

Immunization:**Table 11: Distribution of study participants according to immunization of the infant.**

Immunization	Urban area		Rural area	
	No	%	No	%
Complete	400	100.00	369	97.11
Partial	0	0	9	2.37
Non immunized	0	0	2	0.52
Total	400	100.00	380	100.00

All the mothers had got their children completely immunized in urban area; whereas, in the rural area only 369 (97.11%) mothers had got their children completely immunized.

II. INFANT FEEDING PRACTICES

Pre-lacteal feeds:

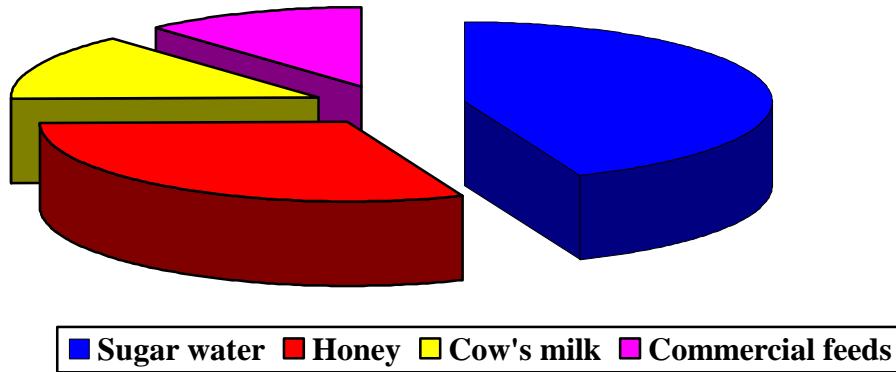
Out of 400 mothers in urban area, 217 (54.25%) and out of 380 mothers in rural area, 217 (57.11%) had given pre-lacteal feeds ($\chi^2=0.664$, $DF=1$, $p=0.422$).

Table 12: Distribution of study participants according to the pre-lacteal foods given

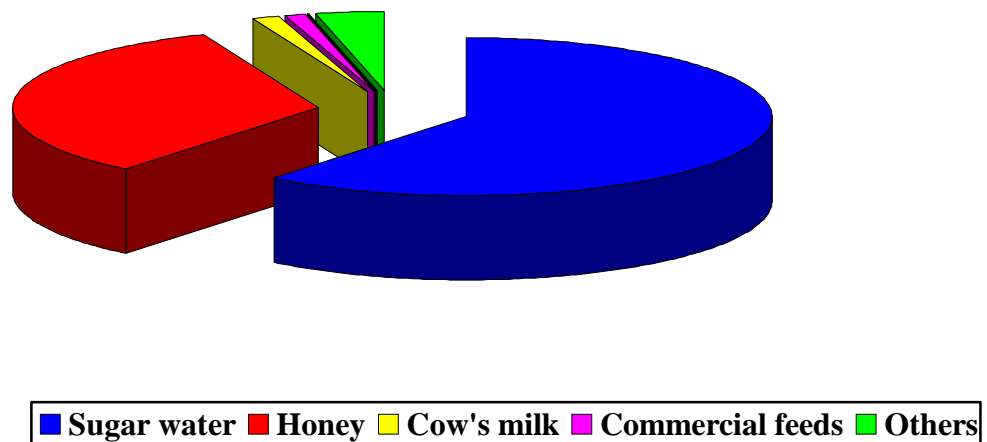
Pre-lacteal foods	Urban area		Rural area	
	No	%	No	%
Sugar water	96	44.24	132	60.82
Honey	67	30.88	72	33.18
Cow's milk	30	13.82	3	1.38
Commercial foods	24	11.06	2	0.92
Water	0	0	1	0.46
Others	0	0	7	3.24
Total	217	100.00	217	100.00

Most common pre-lacteal food given was sugar water by as many as 96 (44.24%) urban and 132 (60.82%) rural mothers.

Graph 4a: Distribution of study participants according to most common pre-lacteal feeds given in urban area



Graph 4b: Distribution of study participants according to most common prelacteal feeds given in rural area



Colostrum:**Table 13: Distribution of study participants according to feeding of the colostrum to the new born and reasons for discarding colostrum.**

Colostrum	Urban area		Rural area		2=14.772 DF=1 p < 0.001
	No	%	No	%	
Discarded	59	14.75	98	25.79	
Not discarded	341	85.25	282	74.21	
Total	400	100.00	380	100.00	
Reasons for discarding colostrum	Urban area		Rural area		
	No	%	No	%	
Baby in NICU	18	30.51	22	22.45	
Elder's advice	13	22.03	59	60.20	
Physical inability in the mother	12	20.34	2	2.05	
No secretion	12	20.34	9	9.18	
Bad for baby's health	4	6.78	6	6.12	
Total	59	100.00	98	100.00	

As many as 59 (14.75%) urban mothers and 98 (25.79%) rural mothers discarded the colostrum. Difference in the practice of discarding the colostrum among urban and rural mothers was statistically significant ($p < 0.001$).

On further analysis, out of the 341 urban mothers who fed colostrum to their newborns, only 12 (3.52%) felt that their young ones were made to suck the empty breast without any secretion and should have been given some other food. Whereas, out of the 282 rural mothers who fed colostrum to their newborns, as many as 110 (39.00%) had the same feeling.

Commonest reason for not giving colostrum in the urban area was that the baby was in NICU (30.51%); whereas, in rural area the mothers did not give colostrum as the elders advised not to give it (60.20%).

Initiation of breast feeding:

Table 14: Distribution of study participants according to time of initiation of breast feeding after delivery and reasons for delayed initiation.

Initiation of breast feeding (hours)	Urban area		Rural area		2=11.99 DF=2 p= 0.002
	No	%	No	%	
<1	170	42.50	163	42.89	
1 - 4	132	33.00	89	23.43	
> 4	98	24.50	128	33.68	
Total	400	100.00	380	100.00	
Reasons for delayed initiation of breast feeding.	Urban area		Rural area		
	No	%	No	%	
Mother's physical inability	38	38.78	7	5.47	
Baby in NICU	23	23.47	25	19.53	
No secretion	19	19.39	31	24.22	
Elder's advice	14	14.29	59	46.09	
Colostrum bad for baby's health	4	4.07	6	4.69	
Total	98	100.00	128	100.00	

In this study, 170 (42.50%) urban and 163 (42.89%) rural mothers initiated breast feeding within one hour of delivery. Only 98 (24.50%) urban mothers had delayed the initiation of breast feeding beyond four hours compared to 128 (33.68%) rural mothers who did the same. Difference in the practice of

delayed initiation of breast feeding among urban and rural mothers was statistically significant ($p=0.002$).

Most common reason quoted by urban mothers for delayed initiation of breast feeding after delivery was their physical inability like pain or tiredness (38.78%) whereas, in rural area it was because of elders who advised not to initiate breast feeding early (46.09%).

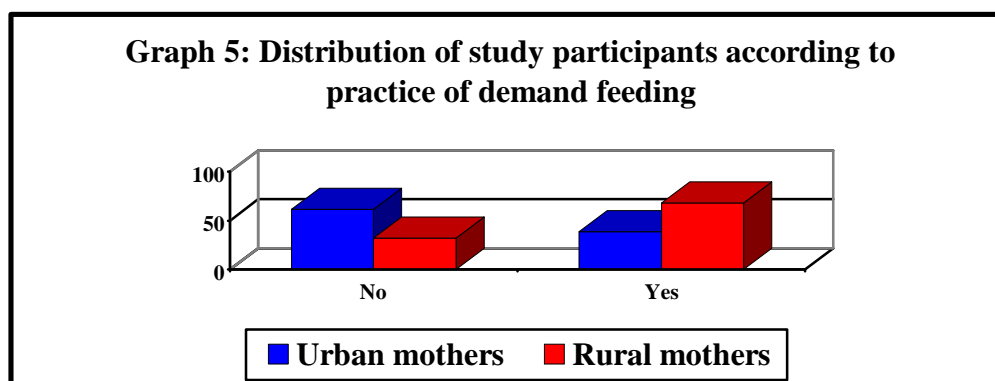
Demand feeding:

Table 15: Distribution of study participants according to practice of demand feeding.

Demand feeding	Urban area		Rural area	
	No	%	No	%
No	245	61.25	122	32.11
Yes	155	38.75	258	67.89
Total	400	100.00	380	100.00

$\chi^2=66.442$, $DF=1$, $p<0.001$

A majority of 245 (61.25%) urban mothers and only 122 (32.11%) rural mothers did not practice demand feeding. Difference in the practice of demand feeding among urban and rural mothers was statistically significant ($p<0.001$).



Water given to the infant before 6 months of age:**Table 16: Distribution of study participants according to practice of giving water before 6 months of age and reasons for the same.**

Water given to the infant before 6 months of age	Urban area		Rural area		2=0.235 DF=1 p=0.628
	No	%	No	%	
No	105	26.25	94	24.74	
Yes	295	73.75	286	75.26	
Total	400	100.00	380	100.00	
Reasons for giving water before 6 months of age	Urban area		Rural area		
	No	%	No	%	
Given with medication	190	64.41	12	4.19	
Elder's advice	45	15.26	32	11.20	
As top feeds with commercial feeds	35	11.86	12	4.19	
Weather is hot	25	8.47	230	80.42	
Total	295	100.00	286	100.00	

A large number of 295 (73.75%) mothers in urban as well as 286 (75.26%) mothers in rural areas had started giving water to the child along with breast milk before 6 months of age. Difference in the practice of giving water before 6 months of age to the infant was statistically not significant (p=0.628). Most commonly water was given in the urban area with medication (64.41%) and in the rural area mothers had started giving water before 6 months of age as they felt the weather was hot and hence water was required (80.42%).

Practice of giving ghutti before 6 months of age:

Ghutti is a paste of almonds, dates and other medicinal plants. Practice of giving ghutti to their infants was more common in mothers of urban area. As many as 125 (31.25%) urban mothers compared to 6 (1.58%) rural mothers gave ghutti to their infants before 6 months of age.

Table 17: Distribution of study participants according to practice of giving ghutti before 6 months of age and reasons for the same

Ghutti given to the infant before 6 months of age	Urban area		Rural area		2=122.8 DF=1 P<0.001
	No	%	No	%	
No	275	68.75	374	98.42	
Yes	125	31.25	6	1.58	
Total	400	100.00	380	100.00	
Reasons for giving ghutti before 6 months of age	Urban area		Rural area		
	No	%	No	%	
Elder's advice	117	93.60	6	100.00	
Boosts immunity	6	4.80	0	0	
Others	2	1.60	0	0	
Total	125	100.00	6	100.00	

Most of the urban as well as rural mothers did so as per the elder's advice (93.60% and 100.00% respectively). In the urban area few mothers (4.80%) gave ghutti as they believed that it boosted the infant's immunity. Other reasons quoted by the mothers in the urban area were that it increased the IQ of the infant, advised by friends etc (1.60%).

Age at which complementary foods were started:**Table 18: Distribution of study participants according to age at which complementary feeds were started to the infant**

Age at which complementary feeds were started (months)	Urban area		Rural area	
	No	%	No	%
< 6 months	277	69.20	90	23.68
At 6 months	115	28.80	160	42.11
> 6 months	8	2.00	130	34.21
Total	400	100.00	380	100.00

$\chi^2=210.12, DF=2, P<0.001$

As many as 277 (69.20%) mothers in the urban area started complementary feeds before the age of 6 months; whereas, in the rural areas, a majority of 160 (42.11%) mothers started complementary feeds at the age of 6 months. Difference in age of the infant at initiation of complementary feeds among urban and rural mothers was statistically significant ($p<0.001$).

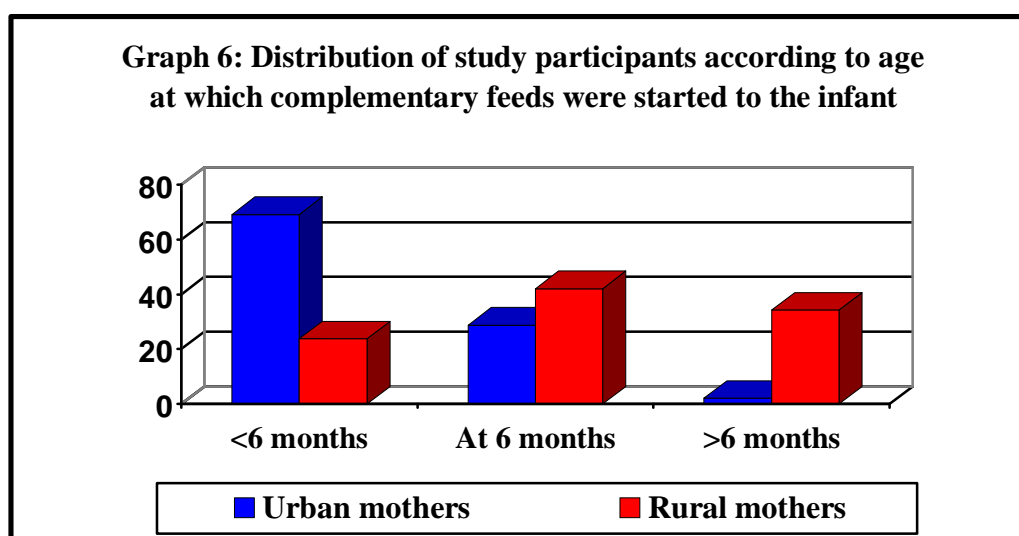


Table 19: Distribution of study participants according to reasons for starting complementary feeding before 6 months of age

Reasons for starting complementary feeding before 6 months of age	Urban area		Rural area	
	No	%	No	%
Advised by elders	133	48.01	10	11.11
Breast milk alone insufficient to meet the infant's needs	88	31.77	30	33.33
No / reduced secretion of breast milk	43	15.52	40	44.44
Advised by the health care personnel	8	2.89	0	0
Working mother	5	1.81	4	4.45
Others	0	0	6	6.67
Total	277	100.00	90	100.00

Majority of the mothers in the urban area started complementary feeds before 6 months of age as advised by their elders (48.01%). Most common reason for starting the complementary feeds before 6 months of age by the rural mothers (44.44%) was because they had reduced or no secretion of breast milk. Many mothers in both urban (31.77%) as well as rural (33.33%) areas felt that breast milk alone was insufficient to meet the increasing demands of the infant and hence started complementary feeds before the age of 6 months.

Table 20: Distribution of study participants according to reasons for starting complementary feeding beyond 6 months of age

Reasons for starting complementary feeding beyond 6 months of age	Urban area		Rural area	
	No	%	No	%
Breast milk secretion was more than sufficient for the infant	3	37.50	60	46.15
Infant was not accepting any foods	2	25.00	50	38.46
Cannot afford commercial foods	2	25.00	8	6.15
Infant cannot eat anything till it gets teeth	1	12.50	12	9.24
Total	8	100.00	130	100.00

Most common reason given for starting complementary foods beyond the optimum 6 months of age in both the urban and the rural areas was that the mother thought she had enough secretion of breast milk to satisfy the needs of the infant (37.50% and 46.15% respectively).

Infant's first food:**Table 21: Distribution of study participants according to the food started first as the complementary food to the infant.**

Food started first	Urban area		Rural area	
	No	%	No	%
Porridge	147	36.75	93	24.47
Commercial foods	119	29.75	66	17.37
Cow's milk	112	28.00	124	32.63
Biscuits	19	4.75	61	16.05
Others	3	0.75	36	9.48
Total	400	100.00	380	100.00

$\chi^2 = 77.455, DF=4, p < 0.001$

In the urban area, most commonly 147 (36.75%) mothers gave porridge as the first food for the infant followed by 119 (29.75%) mothers who gave commercial foods; whereas, in rural area 124 (32.63%) mothers gave cow's milk as the first complementary food for the infant followed by 93 (24.47%) mothers who gave porridge.

Table 22: Distribution of study participants according to complementary foods given as meals, number of meals per day and amount given per meal to the infant between 6 to 8 months of age.

