

**A COMPARATIVE STUDY OF
INFANT FEEDING PRACTICES AMONG
TRIBALS AND NON-TRIBALS IN SIKKIM**

BY

NORMIT LEPCHA

A THESIS SUBMITTED TO THE AVINASHILINGAM INSTITUTE FOR HOME SCIENCE
AND HIGHER EDUCATION FOR WOMEN (DEEMED UNIVERSITY) COIMBATORE-641 043,
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

APRIL 1994

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HUMAN DEVELOPMENT

APRIL, 1994

Certified as bonafide Research work

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Acknowledgement

ACKNOWLEDGEMENT

With heartfelt gratitude the investigator records her sincere thanks to Padmashri Dr.(Tmt.) RAJAMMAL P.DEVADAS M.A., M.Sc., Ph.D. (Ohio State), D.Sc., (Madras), Vice Chancellor of Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University), Coimbatore, for her help in selecting the appropriate topic for research.

The author is profoundly obliged to her esteemed guide Dr.(Tmt.) N.JAYA, M.Sc., Ph.D., (Madras), Professor and Head of the Department of Human Development, Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University), Coimbatore for her consistant, valuable and timely guidance bestowed throughout the study.

The author owes her sincere thanks to Dr.(Tmt.) K.SAROJA PRABHAKARAN, M.A., Dip. Ed. (Madras) Ph.D. (Mother Theresa), Registrar and Directress Hall of Residence, Avinashilingam Institute for Home Science and Higher Education for Women, (Deemed University), Coimbatore, for the facilities provided throughout the study.

Her sincere thanks are due to
Dr.(Tmt.) LAKSHMI SANTA RAJAGOPAL, M.S.(Tennessee),
Ph.D.(Madras), Dean, Faculty of Home Science
Avinashilingam Institute for Home Science and Higher
Education for Women (Deemed University) Coimbatore, for
her kind permission to conduct the study.

The investigator is indebted to her
parents, family members and nieces for their help during
the collection of data. She express her sincere thanks
to all the subjects who had been very co-operative.

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Introduction

I. INTRODUCTION

Children are the vanguards and supreme powers of the world of tomorrow (Devadas, 1984). Investing in children is not only significant but also probably the investment which will have the most returns in economic and social terms (Srinivasan, 1993). Infants are tender plants whose successful blooming depends on delicate cultivation. Infancy is the most important period of the life of a person. It is considered the formative years and the future life depends on it (Sharma, 1994).

Child-rearing is the most precious task and key to bring out sound body, mind and soul (Shalla, 1985). One of the most important aspect of child rearing is infant-feeding practices which include breast feeding and other feeding practices, partial or complete weaning, weaning from milk or other liquid food to semi-solid as well as soft solid food, use of commercial formula food as substitute of breast milk. These feeding phenomenon that place in the child's life is of paramount importance in it's early milestone of development (Shah, 1993).

Given the right start in life, every child has a high probability of realizing his or her own full growth potential. It has been known that manipulation of the quantity of diet given from birth to weaning can produce wide difference in growth rate and body fat. The appropriate infant feeding practices constitute the crucial determinant of the child survival and development and many of the mothers now acknowledge that breast feeding is what is needed to give babies a good start in life (Sharma, 1993).

Zaheer (1991) points out that the practice of breast feeding is almost universal in India. The value of breast milk has been immortalised in ancient Indian literature and its advantages are well documented. Breast feeding is not only the most natural but also the safest and healthiest way of feeding an infant. Today's world is realizing that there cannot be any substitute for mother's milk with its high nutritional values (Ahmed, 1992). Through standardised techniques, it has been estimated that the yield of breast milk that range from 450 to 650 ml. per day in the first six months of lactation is sufficient nourishment for a baby (Nair, 1993).

Recent contacts with urbanization and modernization in the pursuit of overall development has weakened this citadel of child rearing practices. Bottle feeding is quickly replacing the breast feeding owing to various reasons like working women, illiteracy, lactation failures, problems associated with breast and nipples (Sushma, 1993).