Complementary foods given between 6 to 8 months as meals	Urban area		Rural area		
	No	%	No	%	
None	10	2.50	118	31.05	2=45.62 DF=5 P<0.001
Cereal based only	133	33.25	142	37.36	
Double mix only	30	7.50	32	8.43	
Triple mix only	28	7.00	10	2.63	
Quadruple mix only	6	1.50	6	1.57	
Commercial foods	41	10.25	26	6.84	
Combination of various foods	152	38.00	46	12.12	
Total	400	100.00	380	100.00	
Number of meals given between 6 to 8 months per day	Urban area		Rural area		
	No	%	No	%	
Not applicable	10	2.50	118	31.06	2=144.3 DF=3 P<0.001
1	10	2.50	38	10.00	
2	332	83.00	182	47.89	
3	48	12.00	42	11.05	
Total	400	100.00	380	100.00	
Amount of food given per meal between 6 to 8 months	Urban area		Rural area		
	No	%	No	%	
Not applicable	10	2.50	118	31.05	2=122.4 DF=2 P<0.001
3/4 th of a 200 ml cup	84	21.00	24	6.32	
< 3/4 th of a 200 ml cup	306	76.50	238	62.63	
Total	400	100.00	380	100.00	

As many as 10 (2.50%) urban mothers had not given any complementary foods as meals to their infants between 6 to 8 months of age compared to 118 (31.05%) rural mothers. Combinations of various foods were most commonly given for meals in urban area by 152 (38.00%) mothers whereas in the rural area most common complementary food given for meals was cereal based food alone like porridge made of rice, ragi or wheat by 142 (37.36%) mothers.

Table 23: Distribution of study participants according to complementary foods given as snacks and number of snacks given per day to the infant between 6 to 8 months of age.

Complementary foods given between 6 to 8 months as snacks	Urban area		Rural area		
	No	%	No	%	
None	6	1.50	124	32.63	2=31.800 DF=3 P<0.001
Biscuits only	258	64.50	196	51.58	
Fruits only	4	1.00	16	4.21	
Combination of various foods	132	33.00	44	11.58	
Total	400	100.00	380	100.00	
Number of snacks given between 6 to 8 months per day	Urban area		Rural area		
	No	%	No	%	
Not applicable	6	1.50	124	32.63	2=160.2 DF=2 P<0.001
1	14	3.50	42	11.05	
2	322	80.50	180	47.37	
3	58	14.50	34	8.95	
Total	400	100.00	380	100.00	

Biscuit was the most common food given as snack by both urban as well as rural mothers {258 (64.50%) and 196 (51.58%) respectively}.

Table 24: Distribution of study participants according to complementary foods given as meals, number of meals per day and amount given per meal to the infant between 9 to 12 months of age.

Complementary foods given between 9 to 12 months as meals	Urban area		Rural area		
	No	%	No	%	
None	0	0	26	6.84	2=131.25 DF=5 P<0.001
Cereal based only	62	15.50	174	45.79	
Double mix only	50	12.50	56	14.74	
Triple mix only	55	13.75	30	7.89	
Quadruple mix only	2	0.50	2	0.53	
Commercial foods	14	3.50	20	5.26	
Combination of various foods	217	54.25	72	18.95	
Total	400	100.00	380	100.00	
Number of meals given between 9 to 12 months per day	Urban area		Rural area		
	No	%	No	%	
Not applicable	0	0	26	6.84	2=50.9 DF=3 P<0.001
1	4	1.00	42	11.06	
2	140	35.00	150	39.47	
3	242	60.50	156	41.05	
4	14	3.50	6	1.58	
Total	400	100.00	380	100.00	
Amount of food given per meal between 9 to 12 months	Urban area		Rural area		
	No	%	No	%	
Not applicable	0	0	26	6.84	2=20.78 DF=1 P<0.001
full of a 200 ml cup	68	17.00	22	5.79	
<full of a 200 ml cup	332	83.00	330	86.84	
>full of a 200 ml cup	0	0	2	0.53	
Total	400	100.00	380	100.00	

In the rural area 26 (6.84%) mothers did not give complementary foods till 12 months of age and they started thereafter. A majority of 174 (45.79%) mothers in the rural areas gave cereal based foods like porridges made of rice, ragi or rava for meals. Whereas, in the urban area a majority of 217 (54.25%) mothers gave combination of various foods for meals.

Table 25: Distribution of study participants according to complementary foods given as snacks and number of snacks given per day to the infant between 9 to 12 months of age.

Complementary foods given between 9 to 12 months as snacks	Urban area		Rural area		
	No	%	No	%	
None	0	0	48	12.63	$\chi^2=99.281$ DF=3 p<0.001
Biscuits only	262	65.50	258	67.89	
Fruits only	4	1.00	24	6.32	
Others like egg and upma	2	0.50	2	0.53	
Combination of various foods	132	33.00	48	12.63	
Total	400	100.00	380	100.00	
Number of snacks given between 9 – 12 months per day	Urban area		Rural area		
	No	%	No	%	
Not applicable	0	0	48	12.63	$\chi^2=40.94$ DF=2 p<0.001
1	12	3.00	57	15.00	
2	306	76.50	211	55.53	
3	82	20.50	64	16.84	
Total	400	100.00	380	100.00	

Majority of 262 (65.50%) mothers in urban and 258 (67.89%) mothers in rural areas gave biscuits as snacks.

Pacifiers were not used by any mothers in both urban as well as rural areas.

Type of feeding:**Table 26: Distribution of study participants according to type of feeding**

Type of feeding	Urban area		Rural area	
	No	%	No	%
Exclusive	65	16.25	58	15.26
Predominant	309	77.25	296	77.89
Partial	20	5.00	26	6.85
Token	6	1.50	0	0
Total	400	100.00	380	100.00

$$\chi^2=0.17, DF=2, p=0.921$$

Exclusive breast feeding was practiced by only 65 (16.25%) urban and 58 (15.26%) rural mothers. As many as 309 (77.25%) urban and 296 (77.89%) rural mothers practiced predominant type of breast feeding.

Except for three mothers in the rural area who had stopped breast feeding by one year of age, others had continued breast feeding.

Table 27: Indicators for assessing infant feeding practices

Indicators	Urban (%)	Rural (%)
Early initiation of breastfeeding	42.50	42.89
Exclusive breastfeeding under 6 months	16.25	15.26
Continued breastfeeding at 1 year	100	99.21
Introduction of solid, semi-solid or soft foods	98.50	67.37
Minimum dietary diversity	54.75	19.47
Minimum meal frequency	71.75	41.05
Minimum acceptable diet	40.75	15.78
Predominant breastfeeding under 6 months	77.25	77.89

Indicators like early initiation of breast feeding (42.50% in urban and 42.89% in rural), exclusive breast feeding under 6 months (16.25% in urban and 15.26% in rural) and predominant breastfeeding under 6 months (77.25% in urban and 77.89% in rural) were almost same in both urban and rural areas. Continued breast feeding was better in urban compared to rural area (100.00% in urban and 99.21% in rural area). Indicators related to complementary feeds like introduction of solid, semi-solid and soft foods, minimum dietary diversity, minimum meal frequency and minimum acceptable diet were better in urban area.

III. ASSOCIATIONS BETWEEN VARIOUS SOCIO-DEMOGRAPHIC FACTORS AND INFANT FEEDING PRACTICES

Table 28: Association of religion with practice of giving pre-lacteal feeds

Religion	Pre-lacteal feeds given					
	Urban area			Rural area		
	No (%)	Yes (%)	Total	No (%)	Yes (%)	Total
Hindu	172 (51.96)	159 (48.04)	331	141 (43.79)	181 (56.21)	322
Non Hindu	11 (15.94)	58 (84.06)	69	22 (37.93)	36 (62.07)	58
Total	183	217	400	163	217	380
	2 =29.851, DF=2, p<0.001			2 =0.688, DF=2, p = 0.407		

Association of religion with practice of giving pre-lacteal feeds was statistically significant in urban area with a minority of 159 (48.04%) Hindu and a majority of 58 (84.06%) non Hindu mothers gave pre-lacteal feeds ($p < 0.001$). Similarly, a minority of 181 (56.21%) Hindu and a majority of 36 (62.07%) non Hindu mothers gave pre-lacteal feeds in rural area. However, this difference was not statistically significant in rural area.

Table 29: Association between age of the mother and practice of giving pre-lacteal feeds

Age (years)	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
19	4 (18.18)	18 (81.82)	22	8 (40.00)	12 (60.00)	20
20 – 24	118 (45.38)	142 (54.62)	260	100 (40.98)	144 (59.02)	244
25	61 (51.69)	57 (48.31)	118	55 (47.41)	61 (52.59)	116
Total	183	217	400	163	217	380
	$\chi^2 = 8.431, DF=2, p = 0.015$			$\chi^2 = 1.399, DF=2, p=0.497$		

As the age increased practice of giving pre-lacteal feeds decreased. A majority of 18 (81.82%) mothers in urban area and 12 (60.00%) mothers in rural area who gave pre-lacteal feeds were aged 19 years. A majority of 61 (51.69%) mothers in urban area and 55 (47.41%) mothers in rural area who did not give pre-lacteal feeds were aged 25 years. Hence, association of age with practice of giving pre-lacteal feeds was statistically significant in urban area ($p=0.015$). However, this association did not find statistical significance in rural area.

Table 30: Association of educational level with practice of giving pre-lacteal feeds

Educational level	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Illiterate	5 (12.82)	34 (87.18)	39	32 (38.10)	52 (61.90)	84
Primary school	34 (27.42)	90 (72.58)	124	38 (50.00)	38 (50.00)	76
High school	85 (51.83)	79 (48.17)	164	74 (42.05)	102 (57.95)	176
PUC / Diploma / Graduate	59 (80.82)	14 (19.18)	73	19 (43.18)	25 (56.82)	44
Total	183	217	400	163	217	380
	$\chi^2 = 72.447, DF=3, p < 0.001$			$\chi^2 = 2.410, DF=3, p=0.492$		

Association of educational status with practice of giving pre-lacteal feeds was statistically significant in urban area ($p < 0.001$). Practice of giving pre-lacteal feeds reduced with increase in educational status. A majority of 59 (80.82%) mothers in urban area who did not give pre-lacteal feeds had studied till PUC or Diploma or Graduation; whereas, a majority of 34 (87.18%) mothers who gave pre-lacteal feeds were illiterates.

However, association of educational status with practice of giving pre-lacteal feeds was not statistically significant in rural area because as many as 38 (50.00%) mothers who had studied till primary school, 102 (57.95%) till high school and 25 (56.82%) mothers till PUC or diploma or graduation gave pre-lacteal feeds.

Table 31: Association between occupational status and practice of giving pre-lacteal feeds.

Occupational status	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
House wife	169 (44.83)	208 (55.17)	377	144 (42.85)	192 (57.15)	336
Working	14 (60.86)	9 (39.14)	23	19 (43.18)	25 (56.82)	44
Total	183	217	400	163	217	380
	$\chi^2 = 2.248, DF=1, p=0.134$			$\chi^2 = 0.002, DF=1, p=0.967$		

As many as 169 (44.83%) mothers in urban area and 144 (42.85%) mothers in rural area who did not give pre-lacteal feeds were housewives. Similarly, 208 (55.17%) mothers in urban area and 192 (57.15%) mothers in rural area who gave pre-lacteal feeds were housewives. Hence, the association of occupational status with practice of giving pre-lacteal feeds was not significant statistically.

Table 32 Association of socio-economic status with practice of giving pre-lacteal feeds.

Socio-economic status	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
I	15 (71.43)	6 (28.57)	21	2 (33.33)	4 (66.67)	6
II	62 (70.45)	26 (29.55)	88	11 (50.00)	11 (50.00)	22
III	31 (32.63)	64 (67.37)	95	47 (43.52)	61 (56.48)	108
IV	45 (36.00)	80 (74.00)	125	71 (39.88)	107 (60.12)	178
V	30 (42.26)	41 (57.74)	71	32 (48.48)	34 (51.52)	66
Total	183	217	400	163	217	380
	$\chi^2 = 38.943, DF=4, p < 0.001$			$\chi^2 = 2.194, DF=4, p = 0.700$		

As the socio-economic status increased, number of mothers who gave pre-lacteal feeds reduced. As many as 41 (57.74%) mothers who belonged to a socio-economic status of Class V and 6 (28.57%) mothers belonging to Class I gave pre-lacteal feeds. Hence, this association of socio-economic status with practice of giving pre-lacteal feeds was significant ($p < 0.001$).

Whereas in the rural area as many as 107 (60.12%) mothers who belonged to a socio-economic status of Class IV and 4 (66.67%) belonging to Class I gave pre-lacteal feeds. Hence, association of socio-economic status with practice of giving pre-lacteal feeds was not significant.

Table 33: Association between type of family and practice of giving pre-lacteal feeds

Type of family	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Nuclear	62 (29.52)	148 (70.48)	210	94 (39.83)	142 (60.17)	236
Joint	107 (64.07)	60 (35.93)	167	54 (49.09)	56 (50.91)	110
Three generation	14 (60.86)	9 (39.14)	23	15 (44.11)	19 (55.89)	34
Total	183	217	400	163	217	380
	2 =46.983, DF=2, p<0.001			2 =2.649, DF=2, p=0.266		

A majority of 148 (70.48%) mothers belonging to nuclear family, 9 (39.14%) to three generation family and 60 (35.93%) from joint family in urban area gave pre-lacteal feeds. Hence, association of type of family with practice of giving pre-lacteal feeds was statistically significant ($p < 0.001$).

Even in the rural area, a majority of 142 (60.17%) mothers belonging to nuclear family, 19 (55.89%) from three generation family and 56 (50.91%) to joint family gave pre-lacteal feeds. However, association of type of family with practice of giving pre-lacteal feeds was not statistically significant in rural area.

Table 34: Association of place of delivery with practice of giving pre-lacteal feeds.

Place of delivery	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Home	0	0	0	6 (18.75)	26 (81.25)	32
Hospital	183 (45.75)	217 (54.25)	400	157 (45.11)	191 (54.89)	348
Total	183	217	400	163	217	380
				$\chi^2 = 8.316, DF=1, p=0.004$		

Since all the deliveries in urban area had taken place in hospital, association of place of delivery with practice of giving pre-lacteal feeds is not possible to calculate. In the rural area, as many as 26 (81.25%) mothers who delivered at home and 191 (54.89%) mothers who delivered at a hospital gave pre-lacteal feeds. Hence, association of place of delivery with practice of giving pre-lacteal feeds was statistically significant ($p=0.004$).

Table 35: Association between telling about benefits of breast feeding in the hospital and practice of giving pre-lacteal feeds.

Told about benefits of breast feeding in the hospital	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Yes	179 (48.37)	191 (51.63)	370	147 (50.00)	147 (50.00)	294
No	4 (13.33)	26 (86.67)	30	10 (18.51)	44 (81.49)	54
Total	183	217	400	157	191	348
				$\chi^2 = 12.361, DF=1, p=0.0004$		
				$\chi^2 = 25.053, DF=1, p < 0.001$		

Out of the mothers in urban area who gave pre-lacteal feeds, as many as 191 (51.63%) were told about the benefits of breast feeding in the hospital and

26 (86.67%) were not told about it. Hence, association of telling about benefits of breast feeding in the hospital with practice of giving pre-lacteal feeds was statistically significant ($p=0.0004$).

In the rural area, 32 (8.42%) mothers who had delivered at home were not included in this analysis of association. Also out of the mothers in rural area who gave pre-lacteal feeds, as many as 147 (50.00%) were told about the benefits of breast feeding in the hospital and 44 (81.49%) were not told about the same. Hence, association of telling about benefits of breast feeding in the hospital with practice of giving pre-lacteal feeds was statistically significant ($p < 0.001$).

Table 36: Association of birth order with practice of giving pre-lacteal feeds.

Birth order	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
1	96 (51.06)	92 (48.94)	188	57 (37.25)	96 (62.75)	153
2	75 (45.73)	89 (54.27)	164	69 (47.91)	75 (52.09)	144
3	12 (25.00)	36 (75.00)	48	37 (44.57)	46 (55.43)	83
Total	183	217	400	163	217	380
	$\chi^2 = 10.466, DF=2, p=0.005$			$\chi^2 = 3.565, DF=2, p=0.168$		

In the urban area as the birth order increased, practice of giving pre-lacteal feeds also increased from 92 (48.94%) mothers with child birth order one to 36 (75.00%) mothers with child birth order 3. This association of birth order with practice of giving pre-lacteal feeds was statistically significant ($p=0.005$). In the rural area such a trend was not seen.

A majority of 96 (62.75%) mothers who gave pre-lacteal feeds were having child birth order 1 and 46 (55.43%) mothers who gave pre-lacteal feeds were having child birth order 3. Hence, no statistical significance was seen in the association of birth order with practice of giving pre-lacteal feeds in the rural area.

Table 37: Association between mode of delivery and practice of giving pre-lacteal feeds.

Mode of delivery	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Normal vaginal	131 (51.37)	124 (48.63)	255	149 (44.62)	185 (55.38)	334
Caesarean section	52 (35.86)	93 (64.14)	145	14 (30.43)	32 (69.57)	46
Total	183	217	400	163	217	380
	$\chi^2 = 8.960, DF=1, p=0.003$			$\chi^2 = 3.317, DF=1, p=0.69$		

Majority of 93 (64.14%) mothers in urban area who gave pre-lacteal feeds had caesarean delivery. Hence, association of mode of delivery with practice of giving pre-lacteal feeds was statistically significant ($p=0.003$). Majority of 32 (69.57%) mothers in rural area who gave pre-lacteal feeds also had caesarean delivery. However, association of mode of delivery with practice of giving pre-lacteal feeds was not statistically significant

Table 38: Association of sex of the child with practice of giving pre-lacteal feeds.