A single most important occasion identified for this unhealthy practice is the lack of confidence among these mothers who felt that there was not enough breast milk in them for proper and adequate growth of their babies (Ghosh, 1992). To make things worse, even the health care providers including the family physicians, obstetricians and child health specialists, knowingly or unknowingly give advice that tend to favour and support artificial milk formula feeding from early months of life. Such professional advices come in conflict with established practices and naturally confuse the mother further more (Srinivasan, 1993).

The International Declaration for the Protection, Promotion and Support of breast feeding was made in the World Summit for Children (1990) states that as a global goal for optimal maternal and child health and nutrition, all women should be enabled to

practice exclusive breast feeding and all infants should be fed exclusively on breast milk from birth to 4-6 months of age and extend breast feeding in the second year of life, not only to save money for the family but for nation (Grant, 1994). Unfortunately the duration of breast feeding is on the decline. Even poor infants in slums and urban, rural areas are becoming victims of bottle feeding (Anand, 1993).

While the advantage of breast feeding are not disputed the question is how long the infant can be supported by exclusive breast feeding and at what age to introduce complementary foods or to start weaning (Khan, 1991). The term 'to wean' means 'to accustom' and it described the process in which an infant changes from breast milk to a mixed diet, starting with small quantities of complementary foods given regularly in increasing amounts until replacement of milk is virtually complete. Weaning has many definitions changing feeding from breast to cup, from breast to bottle, from bottle to cup, from milk to solids. The definition most widely acceptable is the process of introducing any non-milk food into the infant diet irrespective of whether or not breast to bottle feeding continues (Mehta & Varsha, 1994).

The beginning of weaning is a time of great change for both mother and child. The very close relationship between them, which began in the womb and continued on after birth begins to weaken and this should be a gradual process (Dheer, 1988). Weaning starts at different times in different communities. In some, it does not start until well into the second six months of life and may extend over more than two years or exceptionally for upto four years. In Urban communities, on the other hand, weaning often starts much earlier (Arya, 1990). Semi-solid is recommended for babies at the age of six months since most mothers can produce enough breast milk only for the first four to six months of an infants life (Ghosh, 1992).

What foods to be supplemented is another controversial issue, mothers are often confused with. Many nutritionists advocate that cereals containing rice and barley rather than wheat are suitable first foods, to a semi solid consistency with breast milk, milk formula or boiled water. Mashed bananas and vegetables like carrots are easily digestible and nutritious. From sixth month onwards the baby gradually adopts the family feeding pattern.

Infant feeding practices differ from culture to culture and also among the different groups within the same culture (Bakhru, 1991). India with a vast diversity of culture boost of different tribes settle in for long areas of various state. A tribe is a collection of families or groups of family bearing a common name, members of which occupy the same territory, speak the same language and observe certain taboos regarding marriage, parenting profession or occupation and have developed a well assessed system of reciprocity, mutuality and obligation (Dalton, 1973). Tribals have contributed to the intricate multicoloured mosaic of Indian culture yet they are last among the beneficiaries and the progress. They are extremely backward economically as well as socially which is reflected by their poor living, condition, high rate of illness, diseases and mortality (Chattopadhyay, 1990). In transforming stage the different tribal communities preserve their customs and practices till now with varying nature (Sharma, 1992). Interesting practices are found among tribals (Bhatia, 1990).

Sikkim is the smallest and twenty second state of India with an area of 7096 Sq. kilometer and population of 4,06,457 (1991 census). The Government of India has recognised Lepchas as the most primitive and bonafide tribe of this large tract of mountainous land of Sikkim. Lepchas or

more properly Rongs, are the most extra-ordinary though little known Indian tribe. Confined mainly to Sikkim and Darjeeling Hills, Sociologically they are unique for they have eschewed aggression in their social mores (Chattopadhyay 1990).

The tribal population of Sikkim constitute 2236, (1991 census) out of which only 25 percent are Lepchas. With the passage of time there has been much intermingling among different tribes as well as other communities. Nepalties and Lepchas have taken up many rituals and ways of each other communities (Gorer, 1984). Sikkim has only half the population literate (56.94 percent), the literacy level among the Lepchas is negligible compared to other communities of the state as well as to the nation.