Sex of the child	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Male	74	89	163	100	126	226
	(45.39)	(54.61)		(44.24)	(55.76)	
Female	109	128	237	63	91	154
	(45.99)	(54.01)		(40.90)	(59.10)	
Total	183	217	400	163	217	380
	$\chi^2 = 0.014, DF=1, p=0.907$			$\chi^2 = 0.417, DF=1, p=0.519$		

Association of sex of the child with practice of giving pre-lacteal feeds was not statistically significant in both urban as well as rural areas because in urban area as many as 89 (54.61%) mothers who had male children and 128 (54.01%) mothers having female children gave pre-lacteal feeds; whereas, in the rural area, 126 (55.76%) mothers with male children and 91 (59.10%) mothers of female children gave pre-lacteal feeds.

Table 39: Association between birth weight and practice of giving pre-lacteal feeds.

Birth weight (kg)	Pre-lacteal feeds given					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
<2.5	79 (45.66)	94 (54.34)	173	18 (37.50)	30 (62.50)	48
2.5 – 3.0	98 (44.95)	120 (55.05)	218	121 (44.81)	149 (55.19)	270
> 3.0	6 (66.66)	3 (33.34)	9	6 (42.85)	8 (57.15)	14
Total	183	217	400	145	187	332
	2 =1.643, DF=2, p=0.440			2 =0.890, DF=2, p=0.641		

Since 48 (12.63%) mothers did not know the birth weight of their infants, they were excluded from the analysis of association in the rural area. Association of birth weight of the child with practice of giving pre-lacteal feeds was not statistically significant in both urban as well as rural areas. In urban area, 94 (54.34%) mothers who had children with birth weight < 2.5 kg and 120 (55.05%) mothers whose children's birth weight ranged between 2.5 to 3.0 kg gave pre-lacteal feeds. Similarly, in rural area, birth weight of children who received pre-lacteal feeds by 149 (55.19%) and 8 (57.15%) mothers was 2.5 – 3.0 kg and > 3.0 kg respectively.

Table 40: Association of religion with practice of discarding colostrum

Religion	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
Hindu	51 (15.40)	280 (84.60)	331	88 (27.32)	234 (72.68)	322
Non Hindu	8 (11.59)	61 (88.41)	69	10 (17.24)	48 (82.76)	58
Total	59	341	400	98	282	380
	$\chi^2 = 0.660, DF=1, p=0.416$			$\chi^2 = 2.613, DF=1, p=0.106$		

Difference in practice of discarding colostrum among Hindu and non Hindu mothers was not statistically significant in urban area. As many as 51 (15.40%) Hindu and 8 (11.59%) non Hindu mothers did not give colostrum. Similarly, 88 (27.32%) Hindu and 10 (17.24%) non Hindu mothers did not give colostrum in rural area. However, this difference was not statistically significant in rural area.

Table 41: Association between age of the mother and practice of discarding colostrum

Age (years)	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
19	2 (9.09)	20 (90.91)	22	5 (25.00)	15 (75.00)	20
20 – 24	44 (16.92)	216 (83.08)	260	69 (28.27)	175 (71.73)	244
25	13 (11.01)	105 (88.99)	118	24 (20.68)	92 (79.32)	116
Total	59	341	400	98	282	380
	$\chi^2 = 2.844, DF=2, p=0.241$			$\chi^2 = 2.373, DF=2, p=0.305$		

Among the mothers who had not given colostrum, a majority of 44 (16.92%) were in the age group of 20 – 24 years in urban area. Hence, the association of age of the mother with practice of discarding colostrum was not statistically significant. Even in the rural area, among the mothers who had not given colostrum, a majority of 69 (28.27%) were in the age group of 20 – 24 years. Hence, this association was not statistically significant.

Table 42: Association of educational level with practice of discarding colostrum

Educational level	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
Illiterate	12 (30.76)	27 (69.24)	39	26 (30.95)	58 (69.05)	84
Primary school	29 (23.38)	95 (76.62)	124	14 (18.42)	62 (81.58)	76
High school	15 (9.14)	149 (90.86)	164	43 (24.43)	133 (75.57)	176
PUC / Diploma / Graduate	3 (4.11)	70 (95.89)	73	15 (34.09)	29 (65.91)	44
Total	59	341	400	98	282	380
	$\chi^2 = 25.984, DF=3, p < 0.001$			$\chi^2 = 5.080, DF=3, p=0.166$		

Association of educational status with practice of discarding colostrum

was statistically significant in urban area ($p < 0.001$). Practice of discarding colostrum reduced with increase in educational status. A majority of 12 (30.76%) mothers who were illiterates and 3 (4.11%) who had studied till PUC or Diploma or Graduation in urban area discarded colostrum. However, association of educational status with practice of discarding colostrum was not statistically significant in rural area because 26 (30.95%) mothers who were illiterates and 15 (34.09%) mothers who had studied till PUC or diploma or graduation had discarded colostrum.

Table 43: Association between occupational status and practice of discarding colostrum

Occupational status	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
House wife	54 (14.32)	323 (85.68)	377	86 (25.59)	250 (74.41)	336
Working	5 (21.73)	18 (78.27)	23	12 (27.27)	32 (72.73)	44
Total	59	341	400	98	282	380
	$\chi^2 = 0.450, DF=1, p=0.502$			$\chi^2 = 25.053, DF=1, p < 0.001$		

As many as 54 (14.32%) urban housewives and 5 (21.73%) working mothers discarded colostrum. Hence, the association of occupational status with practice of giving colostrum was not significant statistically in urban area.

Whereas, in the rural area 86 (25.59%) housewives and 12 (27.27%) working mothers discarded colostrum. This association of occupational status with practice of discarding colostrum was significant statistically in rural area ($p < 0.001$)

Table 44: Association of socio-economic status with practice of discarding colostrum

Socio-economic status	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
I	1 (4.76)	20 (95.24)	21	2 (33.33)	4 (66.67)	6
II	2 (2.27)	86 (97.73)	88	7 (31.81)	15 (68.19)	22
III	14 (14.73)	81 (85.27)	95	25 (23.14)	83 (76.86)	108
IV	26 (20.80)	99 (79.20)	125	49 (27.52)	129 (72.48)	178
V	16 (22.53)	55 (77.47)	71	15 (22.72)	51 (77.28)	66
Total	59	341	400	98	282	380
	2 =19.622, DF=4, p < 0.001			2 =1.594, DF=4, p=0.810		

As many as 16 (22.53%) mothers who belonged to a socio-economic status of Class V and 2 (2.27%) mothers belonging to Class II discarded colostrum in urban area. Hence, association of socio-economic status with practice of discarding colostrum was statistically significant ($p < 0.001$).

Whereas, in the rural area, a total of 2 (33.33%) mothers who belonged to a socio-economic status of Class I and 15 (22.72%) belonging to Class V did not give colostrum. Hence, association of socio-economic status with practice of giving colostrum was not significant.

Table 45: Association between type of family and practice of discarding colostrum

Type of family	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
Nuclear	38 (18.09)	172 (81.91)	210	63 (26.69)	173 (73.31)	236
Joint	20 (11.97)	147 (88.03)	167	27 (24.54)	83 (75.46)	110
Three generation	1 (4.34)	22 (95.66)	23	8 (23.52)	26 (76.48)	34
Total	59	341	400	98	282	380
	2 =4.870, DF=2, p=0.088			2 =0.281, DF=2, p=0.869		

A majority of 38 (18.09%) mothers in urban area who belonged to nuclear families, 20 (11.97%) mothers to joint families and 1 (4.34%) mother belonging to three generation families discarded colostrum. A total of 63 (26.69%) mothers in rural area who belonged to nuclear families, 27 (24.54%) mothers to joint families and 8 (23.52%) mothers belonging to three generation families discarded colostrum. Hence, association of type of family with practice of giving colostrum was not statistically significant in both urban and rural area.

Table 46: Association of place of delivery with practice of discarding colostrum

Place of delivery	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
Home	0	0	0	11 (34.37)	21 (65.63)	32
Hospital	59 (14.75)	341 (85.25)	400	87 (25.00)	261 (75.00)	348
Total	59	341	400	98	282	380
				$\chi^2 = 1.346, DF=1, p=0.246$		

Since all the deliveries in urban area had taken place in hospital, association of place of delivery with practice of discarding colostrum is not possible to calculate. In the rural area, as many as 11 (34.37%) mothers who delivered at home and 87 (25.00%) mothers at a hospital had discarded colostrum. However, association of place of delivery with practice of discarding colostrum was not statistically significant

Table 47: Association between telling about benefits of breast feeding in the hospital and practice of discarding colostrum

Told about benefits of breast feeding in the hospital	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
Yes	41 (11.08)	329 (88.92)	370	62 (21.08)	232 (78.92)	294
No	18 (60.00)	12 (40.00)	30	26 (48.14)	28 (51.86)	54
Total	59	341	400	88	260	348
	2 =48.99, DF=1, p < 0.001			2 =18.626, DF=1, p < 0.001		

Out of the 59 mothers in urban area who discarded colostrum, as many as 41 (11.08%) were told about the benefits of breast feeding in the hospital and 18 (60.00%) were not told about it. Hence, association of telling about benefits of breast feeding in the hospital with practice of giving colostrum was statistically significant ($p < 0.001$).

In the rural area, 32 (8.42%) mothers who had delivered at home were not included in this analysis of association. Out of the 88 mothers in rural area who discarded colostrum, as many as 62 (21.08%) were told about the benefits of breast feeding in the hospital and 26 (48.14%) were not told about the same. Hence, association of telling about benefits of breast feeding in the hospital with practice of giving colostrum was statistically significant ($p < 0.001$).

Table 48: Association of birth order with practice of discarding colostrum

Birth order	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
1	22 (11.70)	166 (88.30)	188	36 (23.52)	117 (76.48)	153
2	19 (11.58)	145 (88.42)	164	40 (27.77)	104 (72.23)	144
3	18 (37.50)	30 (62.50)	48	22 (26.50)	61 (73.50)	83
Total	59	341	400	98	282	380
	$\chi^2 = 22.452, DF=2, p < 0.001$			$\chi^2 = 0.758, DF=2, p=0.695$		

In the urban area as the birth order increased, mothers' practice of discarding colostrum also increased. A total of 22 (11.70%) mothers with child birth order 1 and 18 (37.50%) mothers with child birth order 3 discarded colostrum. This association of birth order with practice of giving pre-lacteal feeds was statistically significant ($p < 0.001$).

In the rural area, such a trend was not seen. As many as 36 (23.52%) mothers in rural area with child birth order 1, 40 (27.77%) mothers with birth order 2 and 22 (26.50%) mothers with child birth order 3 discarded colostrum. Hence, association of birth order with practice of discarding colostrum was not statistically significant.

Table 49: Association between sex of the child and practice of discarding colostrum

Sex of the child	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
Male	23 (14.11)	140 (85.89)	163	64 (28.31)	162 (71.69)	226
Female	36 (15.18)	201 (84.82)	237	34 (22.07)	120 (77.93)	154
Total	59	341	400	98	282	380
	$\chi^2 = 0.089, DF=1, p=0.765$			$\chi^2 = 1.864, DF=1, p=0.17$		

Association of sex of the child with practice of discarding colostrum was not statistically significant in both urban as well as rural areas because in urban area, as many as 23 (14.11%) mothers of male children and 36 (15.18%) mothers having female children discarded the colostrum and in the rural area, 64 (28.31%) mothers who had male children and 34 (22.07%) mothers with female children discarded colostrum.

Table 50: Association of birth weight with practice of discarding colostrum

Birth weight (kg)	Colostrum					
	Urban area			Rural area		
	Discarded	Not discarded	Total	Discarded	Not discarded	Total
<2.5	34 (19.65)	139 (80.35)	173	13 (27.08)	35 (72.92)	48
2.5 – 3.0	25 (11.46)	193 (88.54)	218	65 (24.07)	205 (75.93)	270
> 3.0	0	9 (100.00)	9	4 (28.57)	10 (71.43)	14
Total	59	341	400	82	250	332
	$\chi^2 = 6.732, DF=2, p=0.035$			$\chi^2 = 0.316, DF=2, p=0.854$		

Since 48 (12.63%) mothers did not know the birth weight of their infants, they were excluded from the analysis of association in the rural area. Association of birth weight of the child with practice of discarding colostrum was statistically significant in urban area ($p=0.035$). In urban area, as many as 34 (19.65%) mothers who had children with birth weight <2.5 kg and 25 (11.46%) mothers whose children's birth weight ranged within 2.5 to 3 kg had discarded colostrum. In the rural area, 13 (27.08%) and 65 (24.07%) mothers who discarded colostrums, had children weighing 2.5 to 3.0 kg and >3.0 kg respectively. Hence, association of birth weight of the child with practice of discarding colostrum was not statistically significant

Table 51: Association between religion and delayed initiation of breast feeding.

Religion	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
Hindu	140 (42.29)	115 (34.75)	76 (22.96)	331	137 (42.55)	81 (25.16)	104 (32.29)	322
Non Hindu	30 (43.48)	17 (24.63)	22 (31.89)	69	26 (44.83)	8 (13.80)	24 (41.37)	58
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 2.243, DF=2, p = 0.326$				$\chi^2 = 0.632, DF=2, p = 0.729$			

Association of religion with delayed initiation of breast feeding was not statistically significant in both urban and rural areas because as many as 76 (22.96%) Hindu mothers and 22 (31.89%) non Hindu mothers delayed initiation of breast feeding beyond 4 hours. In the rural area, as many as 104 (32.29%) Hindu mothers and 24 (41.37%) non Hindu mothers delayed initiation of breast feeding beyond 4 hours.

Table 52: Association of age of the mother with delayed initiation of breast feeding.

Age (years)	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 – 4	>4	Total	<1	1 - 4	>4	Total
19	6 (27.27)	10 (45.46)	6 (27.27)	22	11 (55.00)	3 (15.00)	6 (30.00)	20
20 – 24	106 (40.77)	83 (31.93)	71 (27.30)	260	99 (40.57)	57 (23.37)	88 (36.06)	244
25	58 (49.15)	39 (33.05)	21 (17.80)	118	53 (45.69)	29 (25.00)	34 (29.31)	116
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 7.141, DF=4, p=0.129$				$\chi^2 = 3.505, DF=4, p=0.477$			

Association of age of the mother with delayed initiation of breast feeding was not statistically significant in both urban and rural areas because as many as 6 (27.27%) mothers aged 19 years, 71 (27.30%) in the age group of 20 – 24 years and 21 (17.80%) aged 25 years had delayed the initiation of breast feeding beyond 4 hours in urban area. Similarly, 6 (30.00%) mothers aged 19 years, 88 (36.06%) in the age group of 20 – 24 years and 34 (29.31) aged 25 years had delayed the initiation of breast feeding beyond 4 hours in rural area.

Table 53: Association between educational level and delayed initiation of breast feeding.

Educational level	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
Illiterate	10 (25.64)	14 (35.90)	15 (38.46)	39	38 (45.23)	14 (16.68)	32 (38.09)	84
Primary school	40 (32.26)	42 (33.87)	42 (33.87)	124	39 (51.31)	16 (21.06)	21 (27.63)	76
High school	75 (45.73)	55 (33.53)	34 (20.74)	164	68 (38.64)	52 (29.55)	56 (31.81)	176
PUC / Diploma / Graduate	45 (61.64)	21 (28.76)	7 (9.50)	73	19 (43.18)	7 (15.91)	18 (40.91)	44
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 29.174, DF=6, p<0.001$				$\chi^2 = 9.972, DF=6, p=0.126$			

As the educational status increased, practice of delayed initiation of breast feeding decreased. A majority of 15 (38.46%) mothers who were illiterates and only 7 (9.50%) mothers who had studied PUC / Diploma / Graduation delayed initiation of breast feeding beyond 4 hours in urban area. This association of educational status with delayed initiation of breast feeding was statistically significant in urban area ($p < 0.001$).

Whereas, such a trend was not seen in rural area. Majority of 18 (40.91%) mothers who had studied till PUC / Diploma / Graduation in rural area had delayed initiation of breast feeding. Hence, association of educational status with delayed initiation of breast feeding was not statistically significant in rural area.

Table 54: Association of occupational status with delayed initiation of breast feeding.

Occupational status	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
House wife	159 (42.17)	123 (32.62)	95 (25.21)	377	144 (42.85)	81 (24.10)	111 (33.05)	336
Working	11 (47.82)	9 (39.13)	3 (13.05)	23	19 (43.18)	8 (18.18)	17 (38.64)	44
Total	170	132	98	400	163	89	128	380
	2 =0.608, DF=2, p=0.738				2 =0.211, DF=2, p=0.900			

As many as 95 (25.21%) mothers in urban area and 111 (33.05%) mothers in rural area who delayed initiation of breast feeding beyond 4 hours were housewives; similarly, 3 (13.05%) mothers in urban area and 17 (38.64%) mothers in rural area who did the same were working. Hence the association of occupational status with delayed initiation of breast feeding was not significant statistically.

Table 55: Association between socio-economic status and delayed initiation of breast feeding.

Socio-economic status	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
I	14 (66.67)	6 (28.58)	1 (4.75)	21	2 (33.33)	2 (33.33)	2 (33.34)	6
II	50 (56.82)	22 (25.00)	16 (18.18)	88	10 (45.45)	5 (22.73)	7 (31.82)	22
III	35 (36.84)	36 (37.90)	24 (25.26)	95	44 (40.75)	26 (24.07)	38 (35.18)	108
IV	35 (28.00)	53 (42.40)	37 (29.60)	125	79 (44.38)	38 (21.35)	61 (34.27)	178
V	36 (50.70)	15 (21.12)	20 (28.18)	71	28 (42.43)	18 (27.27)	20 (30.30)	66
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 31.719, DF = 8, p < 0.001$				$\chi^2 = 1.979, DF = 8, p = 0.982$			

A total of 1 (4.75%) mother who belonged to a socio-economic status of Class I and 37 (29.60%) mothers belonging to Class IV delayed initiation of breast feeding beyond 4 hours in urban area. Association of socio-economic status with delayed initiation of breast feeding was significant ($p < 0.001$).

Whereas, in the rural area, 2 (33.34%) mothers who belonged to a socio-economic status of Class I, 7 (31.82%) to Class II, 38 (35.18%) to Class III, 61 (34.27%) to Class IV and 20 (30.30%) belonging to Class V delayed initiation of breast feeding beyond 4 hours. Hence, association of socio-economic status with delayed initiation of breast feeding was not significant.

Table 56: Association of type of family with delayed initiation of breast feeding.

Type of family	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
Nuclear	68 (32.38)	84 (40.00)	58 (27.62)	210	103 (43.65)	53 (22.45)	80 (33.90)	236
Joint	90 (53.90)	40 (23.95)	37 (22.15)	167	45 (40.90)	29 (26.37)	36 (32.73)	110
Three generation	12 (52.17)	8 (34.78)	3 (13.05)	23	15 (44.11)	7 (20.58)	12 (35.31)	34
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 20.947, DF=2, p < 0.001$				$\chi^2 = 0.922, DF=2, p = 0.921$			

A majority of 58 (27.62%) mothers belonging to nuclear family, 37 (22.15%) mothers belonging to joint family and 3 (13.05%) mothers belonging to three generation family in urban area delayed initiation of breast feeding

beyond 4 hours. Hence, association of type of family with delayed initiation of breast feeding was statistically significant ($p < 0.001$).

Whereas, in the rural area, as many as 80 (33.90%) mothers belonging to nuclear family, 36 (32.73%) mothers belonging to joint family and 12 (35.31%) mothers belonging to three generation family delayed initiation of breast feeding beyond 4 hours. Hence, association of type of family with practice of giving pre-lacteal feeds was not statistically significant in rural area.

Table 57: Association between place of delivery and delayed initiation of breast feeding.

Place of delivery	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
Home	0	0	0	0	8 (25.00)	9 (28.12)	15 (46.88)	32
Hospital	170 (42.50)	132 (33.00)	98 (24.50)	400	155 (44.54)	80 (22.98)	113 (32.48)	348
Total	170	132	98	400	163	89	128	380
					$\chi^2 = 4.892, DF = 2, p = 0.087$			

Since all the deliveries in urban area had taken place in hospital, association of place of delivery with delayed initiation of breast feeding is not possible to calculate. In the rural area, as many as 15 (46.88%) mothers who

delivered at home and 113 (32.48%) mothers who delivered at hospital had delayed initiation of breast feeding beyond 4 hours. However, association of place of delivery with delayed initiation of breast feeding was not statistically significant.

Table 58: Association of telling about benefits of breast feeding in the hospital with delayed initiation of breast feeding.

Told about benefits of breast feeding in the hospital	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
Yes	158 (42.70)	121 (32.70)	91 (24.60)	370	132 (44.90)	67 (22.78)	95 (32.32)	294
No	12 (40.00)	11 (36.67)	7 (23.33)	30	19 (35.19)	15 (27.78)	20 (37.03)	54
Total	170	132	98	400	151	82	115	348
	$\chi^2 = 1.174, DF = 2, p = 0.556$				$\chi^2 = 1.661, DF = 2, p = 0.437$			

Out of the 98 mothers in urban area who delayed the initiation of breast feeding beyond 4 hours, as many as 91 (24.60%) were told about the benefits of breast feeding in the hospital and 7 (23.33%) were not told about the same. Hence, association of telling about benefits of breast feeding in the hospital with delayed initiation of breast feeding was not statistically significant.

In the rural area, 32 (8.42%) mothers who had delivered at home were not included in this analysis of association. Out of the 115 mothers in rural area who delayed the initiation of breast feeding beyond 4 hours, as many as 95 (32.32%) were told about the benefits of breast feeding in the hospital and 20 (37.03%) were not told about it. However, association of telling about benefits of breast feeding in the hospital with delayed the initiation of breast feeding was not statistically significant.

Table 59: Association between birth order and delayed initiation of breast feeding.

Birth order	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 – 4	>4	Total	<1	1 – 4	>4	Total
1	78 (41.48)	55 (29.26)	55 (29.26)	188	58 (37.90)	39 (25.50)	56 (36.60)	153
2	78 (47.56)	60 (36.58)	26 (15.86)	164	66 (45.84)	36 (25.00)	42 (29.16)	144
3	14 (29.18)	17 (35.41)	17 (35.41)	48	39 (46.98)	14 (16.86)	30 (36.16)	83
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 15.449, DF = 4, p = 0.004$				$\chi^2 = 2.935, DF = 4, p = 0.569$			

In the urban area, 26 (15.86%) mothers with birth order 2, delayed initiation of breast feeding beyond 4 hours and 17 (35.41%) mothers with birth

order 3 did the same. This association of birth order with delayed initiation of breast feeding was statistically significant ($p=0.004$). In the rural area, such a trend was not seen. As many as 56 (36.60%) mothers having child birth order 1 and 30 (36.16%) mothers having child birth order 3, delayed initiation of breast feeding beyond 4 hours. Hence, no statistical significance was seen in the association of birth order with delayed initiation of breast feeding in the rural area.

Table 60: Association of mode of delivery with delayed initiation of breast feeding.

Mode of delivery	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
Normal vaginal	109 (44.17)	74 (36.20)	72 (19.63)	255	142 (41.59)	80 (23.89)	112 (34.52)	334
Caesarean section	61 (41.35)	58 (30.80)	26 (27.85)	145	21 (44.15)	9 (25.33)	16 (30.52)	46
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 9.044, DF=2, p=0.011$				$\chi^2 = 0.657, DF=2, p=0.720$			

Majority of 26 (27.85%) mothers in urban area who had caesarean delivery delayed initiation of breast feeding beyond 4 hours compared to 72 (19.63%) mothers with normal delivery. Hence, association of mode of delivery with delayed initiation of breast feeding was statistically significant ($p=0.011$).

As many as 112 (34.52%) mothers with normal delivery and 16 (30.52%) mothers with caesarean delivery in rural area delayed initiation of breast feeding beyond 4 hours. Hence, association of mode of delivery with delayed initiation of breast feeding was not statistically significant in rural area.

Table 61: Association between sex of the child and delayed initiation of breast feeding.

Sex of the child	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 - 4	>4	Total	<1	1 - 4	>4	Total
Male	72 (44.17)	59 (36.20)	32 (19.63)	163	94 (41.59)	54 (23.89)	78 (34.52)	226
Female	98 (41.35)	73 (30.80)	66 (27.85)	237	69 (44.80)	35 (22.73)	50 (32.47)	154
Total	170	132	98	400	163	89	128	380
	$\chi^2 = 3.829, DF=2, p=0.147$				$\chi^2 = 0.662, DF=2, p=0.892$			

Association of sex of the child with delayed initiation of breast feeding was not statistically significant in both urban as well as rural areas because in urban area, as many as 32 (19.63%) mothers who had male children and 66 (27.85%) mothers having female children delayed initiation of breast feeding beyond 4 hours; whereas, in the rural area, 78 (34.52%) mothers who had male children and 50 (32.47%) mothers with female children delayed initiation of breast feeding beyond 4 hours.

Table 62: Association of birth weight with delayed initiation of breast feeding.

Birth weight (in Kg)	Initiation of breast feeding (hours)							
	Urban area				Rural area			
	<1	1 – 4	>4	Total	<1	1 – 4	>4	Total
<2.5	80 (46.24)	55 (31.80)	38 (21.96)	173	25 (52.08)	7 (14.58)	16 (33.34)	48
2.5 – 3.0	88 (40.36)	75 (34.41)	55 (25.23)	218	110 (40.75)	70 (25.92)	90 (33.33)	270
> 3.0	3 (33.33)	3 (33.33)	3 (33.34)	9	6 (42.85)	5 (35.73)	3 (21.42)	14
Total	170	132	98	400	141	82	109	332
	$\chi^2 = 1.591, DF=4, p=0.451$				$\chi^2 = 3.552, DF=4, p=0.169$			

Since 48 (12.63%) mothers did not know the birth weight of their infants, they were excluded from the analysis of association in the rural area. Though association of birth weight of the child with delayed initiation of breast feeding was not statistically significant in both urban as well as rural areas, a majority of 3 (33.34%) urban and 3 (21.42%) rural mothers who delayed initiation of breast feeding beyond 4 hours were having children with birth weight >3 kg.

Table 63: Association between religion and practice of giving water before 6 months of age

Religion	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Hindu	89 (26.88)	242 (73.12)	331	84 (26.08)	238 (73.92)	322
Non Hindu	16 (23.18)	53 (76.82)	69	10 (17.24)	48 (82.76)	58
Total	105	295	400	94	286	380
	$\chi^2 = 0.404, DF=1, p=0.525$			$\chi^2 = 2.066, DF=1, p=0.151$		

A total of 242 (73.12%) Hindu mothers and 53 (76.82%) non Hindu mothers gave water before the age of 6 months in urban area and in rural area, 238 (73.92%) Hindu and 48 (82.76%) non Hindu mothers gave water before the age of 6 months. Hence, association of religion with practice of giving water before 6 months of age was not significant in both urban and rural areas

Table 64: Association of age of the mother with practice of giving water before 6 months of age

Age (years)	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
19	5 (22.72)	17 (77.28)	22	6 (30.00)	14 (70.00)	20
20 – 24	65 (25.00)	195 (75.00)	260	57 (23.36)	187 (76.64)	244
25	35 (29.66)	83 (70.34)	118	31 (26.72)	85 (73.28)	116
Total	105	295	400	94	286	380
	$\chi^2 = 1.060, DF=2, p=0.589$			$\chi^2 = 0.792, DF=2, p=0.673$		

As many as 17 (77.28%) mothers aged 19 years, 195 (75.00%) mothers in the age group of 20 – 24 years and 83 (70.34%) mothers aged 25 years gave water before the age of 6 months in urban area; whereas, 14 (70.00%) mothers aged 19 years, 187 (76.64%) in the age group of 20 – 24 years and 85 (73.28%) mothers aged 25 years gave water before the age of 6 months in rural area. Hence, association of age with practice of giving water before 6 months of age was not significant in both urban and rural areas

Table 65: Association of educational level with practice of giving water before 6 months of age

Educational level	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Illiterate	5 (12.82)	34 (87.18)	39	19 (22.62)	65 (77.38)	84
Primary school	19 (15.32)	105 (84.68)	124	20 (26.32)	56 (73.68)	76
High school	41 (25.00)	123 (75.00)	164	44 (25.00)	132 (75.00)	176
PUC / Diploma / Graduate	40 (54.80)	33 (45.20)	73	11 (25.00)	33 (75.00)	44
Total	105	295	400	94	286	380
	$\chi^2 = 42.138, DF=3, p<0.001$			$\chi^2 = 0.312, DF=3, p=0.958$		

Majority of 34 (87.18%) illiterate mothers and 33 (45.20%) mothers who had studied till PUC / Diploma / Graduation had given water before 6 months of age in urban area. Hence, association of educational status with practice of giving water before 6 months of age was significant in urban area ($p<0.001$).

Whereas, in the rural area, 33 (75.00%) mothers who had studied till PUC / Diploma / Graduation, 132 (75.00%) who studied up to high school, 56 (73.68%) until primary school and 65 (77.38%) illiterate mothers had given water before 6 months of age. Hence, association of educational status with practice of giving water before 6 months of age was not significant in rural area.

Table 66: Association of occupational status with practice of giving water before 6 months of age

Occupational status	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
House wife	94 (24.94)	283 (75.06)	377	85 (25.30)	251 (74.70)	336
Working	11 (47.83)	12 (52.17)	23	9 (20.45)	35 (79.55)	44
Total	105	295	400	94	286	380
	2 =5.868, DF=1, p=0.015			2 =0.490, DF=1, p=0.484		

As many as 283 (75.06%) mothers who were housewives and 12 (52.17%) working mothers in urban area gave water before 6 months of age. Hence, the association of occupational status with practice of giving water before 6 months of age was significant statistically ($p=0.015$). However, in rural area, 251 (74.70%) mothers who were housewives and 35 (79.55%) working mothers gave water before 6 months of age. Hence, the association of occupational status with practice of giving water before 6 months of age was not significant statistically.

Table 67: Association between socio-economic status and practice of giving water before 6 months of age

Socio-economic status	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
I	10 (47.62)	11 (52.38)	21	0 (0.00)	6 (100.00)	6
II	39 (44.32)	49 (55.68)	88	5 (22.73)	17 (77.27)	22
III	15 (15.78)	80 (84.22)	95	31 (28.70)	77 (71.30)	108
IV	22 (17.60)	103 (82.40)	125	46 (25.84)	132 (74.16)	178
V	19 (26.76)	52 (73.24)	71	12 (18.18)	54 (81.82)	66
Total	105	295	400	94	286	380
	$\chi^2 = 30.003, DF=4, p < 0.001$			$\chi^2 = 4.573, DF=4, p = 0.334$		

As many as 49 (55.68%) mothers who belonged to a socio-economic status of Class II and 103 (82.40%) of Class IV gave water to their infants before 6 months of age in urban area. Association of socio-economic status with practice of giving water before 6 months of age was significant ($p < 0.001$).

Whereas, in the rural area, as many as 6 (100.00%) mothers who belonged to a socio-economic status of Class I, 54 (81.82%) belonging to Class V gave water to their infants before 6 months of age. Hence, association of socio-economic status with practice of giving water before 6 months of age to the infant was not statistically significant.

Table 68: Association of type of family with practice of giving water before 6 months of age

Type of family	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Nuclear	34 (16.20)	176 (83.80)	210	53 (22.45)	183 (77.55)	236
Joint	61 (36.52)	106 (63.48)	167	35 (31.82)	75 (68.18)	110
Three generation	10 (43.48)	13 (56.52)	23	6 (17.64)	28 (82.36)	34
Total	105	295	400	94	286	380
	$\chi^2 = 23.614, DF=2, p<0.001$			$\chi^2 = 4.539, DF=2, p=0.103$		

A majority of 176 (83.80%) mothers belonging to nuclear family, 106 (63.48%) to joint family and 13 (56.52%) mothers from three generation family in urban area gave water before 6 months of age to their infants. Hence, association of type of family with practice of giving water before 6 months of age was statistically significant ($p<0.001$).

Whereas in the rural area, a majority of 183 (77.55%) mothers belonging to nuclear family, 28 (82.36%) mothers from three generation family and 75 (68.18%) mothers who belonged to joint family gave water before 6 months of age to their infants. Hence, association of type of family with practice of giving water before 6 months of age was not statistically significant in rural area.

Table 69: Association between place of delivery and practice of giving water before 6 months of age

Place of delivery	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Home	0	0	0	5 (15.62)	27 (84.38)	32
Hospital	105 (26.25)	295 (73.75)	400	89 (25.58)	259 (74.42)	348
Total	105	295	400	94	286	380
				$\chi^2 = 1.558, DF=1, p=0.212$		

Since all the deliveries in urban area had taken place in hospital, association of place of delivery with practice of giving water before 6 months of age is not possible to calculate. In the rural area, as many as 27 (84.38%) mothers who delivered at home and 259 (74.42%) at hospital gave water before 6 months of age. However, association of place of delivery with practice of giving water before 6 months of age was not statistically significant.