Child care in tribal areas is influenced by superstitions, beliefs, illiteracy and ignorance. It is therefore imperative that the feeding practices prevalent in the community be thoroughly surveyed so that proper action plan may be thought out for protecting the health and nutritional status of the young children from the very first of their lives. There are limited studies in the area of infant feeding practices in particular on tribals. The present study on infant feeding practices among tribals and non-tribals was undertaken with following objectives:

- To provide background information on breast and weaning practices in Sikkim, and

- To compare the infant feeding practices among Lepcha tribals and non-tribals in Sikkim.

Review of Literature

II. REVIEW OF LITERATURE

Infant feeding practices are strongly associated with the culture of the society. Rapid cultural changes due to industrialization and urbanization have largely modified such practices. The review of literature regarding the infant feeding practices among tribals and non-tribals in Sikkim is presented under the following headings:

- A. Trends in breast feeding
(Colostrum feeding, frequency, type and length of breast feeding)
- B. Advantages of breast feeding
- C. Weaning practices

A. Trends in breast feeding

The practice of breast feeding is almost universal in India. For most rural mothers this is a natural method of feeding because they see others around them doing the same. They do not even consider an alternative to breast feeding. India being a vast country with diverse traditions and cultures, the practice of breast feeding varies from region to region.

A collaborative study undertaken by WHO (1981) to enquire into contemporary patterns of breast-feeding in various strata of society in selected part of the world has shown that in India, breast feeding at birth was of the order of 96% in the urban upper and middle-income groups, 99% among urban poor and 100% in rural areas. The usual reason for not breast-feeding among the remaining minuscule group of women was lack of milk or mother's illness. With regard to continuation of breast-feeding, among the urban upper-income group it had declined to not more than 50% and 10%. Gopalan (1989) observes that in the urban slums of Calcutta there is a fast replacement of the breast by the bottle even before the infant has completed three months of age. The proportion of women resorting to bottle-feeding is much higher in Calcutta slums than in Bombay, inspite of the fact that in the former women initiate nursing much earlier than in the latter.

The study conducted by Joshi et al (1989) in the rural ICDS block Shankergarh, Allahabad District in UttarPradesh with 485 mothers having youngest child within three years of age revealed that the majority of mothers (52.5%) started breast feeding after 72 hours of delivery. Demand feeding was found to be a common practice in the community and the average duration of breast feeding was 13.7 months.

Kamat et al (1990), reported among lower socio-economic strata in Bombay breast feeding usually was initiated on second to third day and did not feed colostrum. Infants were fed water, glucose water or buffalo's or cow's milk. Breast feeding was done beyond two years of age. The same finding was reported by Nirmala et al (1991). Majority of mothers practised demand feeding.

Colostrum feeding practice in five villages of Dharwad Taluka of Karnataka revealed that majority of mothers (75 percent) did not feed colostrum to their new borns. The association between the colostrum feeding and maternal education was not found significant. Commencement of breast feeding was after third day of delivery (Hadimani et al 1990).

The practice of colostrum feeding and factors influencing the same were studied by Subbulakshmi et al (1990) among 2158 mothers belonging to low socio-economic group from urban slums and rural areas of Maharashtra and Gujarat. They observed that the discard of colostrum was very less among rural mothers though the percentage feeding colostrum was very poor.

Khan et al (1989) conducted a study in rural ICDS block Jawan in Aligarh to find out the breast feeding pattern among 12,000 mothers in eight villages. The families feeding colostrum to the new born were 32 percent as it was considered good for the babies (51%) and mothers were advised by parents, in laws to do so (27.8%). About 65.3 percent started breast feeding after 24 hours after delivery and two percent as late as the sixth day on the advice of their parents, in laws and dais. Nearly 89 percent mothers breast fed their children only upto six months of age and 38.5 percent continued it even after two years.

Puri et al (1992) conducted a study on breast feeding among tribals in an area near Udaipur, Rajasthan, covering 200 tribal mothers in the age group of 15-44 years. Tribal females were found to breast feed their children for atleast 1½ years to 2 years and the duration of breast feeding was highest for the first born. They observed that both socio-cultural practices and economic compulsions tend to promote and prolong breast feeding among the tribals.