Table 70: Association of telling about benefits of breast feeding in the hospital with practice of giving water before 6 months of age

Told about benefits of breast feeding in the hospital	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Yes	101 (27.30)	269 (72.70)	370	80 (27.21)	214 (72.79)	294
No	4 (13.33)	26 (86.67)	30	8 (14.82)	46 (85.18)	54
Total	105	295	400	88	260	348
	$\chi^2 = 2.795, DF=1, p=0.095$			$\chi^2 = 3.792, DF=1, p=0.051$		

Out of the mothers in urban area who gave water before 6 months of age to their infants, as many as 269 (72.70%) were told about the benefits of breast feeding in the hospital and 26 (86.67%) were not told about the same. However, association of telling about benefits of breast feeding in the hospital with practice of giving water before 6 months of age was not statistically significant.

In the rural area, 32 (8.42%) mothers who had delivered at home were not included in this analysis of association. Out of the mothers in rural area who gave water before 6 months of age, as many as 214 (72.79%) were told about the benefits of breast feeding in the hospital and 46 (85.18%) were not told about it. Hence, association of telling about benefits of breast feeding in the hospital with practice of giving water before 6 months of age was weakly statistically significant ($p=0.051$).

Table 71: Association between birth order and practice of giving water before 6 months of age

Birth order	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
1	59 (31.38)	129 (68.62)	188	32 (20.92)	121 (79.08)	153
2	43 (26.22)	121 (73.78)	164	37 (25.70)	107 (74.30)	144
3	3 (6.25)	45 (93.75)	48	25 (30.12)	58 (69.88)	83
Total	105	295	400	94	286	380
	$\chi^2 = 12.476, DF=2, p=0.002$			$\chi^2 = 2.563, DF=2, p=0.278$		

In the urban area as the birth order increased, practice of giving water before 6 months of age also increased. As many as 129 (68.62%) mothers having child birth order 1 and 45 (93.75%) with child birth order 3 gave water before 6 months of age. This association of birth order with practice of giving water before 6 months of age was statistically significant ($p=0.002$).

In the rural area, such a trend was not seen. As many as 121 (79.08%) mothers having child of the birth order 1, 107 (74.30%) with child's birth order 2 and 58 (69.88%) mothers having child birth order 3, gave water before 6 months of age. Hence, no statistical significance was seen in the association of birth order with practice of giving water before 6 months of age in the rural area.

Table 72: Association of sex of the child with practice of giving water before 6 months of age

Sex of the child	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
Male	47 (28.84)	116 (71.16)	163	53 (23.45)	173 (76.55)	226
Female	58 (24.48)	179 (75.52)	237	41 (26.62)	113 (73.38)	154
Total	105	295	400	94	286	380
	$\chi^2 = 0.949, DF=1, p=0.330$			$\chi^2 = 0.495, DF=1, p=0.482$		

Association of sex of the child with practice of giving water before 6 months of age was not statistically significant in both urban as well as rural areas because in urban area as many as 116 (71.16%) mothers who had male children and 179 (75.52%) mothers with female children gave water before 6 months of age; whereas, in the rural area, 173 (76.55%) mothers who had male children and 113 (73.38%) mothers having female children gave water before 6 months of age.

Table 73: Association between birth weight and practice of giving water before 6 months of age

Birth weight (kg)	Given water before 6 months of age					
	Urban area			Rural area		
	No	Yes	Total	No	Yes	Total
<2.5	48 (27.75)	125 (72.25)	173	8 (16.67)	40 (83.33)	48
2.5 – 3.0	53 (24.30)	165 (75.70)	218	67 (24.80)	203 (75.20)	270
> 3.0	4 (44.44)	5 (55.56)	9	4 (28.58)	10 (71.42)	14
Total	105	295	400	79	253	332
	$\chi^2 = 0.35, DF=2, p=0.553$			$\chi^2 = 1.572, DF=2, p=0.209$		

Since 48 (12.63%) mothers in the rural area did not know the birth weight of their infants, they were excluded from the analysis of association. Association of birth weight of the child with practice of giving water before 6 months of age was not statistically significant in both urban as well as rural areas. As many as 125 (72.25%) mothers in urban area who had children with birth weight < 2.5 kg and 165 (75.70%) mothers with children's birth weight ranging within 2.5 to 3.0 kg gave water before 6 months of age. In rural area also, 203 (75.20%) and 10 (71.42%) mothers who gave water before 6 months of age had children with birth weight ranging between 2.5 to 3 kg and > 3 kg respectively.

Table 74: Association of religion with age at initiation of complementary feeding.

Religion	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
Hindu	229 (69.18)	97 (29.31)	5 (1.51)	331	75 (23.29)	136 (42.24)	111 (34.47)	322
Non Hindu	48 (69.57)	18 (26.09)	3 (4.34)	69	15 (25.86)	24 (41.38)	19 (32.76)	58
Total	277	115	8	400	90	160	130	380
	$\chi^2 = 2.505, DF=1, p=0.286$				$\chi^2 = 0.188, DF=1, p=0.910$			

Association of religion with age at initiation of complementary feeds was not significant in both urban and rural area. In urban area, 97 (29.31%) Hindu and 18 (26.09%) non Hindu mothers started giving complementary feeds at an appropriate age of 6 months. Whereas, in the rural area, as many as 136 (42.24%) Hindu and 24 (41.38%) non Hindu mothers did so.

Table 75: Association between age of the mother and age at initiation of complementary feeding.

Age (years)	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
19	19 (86.36)	3 (13.64)	0 (0.00)	22	1 (5.00)	7 (35.00)	12 (60.00)	20
20 – 24	180 (69.23)	73 (28.08)	7 (2.69)	260	58 (23.77)	101 (41.39)	85 (34.84)	244
25	78 (66.10)	39 (33.05)	1 (0.85)	118	31 (26.72)	52 (44.83)	33 (28.45)	116
Total	277	115	8	400	90	160	130	380
	$\chi^2 = 3.576, DF=2, p=0.167$				$\chi^2 = 8.917, DF=4, p=0.063$			

Since the frequency was less in the category ‘age at initiation of complementary feeds > 6 months’ in urban area, the two inappropriate practices that are < 6 months age at initiation of complementary feeds and > 6 months at initiation of complementary feeds were clubbed together and the association was derived. Minority of 3 (13.64%) urban mothers aged 19 years and majority of 39 (33.05%) aged 25 years started complementary feeds at an appropriate age of 6 months. However, the association was not statistically significant.

Even in the rural area, a minority of 7 (35.00%) mothers aged 19 years and a majority of 52 (44.83%) mothers of age 25 years had started complementary feeds at an appropriate age of 6 months. However, the association between age of the mother and the age at initiation of complementary feeds was not statistically significant in rural area.

Table 76: Association of education with age at initiation of complementary feeding.

Educational level	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
Illiterate	35 (89.74)	4 (10.26)	0 (0.00)	39	16 (19.05)	24 (28.57)	44 (52.38)	84
Primary school	91 (73.39)	28 (22.58)	5 (4.03)	124	19 (25.00)	31 (40.79)	26 (34.21)	76
High school	116 (70.73)	45 (27.44)	3 (1.83)	164	44 (25.00)	80 (45.45)	52 (29.55)	176
PUC / Diploma Graduate	35 (47.95)	38 (52.05)	0 (0.00)	73	11 (25.00)	25 (56.82)	8 (18.18)	44
Total	277	115	8	400	90	160	130	380
	$\chi^2 = 28.316, DF=3, p<0.001$				$\chi^2 = 19.926, DF=6, p=0.003$			

Since the frequency was less in the category 'age at initiation of complementary feeds > 6 months' in urban area, the two inappropriate practices that are < 6 months age at initiation of complementary feeds and > 6 months at initiation of complementary feeds were clubbed together and the association was derived. As the educational status improved, number of mothers initiating complementary feeds at 6 months increased. In the urban area, as many as 4

(10.26%) illiterate mothers and 38 (52.05%) mothers educated till PUC / Diploma / Graduation had initiated complementary feeds at 6 months. Hence, the association of educational status with age at initiation of complementary feeding was significant in urban area ($p < 0.001$).

In rural area, as many as 24 (28.57%) illiterate mothers and 25 (56.82%) mothers educated till PUC / Diploma / Graduation had started complementary feeding at the appropriate age of 6 months. However, the association of educational status with age at initiation of complementary feeding was significant in rural area ($p = 0.003$).

Table 77: Association between occupational status and age at initiation of complementary feeding.

Occupational status	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
House wife	262 (69.49)	109 (28.92)	6 (1.59)	377	84 (25.00)	140 (41.67)	112 (33.33)	336
Working	15 (65.22)	6 (26.08)	2 (8.70)	23	6 (13.64)	20 (45.45)	18 (40.91)	44
Total	277	115	8	400	90	160	130	380
	$\chi^2 = 5.588, DF=2, p=0.061$				$\chi^2 = 2.906, DF=2, p=0.234$			

In the urban area, a total of 109 (28.92%) mothers who were housewives and 6 (26.08%) working mothers initiated complementary feeds at 6 months of age. Hence, the association of occupational status with age at initiation of complementary feeding was not significant. As many as 140 (41.67%) housewives and 20 (45.45%) working mothers had started complementary feeds at 6 months of age in rural area. Hence, the association of occupational status with age at initiation of complementary feeding was not significant in rural area.

Table 78: Association of socio-economic status with age at initiation of complementary feeding

Socio-economic status	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
I	12 (57.15)	9 (42.85)	0 (0.00)	21	2 (33.33)	2 (33.33)	2 (33.34)	6
II	46 (52.28)	41 (46.60)	1 (1.12)	88	6 (27.27)	12 (54.55)	4 (18.18)	22
III	73 (76.85)	22 (23.15)	0 (0.00)	95	19 (17.60)	54 (50.00)	35 (32.40)	108
IV	98 (78.40)	24 (19.20)	3 (2.40)	125	48 (26.96)	67 (37.64)	63 (35.40)	178
V	48 (67.60)	19 (26.76)	4 (5.64)	71	15 (22.73)	25 (37.88)	26 (39.39)	66
Total	277	115	8	400	90	160	130	380
$\chi^2 = 22.867, DF=4, p<0.001$				$\chi^2 = 8.870, DF=8, p=0.353$				

Since the frequency was less in the category ‘age at initiation of complementary feeds > 6 months’ in urban area, the two wrong practices that are < 6 months age at initiation of complementary feeds and > 6 months at initiation of complementary feeds were clubbed together and the association was derived.

As the socio-economic status decreased the number of mothers who started complementary feeds at the appropriate age of 6 months also decreased from 9 (42.85%) mothers belonging to socio-economic status class I to 24 (19.20%) belonging to class IV. Hence, the association of socio-economic status with age at initiation of complementary feeding was significant in urban area ($p < 0.001$).

However, such a trend was not seen in rural area and hence the association of socio-economic status with age at initiation of complementary feeding was not significant. A total of 2 (33.33%), 67 (37.64%) and 25 (37.88%) mothers belonging to socio-economic classes I, IV and V respectively initiated complementary feeds at the appropriate age of 6 months.

Table 79: Association between type of family and age at initiation of complementary feeding.

Type of family	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
Nuclear	169 (80.48)	37 (17.62)	4 (1.90)	210	53 (22.45)	89 (37.72)	94 (39.83)	236
Joint	95 (56.88)	68 (40.72)	4 (2.40)	167	28 (25.45)	52 (47.27)	30 (27.28)	110
Three generation	13 (56.62)	10 (43.48)	0 (0.00)	23	9 (26.48)	19 (55.88)	6 (17.64)	34
Total	277	115	8	400	90	160	130	380
	$\chi^2 = 6.236, DF=4, p=0.044$				$\chi^2 = 10.172, DF=4, p=0.038$			

As many as 37 (17.62%) mothers belonging to nuclear family and 68 (40.72%) mothers belonging to joint family started giving complementary feeds at 6 months. Hence, association of type of family with age at initiation of complementary feeding was significant in urban area ($p=0.044$). Even in the rural area, 89 (37.72%) mothers belonging to nuclear family and 52 (47.27%) mothers from joint family initiated complementary feeding at 6 months. Hence, association of type of family with age at initiation of complementary feeding was significant in rural area ($p=0.038$).

Table 80: Association of place of delivery with age at initiation of complementary feeding.

Place of delivery	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
Home	0	0	0	0	9 (28.13)	6 (18.75)	17 (53.12)	32
Hospital	277 (69.25)	115 (28.75)	8 (2.00)	400	81 (23.28)	154 (44.24)	113 (32.48)	348
Total	277	115	8	400	90	160	130	380
					2 =8.472, DF=2, p=0.014			

Since all the deliveries in urban area had taken place in hospital association of place of delivery with age at initiation of complementary feeding is not possible to calculate. In the rural area, as many as 6 (18.75%) mothers who delivered at home and 154 (44.24%) at hospital had started complementary feeds at appropriate 6 months of age. Association of place of delivery with age at initiation of complementary feeding was statistically significant ($p=0.014$).

Table 81: Association between telling about benefits of breast feeding in the hospital and age at initiation of complementary feeding.

Told about benefits of breast feeding in the hospital	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
Yes	250 (67.56)	112 (30.28)	8 (2.16)	370	66 (22.44)	131 (44.55)	97 (33.01)	294
No	27 (90.00)	3 (10.00)	0 (0.00)	30	15 (27.78)	24 (44.44)	15 (27.78)	54
Total	277	115	8	400	81	155	112	348
	$\chi^2 = 5.573, DF=1, p=0.018$				$\chi^2 = 1.042, DF=2, p=0.593$			

Since the frequency was less in the category 'age at initiation of complementary feeds > 6 months' in urban area, the two wrong practices that are < 6 months age at initiation of complementary feeds and > 6 months at initiation of complementary feeds were clubbed together and the association was derived. In the rural area, 32 (8.42%) mothers who had delivered at home were not included in this analysis of association. In the urban area, 112 (30.28%) mothers who had been told about benefits of breast feeding in the hospital and 3 (10.00%) mothers who were not, had started complementary feeds at the appropriate age of 6 months. Hence, association of telling about benefits of breast feeding in the hospital with age at initiation of complementary feeding was statistically significant ($p=0.018$).

Whereas, in rural area, 131 (44.55%) mothers who had been told about benefits of breast feeding in the hospital and 24 (44.44%) mothers who had not been told about it had started complementary feeds at the appropriate age of 6 months. Hence, association of telling about benefits of breast feeding in the hospital with age at initiation of complementary feeding was not statistically significant

Table 82: Association of birth order with age at initiation of complementary feeding.

Birth order	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
1	118 (62.76)	67 (35.64)	3 (1.60)	188	34 (22.21)	62 (40.51)	57 (37.28)	153
2	117 (71.34)	43 (26.22)	4 (2.44)	164	35 (24.30)	64 (44.45)	45 (31.25)	144
3	42 (87.50)	5 (10.42)	1 (2.08)	48	21 (25.30)	34 (40.96)	28 (33.74)	83
Total	277	115	8	400	90	160	130	380
	$\chi^2 = 12.743, DF= 2, p=0.002$				$\chi^2 = 1.346, DF=4, p=0.854$			

Since the frequency was less in the category 'age at initiation of complementary feeds > 6 months' in urban area, the two wrong practices that are < 6 months age at initiation of complementary feeds and > 6 months at initiation of complementary feeds were clubbed together and the association was derived.

Number of mothers who started complementary feeding at 6 months of age decreased as the birth order increased. As many as 67 (35.64%) mothers who were having child birth order 1 and 5 (10.42%) with child birth order 3 had started complementary feeding at 6 months of age. Hence, association of birth order with age at initiation of complementary feeding was statistically significant in urban area ($p=0.002$).

Whereas, in rural area, as many as 62 (40.51%) mothers who were having child birth order 1, 64 (44.45%) with child birth order 2 and 34 (40.96%) mothers whose child's birth order was 3 had started complementary feeding at an appropriate age of 6 months. Hence, association of birth order with age at initiation of complementary feeding was not statistically significant in rural area.

Table 83: Association between sex of the child and age at initiation of complementary feeding.

Sex of the child	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
Male	120 (73.62)	40 (24.54)	3 (1.84)	163	57 (25.22)	88 (38.94)	81 (35.84)	226
Female	157 (66.24)	75 (31.65)	5 (2.11)	237	33 (21.43)	72 (46.75)	49 (31.82)	154
Total	277	115	8	400	90	160	130	380
	$\chi^2 = 2.490, DF=2, p=0.288$				$\chi^2 = 2.318, DF=2, p=0.314$			

In urban area, a total of 40 (24.54%) mothers having male children and 75 (31.65%) mothers with female children had started giving complementary feeds at an appropriate age of 6 months. In the rural area 88 (38.94%) mothers of male children and 72 (46.75%) mothers having female children had started giving complementary feeds at an appropriate age of 6 months. Hence, association of sex of the child with age at initiation of complementary feeding was not statistically significant.