Lenka et al (1992) found that among tribals of Orissa, breast feeding commenced only after 2½ days or 3 days after delivery and continued until the mother

is pregnant again. In a study conducted by Suman and Jaya (1986) among Irulas of Nilgiris, 24 percent of mothers had discarded the colostrum before putting the new born to the breast. Reasons stated by the mothers were that the first milk would be too strong and hence harmful to the child. The tribal mothers breast fed their neonates within six hour of delivery and 67 percent continued breast feeding for one or two years, while a study done by Shahida and Indira (1969) revealed that Irulas stopped breast feeding by the onset of next pregnancy.

In a study conducted by Shah et al (1993) with 350 mothers in Bombay, majority of mothers (88.6%) breast fed their infants upto three months after delivery and only 34.6 percent breast fed upto 12 months and very few infants were exclusively breast fed. The need to educate women on exclusive breast feeding is imperative.

A multicentric study of Nutrition Foundation of India (1993) on infant feeding practices in three metropolitan cities, namely, Calcutta, Bombay and Madras had shown that even at the end of first year more than 90 percent in Calcutta, 85 percent on Bombay; and 70 percent at Madras infants were receiving breast milk.

In a study conducted by Tamagond and Saroja (1992) in twin cities of Hubli and Dharwad with mothers in antinatal clinics/hospitals and nursing homes to see the effectiveness of educational programmes for promotion of colostrum feeding, they observed reduction in number of misinformation regarding colostrum feeding between the first and present deliveries in the case of experimental group and mothers who had received educational inputs showed positive colostrum feeding behaviour.

Chandrasekhar et al (1990) study of infant feeding practices among Irulas of Attapadi Hills and Lambas of Katchuvadi Hills revealed that about sixty percent of the mothers in Irulas and 36 percent of the Lambas gave colostrum to the infant. In both the communities the mothers believed that breast feeding should be continued till 10 to 12 months. The infants were fed four times a day till the eight month.

Study conducted by Bhardwaj et al (1991) with 212 pregnant women in their last trimester, in Jawan block of Aligarh district in Uttar Pradesh, the pregnant women were given advice regarding breast feeding and benefits of colostrum feeding. Their finding after the

counselling showed that as many as 91.5 percent of the mothers breast fed their infants. It was observed that none of the infants received breast milk on the day of the birth. Karla et al (1982) in rural area of Agra also found that 97.2 percent of infant did not receive breast milk on the day of the birth and the same has been reported from Varnasi by Katiyar et al (1981).

In a same study mentioned above majority of women breast fed their infants only after two or three days of birth. Only 11.8 percent of the mothers gave colostrums following counselling. The mothers who did not feed colostrum inspite of constant motivation to do so were 88 percent. The commonest reason for not giving colostrum as cited by the mothers was religious beliefs that dropping milk on earth would ensure a continuous flow of milk otherwise milk would dry up. Other reasons were that it was thick (12.8%), dirty (11.8%) and its removal would make sucking easy for the baby (11.8%).

Glory and Vasantha (1990) reported a study with 50 employed mothers from each low, middle and high income levels, where in 20 percent from high income group started breast feeding immediately after the birth of the child, 60 and 32 percent from high and middle

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income group respectively had started breast feeding around 3-6 hours after birth. The number of low income group mothers (74%) who, breast fed on the second day was striking. Perhaps they were unaware of the advantages of breast feeding immediately after the birth of the child.

Anantharishna (1984) conducted a comparative study in ICDS and non-ICDS area adjacent to Kilpauk Medical College, Madras and found that more than 90 percent of mothers in both ICDS and Non-ICDS did breast feeding upto one year. Only 28.8 percent mothers in ICDS block regarded colostrum as harmful and 64 percent breast fed their babies within six hours whereas in non-ICDS areas, 58.4 percent mothers regarded colostrum as harmful and 48.8 percent offered breast feeding within six hours. One of the major findings of this study related to the significant role played by grandmothers in advising lactating women regarding infant feeding practices.

A study conducted in Vijayawada, Andhra Pradesh by Vijayasree and Vani (1992) revealed that mothers who were illiterates (62%) and from low income group (61%) breast fed beyond one year while college educated and middle and high income group discontinued breast feeding before the infant was one year old showing a negative correlation between family income, mothers education and breast feeding behaviour.

DANIDA Project (1983) conducted a study in seven districts of Madhya Pradesh and reported only 51.5 percent considered colostrum very important. Others cited various reasons for not feeding the colostrum such as dirty (25.9%); harmful (23%); baby will become ill (13%); causes pain in abdomen (3.4%). One third of the respondents did not give any reasons for discarding it.