Table 84: Association of birth weight with age at initiation of complementary feeding.

Birth weight	Age at initiation of complementary feeding. (months)							
	Urban area				Rural area			
	< 6	At 6	> 6	Total	< 6	At 6	> 6	Total
<2.5	111 (64.16)	56 (32.37)	6 (3.47)	173	13 (27.08)	13 (27.08)	22 (45.84)	48
2.5 – 3	159 (72.94)	57 (26.15)	2 (0.92)	218	57 (21.11)	124 (45.93)	89 (32.96)	270
> 3	7 (77.78)	2 (22.22)	0	9	6 (42.86)	5 (35.71)	3 (21.43)	14
Total	277	115	8	400	76	142	114	332
	$\chi^2 = 2.02, DF=2, p=0.365$				$\chi^2 = 9.409, DF=4, p=0.052$			

Since the frequency was less in the category ‘age at initiation of complementary feeds > 6 months’ in urban area, the two wrong practices that are < 6 months age at initiation of complementary feeds and > 6 months at initiation of complementary feeds were clubbed together and the association was derived and since 48 (12.63%) mothers in the rural area did not know the birth weight of their infants, they were excluded from the analysis of association. Statistically significant association was not found between birth weight and age at initiation of complementary feeding in the urban area. As many as 56 (32.37%) mothers with infant’s birth weight of <2.5 kg, 57 (26.15%) mothers whose infant’s birth weight was 2.5 – 3 kg and 2 (22.22%) mothers having birth weight of children as

> 3 kg in urban area had initiated complementary feeds at an appropriate age of 6 months.

As many as 13 (27.08%) mothers with infant having birth weight of <2.5 kg, 124 (45.93%) mothers with infant's birth weight between 2.5 – 3 kg and 3 (35.71%) mothers with birth weight of infant > 3 kg in rural area had initiated complementary feeds at an appropriate age of 6 months. A weak statistical significance was found in rural area between birth weight and age at initiation of complementary feeding ($p=0.052$).

DISCUSSION

Table 1: Age distribution of study participants

In this study, 400 urban and 380 rural mothers were interviewed. Among them, majority were in the age group of 20 – 24 years (65.00% in urban and 64.21% in rural area). The mean age among the study population was 23.45 ± 2.34 years for urban mothers with a range of 17 to 31 years and 23.20 ± 2.64 years for rural mothers with a range of 18 to 32 years.

Similarly, a study conducted by Kulkarni et al⁴⁶ in Urban community of Kalamboli, Navi Mumbai, comprised of mothers with mean age of 24.36 years with a range of 18 – 32 years.

Table 2: Distribution of study participants according to religion

In the present study, 82.75% mothers in urban and 84.74% mothers in rural areas were Hindus. Similarly, 17.25% mothers in urban and 14.74% mothers in rural areas belonged to Muslim community. None of the urban study participants were Christians; whereas, 0.52% study participants were Christians.

Participants of a study conducted by Aggarwal et al⁴⁵ in Delhi comprised 69.50% Hindus and 30.50% Muslims. In yet another study done in Urban slum of Kolkata by Roy et al⁴⁸, there were 72.50% Hindus and 25.80% Muslims. Similarly, a study in urban slums of Lucknow by Gupta et al⁵⁰ included 70.60% Hindus and 29.40% Muslims.

Table 3: Distribution of study participants according to educational level

In the present study, 9.80% of the urban mothers and 22.10% of the rural mothers were illiterates. Out of the remaining literate mothers, a majority of 41.00%

in urban and 46.32% in rural areas had completed high school education. Difference in the educational status among urban and rural mothers was statistically significant with educational status better among mothers of urban area compared to those of rural area ($p < 0.001$). This difference was probably because women in urban area have realized the importance of education compared to rural mothers.

A consistent observation was made by Aggarwal et al⁴⁵ in a study conducted in Delhi with a majority of 79.50% mothers educated till 10th standard and by Kulkarni et al⁴⁸ who carried out a study in Mumbai with 13.20% mothers being illiterates.

Table 4: Distribution of study participants according to occupation

In the present study, 94.20% urban mothers were housewives compared to 88.42% rural mothers. Statistically significant difference was found in the occupational status of the mothers with more rural mothers going out for various jobs like agriculture, daily wage work etc ($p < 0.001$).

A study conducted in Kashmir by Fazilli⁵⁶ showed that 61.53% mothers were housewives. In yet another study done in Urban slum of Kolkata by Roy et al⁴⁸ 69.10% mothers were housewives.

Table 5: Distribution of study participants according to socio-economic status

In the present study, a majority of the study participants belonged to Class IV socio-economic status (31.20% of the urban and 46.84% of the rural). More number of urban mothers were in class I compared to rural mothers (5.20% urban v/s 1.58% rural mothers). Perhaps, mothers were better educated in urban area and hence they had better socio-economic status compared to rural mothers.

A study done in urban slums of Lucknow by Gupta et al⁵⁰ showed that 67.00% mothers belonged to class V socio-economic status, 12.60% to class IV, 6.70% to class III and 7.60% to class II socio-economic status.

Table 6: Distribution of study participants according to type of family

In this study, 52.50% mothers in urban and 62.11% mothers in rural belonged to nuclear family, followed by 41.75% urban and 28.95% rural mothers belonging to joint family. Only 5.75% and 8.94% mothers in urban and rural areas respectively lived in three generation family.

A study done in urban slums of Lucknow by Gupta et al⁵⁰ showed that 70.00% mothers lived in nuclear family and 38.50% in joint family.

Table 7: Distribution of study participants according to age at marriage.

In this study, a majority of 51.25% of the urban participants got married between the ages of 20 – 24 years followed by 48.25% at an age 19 years; whereas, in the rural area, a large majority of 76.32% got married at an age 19 years followed by 22.63% between the ages of 20 – 24 years. Only 0.50% in urban and 1.05% in rural areas had got married at an age 25 years.

Table 8: Distribution of study participants according to birth order of the present child

A total of 47.00% in urban and 40.26% in rural area mothers had children of the birth order one. Child birth order of two was seen in 41.00% and 37.89% urban and rural mothers respectively. A birth order of 4 was more common in rural mothers compared to urban mothers (3.96% in rural v/s 1.00% in urban). Higher birth orders were common among rural mothers most probably due to lesser level of education due to which they did not utilize family welfare services.

Table 9: Distribution of study participants according to birth spacing.

In the present study, as majority of 57.55% urban and 44.06% rural mothers had a birth spacing of 2 – 3 years. A space of < 2 years was more common in mothers of rural area compared to urban area mothers (29.07% in rural v/s 16.51% in urban). A total of 25.94% mothers in urban and 26.87% mothers in rural had an adequate spacing of > 3 years. Inadequate birth spacing was more common among rural mothers perhaps due to lower educational status among them.

As per NFHS 3 data⁶, around 61.00% of women had birth spacing less than 3 years.

Place of delivery

In this study, 100.00% hospital delivery was observed in the urban area; whereas, in the rural area, though a total 91.58% had delivered in a hospital, as many as 8.42% had delivered at home. Home deliveries had happened in rural areas due to lack of awareness among mothers and inability to reach the health care service due to remoteness of the villages.

In a study done by Shirima et al²¹ in rural and urban Morogoro, Tanzania, a total of 20.31% in rural and 4.38% in urban areas had home delivery. In yet another study carried out in Urban slum of Kolkata by Roy et al⁴⁸, 93.33% had undergone delivery at a hospital. In a study conducted by Panda et al⁵⁹ in Cuttack, 92.50% had institutional deliveries in urban area.

Mode of delivery

Majority of both urban mothers (63.75%) as well as rural mothers (87.89%) had normal vaginal delivery.

Told about benefits of breast feeding in hospital after delivery

Among the mothers who had delivered at a hospital, as many as 92.50% mothers in urban and 84.48% mothers in rural areas were told about the benefits of breast feeding in the hospital.

Roy et al⁴⁸ conducted a study in Urban slums of Kolkata and observed that only 41.66% mothers were informed about exclusive breast feeding in the hospital.

Inconsistency in the findings of the two studies could be because of strict adherence to baby friendly hospital initiative in this study area.

Table 10: Distribution of study participants according to birth weight of the infant.

In this study, 43.25% in urban area and 12.63% in rural area were low birth weight. About 12.63% of mothers did not know the birth weight of their children in rural area. Probably that could be causing the apparent difference between urban and rural area in regards to low birth weight. A study in Han and Uygur, China by Fenglian et al²⁵ revealed that about 3.20% of the children were with low birth weight.

Present study observed higher proportion of low birth weight children probably because, majority of mothers were in socio-economic class IV and may be that led to maternal malnutrition and hence low birth weight infants.

Table 11: Distribution of study participants according to immunization of the infant.

All children (100.00%) were completely immunized in urban area; whereas, in rural area, 97.11% children were completely immunized, 2.37% were partially immunized and 0.52% of children were un-immunized. Full immunization coverage as per NFHS 3 data⁶ was 76.10%. Higher immunization coverage in the present study

area was perhaps attributable to awareness created among mothers by the respective health workers.

Pre-lacteal feeds and pre-lacteal foods given (table 12)

As many as 54.25% mothers in urban and 57.11% mothers in rural area had given pre-lacteal feeds. Difference in the practice of giving pre-lacteal feeds among urban and rural mothers was not statistically significant. Almost same proportion of urban as well as rural mothers gave pre-lacteal feeds mostly due to prevailing tradition of doing so in the entire study area.

Most common pre-lacteal food given was sugar water by both urban and rural area mothers (44.24% in urban and 60.82% in rural area) followed by honey (30.88% in urban and 33.18% in rural area).

In a study done by Qiu et al²⁶ as many as 62.00% mothers in urban area and 39.00% mothers in rural area gave pre-lacteal feeds. A study conducted by Roy et al⁴⁸ in urban slums of Kolkata showed that 29.16% mothers gave pre-lacteal feeds, most common pre-lacteal foods given were water, infant milk formula, cow milk and honey. Another study in rural areas of Dehradun by Semwal et al⁵⁴ revealed that pre-lacteal feeds were given by nearly 74.00% of mothers in the form of honey and sugar water. Fazilli et al⁵⁶ in a study at rural and urban areas of Srinagar, observed that 61.17% urban and 75.00% rural mothers gave pre-lacteal feeds.

Table 13: Distribution of study participants according to feeding of the colostrum to the new born and reasons for discarding colostrum.

As many as 14.75% urban and 25.79% rural mothers discarded the colostrum. Difference in the practice of discarding colostrum among urban and rural mothers was statistically significant ($p < 0.001$). The commonest reason for not giving colostrum in

the urban area was that the baby was in NICU (30.51%); whereas, in rural area, the mothers did not give colostrum as the elders advised not to give it (60.20%).

A study was done by Shirima et al²¹ in urban and rural Morogoro, Tanzania and it showed that practice of discarding colostrum by mothers was 10.00% in urban and 43.00% in rural areas. In a study carried out by Yadav et al³⁹ in Bihar it was seen that 62.50% urban and 66.40% rural mothers discarded colostrum. Most common reason for doing so in both urban as well as rural area was elder's advice (34.20% in urban and 37.20% rural area).

Yet another study done by Gupta et al⁵⁰ in urban slum of Lucknow showed that 56.50% mothers had discarded the colostrum with most common reason for doing so being the fear that it was harmful to the baby (66.90%), followed by elder's advise against giving colostrums (14.50%). In the villages of central Karnataka a study was carried out by Banapurmath et al⁶¹ and it showed that practice of discarding colostrum was done by 28.60% of mothers.

Table 14: Distribution of study participants according to time of initiation of breast feeding after delivery and reasons for delayed initiation.

Initiation of breast feeding was delayed beyond 4 hours by 24.50% urban and 33.68% rural mothers. Difference in time of initiation of breast feeding after delivery among urban and rural mothers was statistically significant ($p=0.002$). The most common reason quoted by urban mothers for delayed initiation of breast feeding after delivery was their physical inability (38.78%); whereas, in rural area it was because of elders who advised not to initiate breast feeding early (46.09%).

A study was done by Shirima et al²¹ in urban and rural Morogoro, Tanzania and early initiation of breast feeding within one hour was observed in 82.00% urban and 52.00% rural mothers. Yet another study carried out by Gupta et al⁵⁰ in urban

slum of Lucknow revealed that only 36.60% mothers initiated breast feeding within 1 hour of delivery. Most common reasons given for delayed initiation were family custom / belief (52.10%), no secretion of breast milk (31.00%) and discomfort in the mother (16.90%). In the villages of central Karnataka a study was carried out by Banapurmath et al⁶¹ and it showed that only 6.20% mothers initiated breast feeding within 4 hours of delivery.

Table 15: Distribution of study participants according to practice of demand feeding.

As many as 61.25% of urban and 32.11% of rural mothers did not practice demand feeding. Difference in the practice of demand feeding among urban and rural mothers was statistically significant ($p < 0.001$). It has been observed that more rural mothers were working compared to urban mothers. Hence, probably it was not possible for them to practice time bound feeding as done by urban mothers.

A study on infant feeding practices by Parekh et al⁵⁵ in Parel, Mumbai showed that feeds were given on demand by 73.68% mothers. Yet another study on infant feeding practices by Panda et al⁵⁹ in Cuttack showed that 90.10% of mothers fed their infants on demand.

Table 16: Distribution of study participants according to practice of giving water before 6 months of age and reasons for the same.

Large number of mothers in urban (73.75%) as well as in rural areas (75.26%) had started giving water to the child along with breast milk before 6 months of age. However, the difference in the practice of giving water to the infant before the age of 6 months among urban and rural mothers was not statistically significant. In the urban area, most commonly the water was given with medication by 64.41% mothers and 80.42% rural area mothers had started the same as they felt that weather was hot.

This observation was consistent with that of a study done by Chaturvedi et al⁴⁷ which showed that 73.00% of mothers had started giving water since birth in both urban as well as rural areas of Agra district.

Table 17: Distribution of study participants according to practice of giving ghutti before 6 months of age and reasons for the same

Practice of giving ghutti was more common in mothers of urban area than rural area (31.25% urban v/s 1.58% rural mothers). Most of the urban (93.60%) as well as rural mothers (100.00%) did so as per the elder's advice. Difference in the practice of giving ghutti among urban and rural mothers was statistically significant ($p < 0.001$). Since the ingredients used to prepare ghutti were expensive, only mothers who could afford it had given it to their infants and hence, it was more common in urban mothers who had better socio-economic status than rural mothers.

A study done by Chaturvedi et al⁴⁷ in Agra district showed that practice of giving ghutti was more common in urban than in rural mothers.

Table 18, 19, 20: Distribution of study participants according to age at which complementary feeds were started to the infant and reasons for starting complementary feeding before or beyond 6 months of age

Majority of the 69.20% mothers in the urban area started complementary feeds before the age of 6 months; whereas, in the rural areas, 42.11% mothers did so at the age of 6 months. Difference in the age at which complementary feeds were started by urban and rural mothers was statistically significant ($p < 0.001$).

Most common reason for starting the complementary feeds before 6 months of age by 48.01% urban mothers was elders' advice to do so and the 44.44% rural mothers thought that they had less or no secretion of breast milk.

Most mothers started the complementary feeds beyond 6 months of age in urban as well as rural areas because they thought that they had enough secretion of breast milk to satisfy the needs of the infant (37.50% and 46.15% respectively).

In a study done by Mushaphi et al³⁰ in Vhembe District of Limpopo Province it was observed that about 77.30% mothers had started complementary foods to their infants before 6 months of age; most commonly they had done so as per elder's advice (45.00%). In the urban and rural areas of Bihar a study was carried out by Yadav et al³⁹ and it was seen that 17.70% urban and 13.10% rural mothers started complementary foods before 6 months of age and 53.70% urban and 54.20% rural mothers started complementary foods between 6 – 12 months of age. Most commonly mothers had done early weaning because they felt that breast milk was not sufficient (30.00% in urban and 28.90% in rural area).

Yet another study done by Aggarwal et al⁴⁵ showed that only 17.50% mothers had started complementary feeds at the recommended 6 months of age and most common reason for delayed weaning being unsuccessful attempt as child used to vomit (52.00%).

Table 21: Distribution of study participants according to the food started first as the complementary food to the infant.

The most common complementary food given first was porridge by 36.75% urban mothers and cow's milk by 32.63% rural mothers. The commercial food was given by 29.75% of urban and 17.37% rural mothers. Difference in the first food started during weaning by urban and rural mothers was statistically significant ($p < 0.001$). Since commercial foods are expensive, probably the affordable urban mothers gave it more than rural mothers.

In a study done by Mushaphi et al³⁰ in Vhembe District of Limpopo Province it was showed that formula milk was the most common weaning food started by 80.00% mothers. In the urban and rural areas of Bihar a study was done by Yadav et al³⁹ and was seen that most common food given first as weaning food both in urban as well as rural area was rice (33.40% in urban and 39.90% in rural area). The practice of giving marketed commercial foods ranged from 5.90% to 80.00% in various studies.^{30, 39, 45, 55}

Complementary foods given as meals, snacks, frequency and amount given between 6 to 12 months of age of infancy. (Table 22, 23, 24, 25)

In the urban area, most commonly, combination of various foods was given as meals at both age groups of 6 – 8 and 9 – 12 months (38.00% and 54.25% respectively). However, 64.50% and 65.50% mothers gave only biscuits as snacks in the urban area at 6 – 8 and at 9 – 12 months of age respectively.

Most of the 37.36% mothers in rural area gave only cereal based foods for meals at 6 – 8 months and 45.79% rural mothers at 9 – 12 months. Even in the rural area, biscuits were most commonly given as snacks between meals (51.58% mothers at 6 – 8 months and 67.89% mothers at 9 – 12 months). Difference in the foods given for meals and snacks by urban and rural mothers was statistically significant ($p < 0.001$). This difference can probably be attributed to either lack of awareness or lack of financial resources.

Most of the mothers gave 2 meals and 2 snacks per day between the age of 6 – 8 months (83.00% and 80.50% respectively in urban and 47.89% and 47.37% respectively in rural area). Amount per meal was less than the recommended $3/4^{\text{th}}$ of a 200 ml cup (76.50% in urban and 62.63% in rural area). In the age of 9 – 12 months, mothers most commonly gave 3 meals and 2 snacks (60.50% and 76.50% respectively

in urban and 41.05% and 55.53% respectively in rural area). Amount per meal was again less than the recommended full of a 200 ml cup (83.00% in urban and 86.84% in rural area). Difference in the frequency of complementary feeds per day and amount given per feed among urban and rural mothers was statistically significant ($p < 0.001$). This difference could also be due to lack of awareness regarding amount and frequency of complementary feeding among rural mothers.

In a study done by Mushaphi et al³⁰ in Vhembe District of Limpopo Province it was showed that 37.80% of infants were receiving meals only twice a day. A study carried out by Aggarwal et al⁴⁵ in urban areas of Delhi showed that as many as 60.00% of mothers gave less than recommended frequency of complementary feeds and almost 75.00% of mothers gave less than recommended quantity as well.

Table 26: Distribution of study participants according to type of feeding

Exclusive breast feeding rate at 6 months was as low as 16.25% in urban and 15.26% in rural area. Majority of mothers practiced predominant breast feeding in both urban and rural area (77.25% and 77.89% respectively).

Various studies^{25, 26, 27} at international level showed that exclusive breast feeding rate ranged from 10.70% to 61.00%. Studies^{40, 41, 43, 44, 48, 54, 56, 67} done in various states of India have showed that exclusive breast feeding rate ranged from 23.50% to 69.35%. A study done in villages of Central Karnataka by Banapurmath et al⁶¹ showed that exclusive breast feeding rate at 4 months was 61.26%.

Exclusive breast feeding was practiced by fewer number of mothers in both urban as well as rural areas in the present study perhaps because of influence of elders' advise.

Table 27: Indicators for assessing infant feeding practices

Indicators like early initiation of breast feeding (42.50% in urban and 42.89% in rural), exclusive breast feeding under 6 months (16.25% in urban and 15.26% in rural) and predominant breastfeeding under 6 months (77.25% in urban and 77.89% in rural) were almost same in both urban and rural areas. Continued breast feeding rate was better in urban (100.00%) compared to rural area (99.21%) in urban and in rural area.

Indicators related to complementary feeds like introduction of solid, semi-solid and soft foods, minimum dietary diversity, minimum meal frequency and minimum acceptable diet were better in urban area.

Tables 28 – 39: Association between various socio-demographic factors and practice of giving pre-lacteal feeds.

In the urban area, a minority of 48.04% Hindu and a majority of 84.06% non Hindu mothers gave pre-lacteal feeds. As the age increased practice of giving pre-lacteal feeds decreased from 81.82% mothers aged 19 years to 48.31% mothers aged 25 years. Practice of giving pre-lacteal feeds reduced with increase in educational status with 87.18% illiterate mothers to 19.18% mothers educated till PUC / Diploma / Graduation.

As the socio-economic status increased, number of mothers who gave pre-lacteal feeds reduced from 57.74% mothers who belonged to a socio-economic status of Class V to 28.57% mothers belonging to Class I. A majority of 70.48% mothers who gave pre-lacteal feeds belonged to nuclear family. More number of 86.67% mothers who were not informed about benefits of breast feeding had given pre-lacteal feeds.

As the birth order increased, practice of giving pre-lacteal feeds also increased from 48.94% mothers with child birth order one to 75.00% mothers with child birth order 3. Majority of 64.14% mothers who had delivered by caesarean section gave pre-lacteal feeds. Hence, significant associations were found between religion, age of the mother, educational level, socio-economic status, type of family, information about benefits of breast feeding, birth order, mode of delivery and practice of giving pre-lacteal feeds in urban area.

Whereas, in the rural area only place of delivery and being informed about benefits of breast feeding had significant association with practice of giving pre-lacteal feeds in rural area ($p < 0.05$). Lesser percent of mothers who had delivered at a hospital (54.89%) and informed about benefits of breast feeding (50.00%) had given pre-lacteal feeds.

Consistently, several studies^{46, 48, 54, 58} have showed statistically significant association between age, educational level, socio-economic status, place of delivery, not being informed about exclusive breast feeding and practice of giving pre-lacteal feeds. ($p < 0.05$).

Table 40 – 50: Association between various socio-demographic factors and practice of discarding colostrum.

In urban area, practice of discarding colostrum reduced with increase in educational status from 30.76% illiterate mothers to 4.11% mothers who had studied till PUC / Diploma / Graduation. As many as 22.53% mothers who belonged to socio-economic status of Class V and only 2.27% mothers belonging to Class II discarded colostrum.

More number of mothers (60.00%) who were not informed about benefits of breast feeding in the hospital, discarded colostrum. As the birth order increased,

mothers' practice of discarding colostrum also increased from 11.70% mothers with child birth order 1 to 37.50% mothers with child birth order 3. More mothers (19.65%) who had infant's birth weight < 2.5 kg had discarded colostrum. Hence, significant associations were found between educational level, socio-economic status, being informed about benefits of breast feeding, birth order and birth weight and practice of discarding colostrum in urban area.

Even in the rural area, 27.27% working mothers and those who were not informed about benefits of breast feeding (48.14%) had discarded colostrum. Hence, only occupational status and being informed about benefits of breast feeding had significant association with practice of discarding colostrum in rural area ($p < 0.05$).

Table 51 – 62: Association between various socio-demographic factors and delayed initiation of breast feeding.

As the educational status increased, practice of delayed initiation of breast feeding beyond 4 hours decreased in the urban area from 38.46% illiterate mother to 9.50% mothers who had studied till PUC / Diploma / Graduation. Majority of mothers (29.60%) who delayed initiation of breast feeding belonged to socio-economic class IV. Nearly 27.62% mothers who were from nuclear family delayed initiation of breast feeding.

As many as 35.41% mothers with child birth order 3 delayed the initiation of breast feeding beyond 4 hours after delivery. About 27.85% mothers who had delivered by caesarean section, delayed initiation of breast feeding. Hence, significant associations were found between educational level, socio-economic status, type of family, birth order and mode of delivery and delayed initiation of breast feeding in urban area ($p < 0.05$). However, no factors influenced this practice in rural area.

Table 63 – 73: Association between various socio-demographic factors and practice of giving water before 6 months of age.

Majority of 87.18% illiterate mothers and 45.20% mothers who had studied till PUC / Diploma / Graduation had given water before 6 months of age in urban area. More number of 75.06% urban housewives had given water before 6 months of age.

As the socio-economic status reduced, practice of giving water before 6 months of age increased from 52.38% mothers belonging to socio-economic class I to 73.24% to class V. Majority of mothers (83.80%) belonging to nuclear family gave water before 6 months of age. As many as 93.75% mothers having child of birth order 3, gave water before 6 month of age. Hence, significant associations were found between educational level, occupational status, socio-economic status, type of family, birth order and practice of giving water before 6 months of age in urban area.

Whereas, in the rural area, only being informed about benefits of breast feeding had significant association with practice of giving water before 6 months of age ($p < 0.05$) because a majority of 85.18% mothers who gave water before 6 months of age were not informed about benefits of breast feeding in the hospital.

Table 74 – 84: Association between various socio-demographic factors and age at initiation of complementary feeding.

Significant associations were found between educational level, socio-economic status, type of family, being informed about benefits of breast feeding, birth order and age at initiation of complementary feeds in urban area ($p < 0.05$). More number (52.05%) of mothers educated till PUC / Diploma / Graduation initiated complementary feeds at an appropriate age of 6 months compared to 10.26% illiterate mothers who did so.

In urban area, as many as 46.60% mothers belonging to socio-economic class II compared to 19.20% mothers to class IV and 43.48% mothers from three generation family against 17.62% mothers of nuclear family initiated complementary feeds at an appropriate age of 6 months. A total of 30.28% mothers who were informed about benefits of breast feeding in the hospital and 35.64% with child birth order 1 initiated complementary feeds at an appropriate age of 6 months.

Whereas, in the rural area, a majority of 56.82 % mothers educated till PUC / Diploma / Graduation initiated complementary feeds at 6 months of age compared to 28.57% illiterate mothers. As many as 55.88% mothers from three generation family and 44.24% mothers delivered at hospital gave complementary feeds at appropriate age. Infants who received complementary feeds at 6 months of age by 27.08% mothers were having birth weight of < 2.5 kg. Hence, in the rural area, educational level, type of family, place of delivery and birth weight had statistically significant association with age at initiation of complementary feeds ($p < 0.05$).

In a study in rural areas of Dehradun by Semwal et al⁵⁴ established a statistically significant association between age of the mother and age at initiation of the complementary feeds ($p < 0.001$). In the present study association between age of the mothers and age at initiation of complementary feeds was not significant, probably because educational level of the mothers and elder's advise had a strong influence on the study participants.

CONCLUSION

Present study revealed that various inappropriate infant feeding practices are prevalent in both urban and rural areas. Religion, age of the mother, educational level, occupational status, socioeconomic status, type of family, place of delivery and education about benefits of breast feeding given in the hospitals, birth order and birth weight of the infant influenced the breast feeding practices. Quality and quantity of complementary foods were also inappropriate. Elders' advice played an important role in shaping the infant feeding practices. However, indicators of infant feeding practices revealed that both urban and rural mothers were no better than each other with regards to breast feeding practices, but with regards to complementary feeding, urban mothers were better than rural mothers.

LIMITATIONS

The limitations of the study are:

- Only mothers having children aged 1 year were included in the study in order to minimize the recall bias regarding infant feeding practices and hence, it was not possible to know the proportion of mothers who continued breast feeding till recommended 2 years of age.
- It was not feasible to collect detailed information on exact amount of dietary intake. Hence, calorie and protein deficit of the infants could not be calculated.

RECOMMENDATIONS

On the basis of this study, the following recommendations have been made for the improvement of infant feeding practices in the community.

- Mothers who delivered at hospitals and those who were told about the benefits of breast feeding in the hospital had practiced near appropriate breast feeding. Hence, strategies to encourage 100% institutional deliveries have to be implemented and after delivery every mother should be told about the benefits of breast feeding in the hospital without fail.
- It was also observed in this study that elder's advice played an important role in guiding the mothers regarding infant feeding practices. Hence, IEC campaigns (information, education, and communication) should not only be targeted at the mothers but also at the elders in the family and community.
- Complementary foods given were poor in their quality and quantity. Hence, IEC campaigns should be held often to teach mothers and also other family members regarding low cost, locally available complementary foods that are rich in nutrients to ensure proper growth and development of children. AWW, ASHA, health workers, medical officers, NGOs and other local leaders must take an active part in such campaigns.

SUMMARY

The present community based cross-sectional study was undertaken to compare the infant feeding practices of mothers in urban and rural areas and also to know social factors and cultural practices influencing the infant feeding practices.

This community based cross-sectional study was carried out in urban area Khasbag and at villages namely Vantamuri, Kakati (A and B), Honaga, Bhutramanahatti which are field practice areas Department of Community Medicine, Jawaharlal Nehru Medical College, Belgaum. By random sampling, 400 urban and 380 rural mothers having one year old child were selected.

The duration of the study was for one year from 1st January 2011 to 31st December 2011.

In the present study majority of 65.00% urban as well as 64.21% rural mothers were between 20 to 24 years of age. As many as 82.75% of urban and 84.74% of rural mothers were from Hindu community. Though a majority of 41.00% urban and 46.32% rural mothers were educated till high school, higher number of mothers in the rural area were illiterates (9.80% in urban v/s 22.10% in rural). Most of 31.20% and 46.84% urban as well as rural mothers respectively belonged to socio-economic status IV.

As many as 52.50% urban and 62.11% rural mothers were from nuclear family. As many as 41.00% urban and 37.89% rural mothers had children of birth order 2 and adequate birth spacing of > 3 years was practiced by only 25.94%

urban and 26.87% rural mothers. In urban area, 100.00% deliveries had occurred in hospitals; whereas, in the rural area, only 91.58% mothers had delivered in hospitals. Among the mothers who delivered at a hospital, majority of them in both urban (92.50%) and rural areas (84.48%) were told about the benefits of breast feeding in the hospital.

The practice of giving pre-lacteal feeds was almost equally common in both urban as well as rural mothers (54.25% and 57.11% respectively); most common pre-lacteal food being sugar water in both the areas. Though many mothers in both rural and urban areas discarded the colostrum, more number of mothers in the rural area did so (14.75% in urban v/s 25.79% in rural). The initiation of breast feeding after delivery was delayed beyond 4 hours by 24.50% urban mothers and 33.68% rural mothers.

Majority of 61.25% the urban mothers did not practice demand feeding; whereas, 67.89% rural mothers practiced it. The practice of giving water was almost equally prevalent among mothers of both 73.75% urban as well as 75.26% rural areas along with breast milk before 6 months of age. The practice of giving ghutti was more common in mothers of urban area (31.25%) compared to rural mothers (1.58%).

Majority of 69.20% urban mothers started complementary feeds before the age of 6 months; whereas, in the rural areas, 42.11% mothers started complementary feeds at the age of 6 months. In the urban area, most commonly, combination of various foods was given as meals at both age groups of 6 – 8 and 9 – 12 months (38.00% and 54.25% respectively). However, 64.50% and 65.50%

mothers gave only biscuits as snacks in the urban area at 6 – 8 and at 9 – 12 months of age respectively. Most of the 37.36% mothers in rural area gave only cereal based foods for meals at 6 – 8 months and 45.79% rural mothers at 9 – 12 months. Even in the rural area, biscuits were most commonly given as snacks between meals (51.58% mothers at 6 – 8 months and 67.89% mothers at 9 – 12 months). Frequency of feeding was appropriate in majority of mothers in both the areas though the quantity was less than the recommended. Exclusive breast feeding rate was 16.25% in urban and 15.26% in rural areas.

Various social factors and cultural practices had an influence on these infant feeding practices. Significant associations were found between religion, age of the mother, educational level, socio-economic status, type of family, being informed about benefits of breast feeding, birth order, mode of delivery and practice of giving pre-lacteal feeds in urban area ($p < 0.05$). Similarly, place of delivery and being informed about benefits of breast feeding had significant association with practice of giving pre-lacteal feeds in rural area ($p < 0.05$).

In case of urban mothers, a significant association was found between practice of discarding colostrum and educational level, occupational status, socio-economic status, being informed about benefits of breast feeding, birth order and birth weight ($p < 0.05$). Whereas, in case of rural mothers, such statistical significance was observed between occupational status, information about benefits of breast feeding and discarding of colostrum ($p < 0.05$).

Significant associations were also found between educational level, socio-economic status, type of family, birth order and mode of delivery with delayed initiation of breastfeeds after delivery in urban area ($p < 0.05$).

Associations were significant statistically between educational level, occupational status, socio-economic status, type of family, birth order and practice of giving water before 6 months of age in urban mothers. Whereas, in rural mothers, this practice had significant association only with being informed about benefits of breast feeding ($p < 0.05$).