An analysis by Pushparani and Jaya (1991) of the problems of 95 women workers in Textile mills in Coimbatore brought to light that 82 percent and 95 percent of the employed women in nuclear and joint families respectively were unable to nurse their children even from third months onwards due to rigid timings of employment. Provision has to be made for employed women to continue breast feeding in their work spot or at home, Swaminathan 1984.

Mahapatra and Baag (1982) studied customs and beliefs on neonatal care in a tribal community. Early breast feeding (83.4%), acceptance of colostrum (100%) were the beneficial practices observed in the community. In case of lactation failure, they preferred wet nurse and cow's milk (100%); goat milk (47.5%); buffalo's milk (73.5%) but tinned milk by none and top milk fed under unhygienic conditions.

A study conducted by Mane and Bantey (1989) in tribal children (6 months - 3 years) residing in Amravati city, Maharashtra found that a great majority of mothers breast fed their new borns on 2nd and 3rd day of delivery. To avoid colostrum on first day, all the mothers fed their babies with jaggery water. Infants received 5-9 breast feeds during the day. All mothers breast fed during night and upto 18 months of age. Cow's and Buffalo's milk and tea were given as a liquid supplement at the age of 10-12 months.

Eshwaran and Goswami (1989) did a study on nutritive value of selected 15 unconventional plant food consumed by khasis of Meghalaya and found that all mothers breast fed their infants upto three months exclusively and the complete cessation of breast feeding on an average was by the age of one and half years in the rural household against one year in the urban households. Yagathi (1987) study in tribal community at Andhra Pradesh found that breast feeding was started immediately after delivery and continued generally till the next pregnancy. No supplementary milk was given during this period.

Concepts of infant feeding among 200 under graduates were examined by Hemalatha and Jaya (1993). Significant differences were seen in the scores for concept of infant feeding between Home Science and non-home science groups the latter scoring very low,

reflecting the positive impact of Home science Education. Hence there is need to include in curriculum at all levels of education some priority issues in parenting to orient future parents.

Eshnarian (1986) in his study of the foods that tribals eat, found that most of the tribal do not discard colostrum while in Sarguja district of Madhya Pradesh, Bhil and Onges mothers started breast feeding the child two days after birth. Each tribal community tends to follow specific practices of their culture.

Report of NIPCCD (1990) on breast feeding and weaning practices in India revealed a strong resistance to giving colostrum. In certain parts of India colostrum is routinely discarded and lactations is usually not initiated until the third day. Introduction of prelacteal feeds seems to be the commonest practice particularly feeding honey, jaggery, glucose water to tide children over the period of starvation until lactation begin. This practice suggest that exclusive breast feeding is not common in India.

Pandey and Tiwary (1993) found that in 170 households of tribes of Hill Korwas in Madhya Pradesh, majority of the babies were breast fed about an hour

after birth and colostrum was not discarded and the mothers breast fed as long as two to four years and if there was no sufficient breast milk, infant was given goat's milk.

Kusuma (1988) took 100 Sugalis children of 0-3 years and 100 mothers in Andhra Pradesh for her study. The study revealed that Sugali mother feed the baby honey and sugar water immediately after the child's birth which they believed can help the child to resist hunger. The baby continued on breast till the mother gives birth to another baby. The frequency of feeding the child decrease with the increase in age. The child was never denied breast milk even if either of them is ill. The mother fed her baby publicly without any kind of privacy. This healthy practice should be encouraged.

Madhumathi (1993) recorded in her study of 50 tribal mothers in Prakasham district of Andhra Pradesh that very few mothers (10%) had adequate knowledge regarding breast milk secretion and child's growth and development. Only 18 percent of mothers fed their infants with colostrum within an hour after delivery. Thirty three percent of mothers had child to breast after one day of delivery and 66 percent after two days.

Caster oil (58%), honey (16%) and glucose water (8%) were used as prelacteal feeds. Majority of the mothers felt colostrum is not true milk, was thick and children may become mentally retarded if they feed colostrum. Such adverse attitudes need to be changed.