In the urban area, educational level, socio-economic status, type of family, information about benefits of breast feeding and birth order had statistically significant association with age at initiation of complementary feeds ($p < 0.05$). However, in the rural area, association was statistically significant between age at initiation of complementary feeds and educational level, type of family, place of delivery and birth weight ($p < 0.05$).

Urban as well as rural mothers were no better than each other with regards to breast feeding practices, but with regards to complementary feeding urban mothers were better than rural mothers.

Hence, the present study recommends that in order to improve infant feeding practices, 100% institutional deliveries should be encouraged and every mother delivering at a hospital must be told about benefits of breast feeding with out fail. IEC activities must be held often to teach not only mothers but also their family members regarding the appropriate infant feeding practices

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ANNEXURE I – ETHICAL CLEARANCE LETTER



K.L.E.SOCIETY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELGAUM-590010 (KARNATAKA-INDIA)
(Affiliated to KLE University, Belgaum)

Website: <http://www.jnmc.edu>
E-Mail : dome@jnmc@sanchurnet.in
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Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 - 2470759

Ref: MDC/PG/3271

Date: 8/10/2010

To,
Dr
Postgraduate Student,
Department of Community Medicine,
J.N.Medical College,
BELGAUM.

Sub: Institutional Ethical Clearance for the study.

Dear Dr. /

With reference to the above, I wish to inform you that the research project "COMPARISON OF INFANT FEEDING PRACTICES AMONG URBAN AND RURAL MOTHERS-A CROSS SECTIONAL STUDY", is Ethical and justifiable and has been cleared by the departmental Ethical Committee and College Dissertation and Research Committee.


(Dr. V.D.Patil),
Chairman
College Ethical Dissertation
And Research Committee,
J.N.Medical College, Belgaum.

ANNEXURE II
INFORMED CONSENT

**COMPARISON OF INFANT FEEDING PRACTICES
AMONG URBAN AND RURAL MOTHERS – A CROSS SECTIONAL
STUDY.**

INVESTIGATORS: Dr. _____

Introduction:

You are being invited to participate in this study which will be conducted to compare infant feeding practices among urban and rural mothers and factors influencing these practices.

Methodology:

I will be interviewing you to know about your infant feeding practices. No laboratory investigations will be done. No treatment will be provided if any illness is found during the study.

Possible benefits:

You will not be eligible for any kind of monetary benefits or free services by virtue of your participation in the study. You will be benefited by the health education given during the study regarding appropriate infant feeding practices.

Possible risks:

Methods applied to do the study are safe. No risk is involved in the study.

Cost of participation:

The cost of the study will be borne by the researcher. You will not have any costs attached to your participation.

Legal rights:

By signing this consent form you are not waiving any of your legal rights.

Privacy and Confidentiality:

The results of the study may be published for scientific purposes. However your identity will not be revealed. All information collected will be coded so that no one other than the investigator will know your identity.

Withdrawal from the study:

You can withdraw from the study at any time if you wish to do so.

Authorization to publish the results:

The researcher may use the information gathered from this study for presentation in scientific journals. However your identity will not be revealed.

Questions:

If you have question about this study, you should contact DR. _____, _____, DR. _____, 9481857955. If you have any questions about the rights as a research participant you may contact DR V.D.PATIL, Principal and Chairman, J. N. M. C. Institutional Ethics Committee on human subjects' research

Consent summary:

I have been explained all the contents of this consent form in my local language and having understood and clarified all my queries about the study to the best of my knowledge, I here by give my voluntary consent for participation in the study. I do sign the informed consent form in front of an eyewitness whom I recognize.

Name and Signature/ left thumb impression of the participant:

Name and Signature of the interviewer:

Name and Signature/ left thumb impression of the eyewitness:

Signature of the guide:

Date:

ANNEXURE III - PROFORMA

Comparison of Infant Feeding Practices among Urban and Rural

Mothers – A cross sectional study.

Investigators -

Sl. No -

INFORMATION REGARDING THE MOTHER

1. Name -
2. Address -
3. Religion –
4. Age in years
5. Education –
6. Occupation -
7. Total income of family in Rs / month - Per Capita Income
8. Number of family members -
9. Type of family – Joint / Nuclear / Three generation
10. Age at marriage in years
11. Birth Spacing-
12. Place of Delivery – Home / Hospital
13. If delivered in hospital, was she told about the benefits of breastfeeding in the hospital? Yes / No
14. Mode of Delivery - Normal Vaginal Delivery / Caesarean Section

INFORMATION REGARDING THE INFANT

15. Name -
16. Sex of Child -

17. Birth Order

18. Birth Weight

19. Immunization:

VACCINE	0	1	2	3
BCG				
OPV				
DPT				
HEPATITIS B				
MEASELS				

INFORMATION REGARDING INFANT FEEDING PRACTICES

20. Pre Lacteal Feeds Given – Yes / No

21. If fed, what was given?

22. Colostrum fed to infant in first 72 hours: Yes / No

23. If fed, does the mother feel baby was made to suck empty breast and hence should have been given something else? Yes / No

24. If not fed, why?

25. Time of initiation of breast feeding after birth:

26. If delayed beyond 4 hours, why?

27. Was the infant fed on demand? Yes / No

28. Was the infant given water before 6 months of age: Yes / No

29. If yes, why?

30. Was the infant given a mix of almond, dates and other medicinal plants (ghutti) before six months of age: Yes / No

31. If yes, why?

32. Age at which complementary foods were started:

a.< 6months

b.At 6 months

c.>6 months-1 year

33. If started before 6 months of age, why?

34. If started beyond 6 months of age, why?

35. Which food was started first?

36. Complementary food given

Age	Foods commonly given	Frequency	Amount at each meal
6 – 8 months			
9 – 11 months			

37. Pacifiers given to the baby: Yes / No

38. Type of breast feeding practiced? Exclusive / Predominant / Partial / Token

39. Are you still breastfeeding at the age of 1 year? Yes / No

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	
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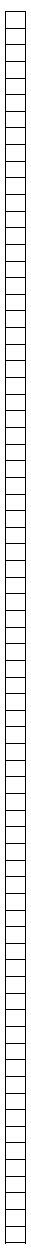
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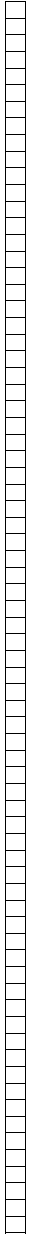
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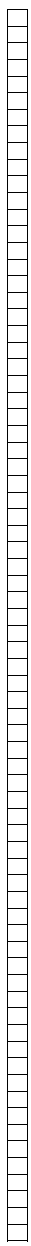
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115	2	1	25	1	2	1000	4																																									

147	2	1	22	3	1	800	4	2	17	2	1	2	1	1	2	2	3	1	0	0	1	2	0	1	0	0	0	0	0	1	1	0	1	5	6	2	2	2	6	6	3	2	2	0	3		
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163	2	2	25	2	1	2142	3	1	16	3	2	2	1	1	1	3	3	1	0	0	1	1	0	1	0	1	1	2	0	0	2	0	0	1	2	1	3	1	2	2	1	3	1	2	0	2	
164	2	1	27	3	1	636	5	1	17	2	3	2	1	1	1	2	3	1	0	0	1	1	0	1	0	0	1	2	0	0	2	0	0	1	2	1	3	2	2	2	1	3	2	2	0	2	
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181	2	1	24	2	1	300	5	1	18	2	2	1	1	1	2	3	0	1	1	1	1	1	0	3	1	1	1	2	0	0	2	0	0	1	1	1	2	2	2	3	1	3	2	2	0	2	
182	2	1	23	3	1	1125	4	1	19	2	1	2	1	1	1	2	3	1	0	0	1	2	0	2	0	1	1	2	0	0	2	0	0	3	1	1	2	2	2	1	1	2	2	2	0	2	
183	2	1	20	4	1	1857	3	1	18	1	0	2	1	1	1	1	3	1	1	1	1	2	0	2	0	1	1	2	1	1	3	0	4	1	1	2	2	2	1	1	3	2	2	0	2		
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188	2	1	20	1	1	1875	3	1	15	2	1	2	1	1	1	2	2	1	1	1	1	1	0	3	1	0	1	2	0	0	3	0	4	3	0	0	0	0	0	0	1	1	2	2	0	2	
189	2	1	23	3	1	750	4	1	18	1	0	2																																			

221	2	1	28	3	1	1000	4	2	18	3	3	2	1	2	1	3	3	1	1	1	1	2	0	1	0	1	1	2	0	0	3	0	4	4	1	1	2	2	1	1	3	2	2	0	2	
222	2	1	24	1	1	800	4	1	17	2	3	2	1	1	1	3	3	1	0	0	1	1	0	1	0	1	0	0	0	0	3	0	4	1	1	1	2	2	2	1	1	3	2	2	0	1
223	2	1	22	3	1	800	4	1	15	2	1	2	1	1	2	2	3	1	1	2	1	2	0	2	0	1	0	0	0	2	0	0	1	1	1	2	2	2	1	1	3	2	2	0	1	
224	2	1	27	2	1	583	5	2	16	4	3	2	1	1	1	1	3	1	0	0	1	2	0	2	0	0	0	0	0	2	0	0	1	1	1	2	2	2	1	1	3	2	2	0	1	
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371	2	2	23	4	1	2500	2	3	20	1	0	2	1	1	1	2	0	1	0	0	1	2	0	1	0	1	1	2	0	0	3	0	4	4	0	0	0	0	0	1	1	2	2	2	0	2	
372	2	1	28	1	1	666	4	1	16	4	2	2	1	1	1	2	3	1	0	0	1	1	0	1	0	1	1	2	0	0	1	1	0	2	1	1	3	2	2	6	1	3	3	2	0	2	
373	2	1	28	3	1	1000	4	2	18	3	2	2	1	1	1	1	3	1	1	1	1	1	0	3	1	1	1	2	0	0	1	5	0	1	1	0	2	0	2	1	0	2	0	2	0	3	
374	2	1	20	1	1	600	5	1	15	2	1	1	0	1	2	2	3	1	1	2	1	2	0	2	0	1	1	1	0	0	3	0	1	3	0	0	0	0	0	0	1	0	2	0	0	2	
375	2	2	22	2	1	1000	4	1	17	2	3	2	1	1	1	1	2	1	0	0	1	2	0	2	0	1	1	2	0	0	3	0	2	3	0	0	0	0	0	1	1	3	3	2	0	2	
376	2	1	25	2	1	900	4	2	16	2	3	2	1	1	1	1	3	1	0	0	1	2	0	1	0	1	1	3	0	0	3	0	2	5	0	0	0	0	0	1	1	3	3	3	0	2	
377	2	2	18	1	1	400	5	1	16	1	0	2	1	1	2	1	3	1	0	0	1	1	0	1	0	1	1	2	0	0	2	0	0	4	1	1	3	3	2	1	1	3	3	2	0	2	
378	2	2	25	2	1	750	4	2	18	2	3	2	1	1	1	2	2	1	0	0	1	2	0	1	0	0	1	2	0	0	1	4	0	1	1	1	2	3	2	1	1	3	3	2	0	3	
379	2	1	24	2	1	500	5	2	16	2	2	2	1	1	1	1	3	1	0	0	1	1	0	1	0	1	1	2	0	0	3	0	3	5	0	0	0	0	0	0	2	0	3	0	2	0	2
380	2	1	25	2	1	285	5	1	16	4	1	2	1	1	1	2	3	1	0	0	1	1	0	2	0	1	1	2	0	0	3	0	2	5	0	0	0	0	0	0	1	1	2	3	2	0	2

ANNEXURE IV - KEY TO MASTER CHART

Comparison of Infant Feeding Practices among Urban and Rural

Mothers – A cross sectional study

Investigators -

- A) Serial No
- B) Residence –
 - 1. Urban
 - 2. Rural
- C) Religion –
 - 1. Hindu
 - 2. Muslim
 - 3. Christian
- D) Age in years
- E) Education –
 - 1. Illiterate
 - 2. Primary School
 - 3. High School
 - 4. PUC/Diploma
 - 5. Graduate
 - 6. Post Graduate
- F) Occupation:
 - 1. Housewife
 - 2. Agriculturist
 - 3. Daily Wage Worker
 - 4. Weaver
 - 5. Others
- G) Per Capita Income

H) Socio Economic Status (Modified B G Prasad Classification) -

1. Class I

2. Class II

3. Class III

4. Class IV

5. Class V

- I) Type of family-
1. Joint
 2. Nuclear
 3. Three generation

J) Age at marriage in years

K) Number of living children

- L) Birth Spacing-
0. Not applicable
 1. <2 years
 2. 2-3 years
 3. >3 years

- M) Place of Delivery-
1. Home
 2. Hospital

- N) If delivered in hospital, was she told about the benefits of breastfeeding in the hospital?
0. Not Applicable
 1. Yes
 2. No

- O) Mode of Delivery -
1. Normal Vaginal Delivery
 2. Caesarean Section

P) Sex of Child - 1. Male

2. Female

Q) Birth Order

R) Birth Weight

S) Immunization: 1.Complete
 2.Partial
 3.Non Immunized

T) Pre Lacteal Feeds Given - 0.No
 1.Yes

U) If fed, what was given? 0. Not Applicable
 1. Sugar water
 2.Honey
 3.Commercial Food
 4.Cow's milk
 5.Water
 6.Others

V) Colostrum fed to infant in first 72 hours: 0.No
 1.Yes

W) If fed, does the mother feel baby was made to suck empty breast and hence should have been given something else?
 0. Not Applicable
 1.Yes
 2.No

X) If not fed, why? 0. Not Applicable

- 1.No secretion
- 2.Baby in NICU
- 3.Pain/Physical inability in the mother
- 4.Elder's advice
5. Bad for baby's health

Y) Time of initiation of breast feeding after birth:

- 1.Withn 1 hour
2. 1 - 4 hours
- 3.Beyond 4 hours

Z) If delayed beyond 4 hours, why?

0. Not Applicable
- 1.No Secretion
- 2.Baby in NICU
- 3.Pain/Physical inability in the mother
- 4.Elder's advice
- 5.Colostrum is bad for baby's health

AA) Was the infant fed on demand? 0.No

1.Yes

AB) Was the infant given water before 6 months of age: 0.No

1.Yes

AC) If yes, why? 1. Elders advice,

2.Weather was hot

3.Along with medication

4. As top feeds with commercial feeds

AD) Was the infant given a mix of almond, dates and other medicinal plants (ghutti) before six months of age: 0. No

1. Yes

AE) If yes, why? 1. Elder's advice

2. Boosts immunity

3. Others

AF) Age at which complementary foods were started:

1. < 6 months

2. At 6 months

3. >6 months

AG) If started before 6 months of age, why?

1. Breast milk alone insufficient to meet the infant's needs

2. Advised by health care personnel

3. Advised by elders

4. No or reduced secretion

5. Working mother

6. Others

AH) If started beyond 6 months of age, why?

1. Infant cannot eat anything till it gets teeth

2. Infant was not accepting any food

3. Cannot afford commercially available foods

4. Breast milk is more than sufficient for the infant

AI) Which food was started first? 1. Cows milk

2. Commercial foods

3.Biscuit

4.Porridge

5.Others

AJ) Complementary food given between the age of 6-8 months as meal:

1.Only cereal based food

2.Double mix

3.Triple mix

4.Quadruple mix

5.Commercial foods

6.Combination of various foods

AK) Complementary foods given between the age of 6-8 months as snacks:

1. Biscuits

2.Fruits

3.Egg

4.Sooji kheer or shira

5.Upma or idli

6.Combination of many items

AL) Number of meals given between the ages of 6-8 months per day

AM) Number of snacks given between the ages of 6-8 months per day

AN) Amount given at each feed: 1. $\frac{3}{4}$ th of a 200 ml cup

2.< $\frac{3}{4}$ th of a 200 ml cup

3.> $\frac{3}{4}$ th of a 200 ml cup

AO) Complementary food given between the age of 9-12 months as meal:

1.Only cereal based food

2. Double mix
3. Triple mix
4. Quadruple mix
5. Commercial foods
6. Combination of various foods

AP) Complementary foods given between the age of 9-12 months as snacks:

1. Biscuits
2. Fruits
3. Egg
4. Sooji kheer or shira
5. Upma or idli
6. Combination of many items

AQ) Number of meals given between the ages of 9-12 months per day

AR) Number of snacks given between the ages of 9-12 months per day

AS) Amount given at each feed: 1. Full of a 200 ml cup

2. < Full of a 200 ml cup

3. > Full of a 200 ml cup

AT) Pacifiers given to the baby: 0.No

1.Yes

AU) Type of breast feeding practiced? 1.Exclusive

2.Predominant

3.Partial

4.Token

AV) Are you still breastfeeding at the age of 1 year? 0.No 1.Yes