Armstrong (1991) states that the practice of prolonged breast feeding in India is very common ranging from two to three years surprisingly leading to malnutrition, usually not because of breast milk but due to the failure to give other foods in addition. Nandan et al (1991) conducted a comparative study on breast feeding practices among rural 1249 mothers and 2050 urban mothers of infants and toddlers in Agra. In rural areas 91.8 percent of the babies were first put to breast of mothers on third day while 61.8 percent urban mothers started breast feeding on third day. Majority of the mothers breast fed their children 5 to 6 times a day and 2 to 3 times at the night. Urban mothers breast fed more than rural mothers, feeding on demand was the most common practice among rural mothers while schedule feeding was noted among urban mothers.

Salpathy et al (1993) study on knowledge and attitudes of breast feeding among the Anganwadi workers of Sundergarh district of Orissa showed that the average knowledge of Anganwadi worker on breast feeding was

good, very good in aspect of benefits of breast milk to mothers and child and good in initiation of breast feeding. But there was a scope to develop the knowledge on the aspect of continuation and concern for breast feeding failure among Anganwadi workers.

Benakappa et al (1989) did a study in remote rural area of Karnataka with 274 lactating mothers. They found that majority of the mothers (97.09) percent in rural areas breast fed, 58.4 percent rejected colostrum but knew the advantages of breast feeding. Limitation of breast feeding within 4-6 hours was noted only in 8.03 percent of mothers whereas 53 percent of mothers started sugar water and castor oil as prelacteal feeding respectively. Eighty percent of mothers fed their infants till 12 months. Grandmothers (21.9%) and auxillary nurse individuals (21.9%) were the chief influencers of breast feeding.

As a global goal or optimal maternal and child health and nutrition, all mothers should be enabled to practice exclusive breast feeding and all infants should be fed exclusively on breast milk from birth to four-six months of age (World summit for Children, 1990). According to the latest joint WHO/UNICEF (1989) statement mothers should be helped to intiate breast feeding within half an hour of child birth.

Breast feeding has still been retained in the Indian family scene, practices of feeding varying however from region to region. Data collected from all over country indicate that nearly all mothers breast fed their babies on birth; above 90 percent continues breast feeding till the child attains six months of age; and above 80 percent till the child is one year old. Lactation upto two to three years is not uncommon especially in villages (Nair, 1993).

Practices regarding early breast feeding, colostrum feeding needs to be given due importance and the rural community should be educated regarding the advantages of breast feeding. The traditional healthy practices like early offer of breast milk, colostrum feeding should be strengthen and reinforced.

B. Advantages of Breast feeding

Many epidemiological studies have shown beneficial effects of breast feeding, both with respect to nutritional status and infections. Exclusively breast fed infants have fewer and less serious episodes of diarrhoea than those fed other milk or infant formulas. A study conducted in some poor parts of Lima,

Peru has shown that the incidence and prevalence of diarrhoea in children under the age of six months were definitely lower among the breast fed than among formula fed infants who were given no breast milk (WHO, 1993).

The same result has been observed by 21 studies done in eight countries by Fricker in collaboration with WHO (1993). They further observed that the prevalence of diarrhoeal morbidity and mortality in infants receiving no breast milk can be reduced by 40 percent in 0 to 2 months old by 30 percent in 3-5 months, and by 10 percent in those aged 6 months to 1 year if breast feeding is encouraged by educating mothers.

Studies on growth of infants have shown that breast milk alone can sustain a positive rate of growth till four to five months (Devadas, 1983). The breast fed infants of the well fed mothers recorded highest mean height, weight, chest and mid arm circumference measurements during the 3rd, 6th, 9th and 12th months. Until the first six months, the trend of growth breast fed infants of the low income group was close to that of the high income counterparts, thereafter they fell apart from both the breast fed and non-breast fed infants of the well fed mothers in the high income group showing a definite impact of breast feeding (Devadas

and Vijayalakshmi, 1980). Assessment of nutritional status of breast fed and artificially fed infants by Eswaran and Dharmarajan (1987) in Coimbatore revealed that the mean body measurements of breast fed infants surpassed the artificially fed infants in all body measurements.

Cowen's (1983) studies show that in a village of Punjab, 84 percent of 765 full term infants who were breast fed for atleast six months achieved satisfactory weight gains on exclusive breast feeding. The decline in breast feeding has been associated with an increase in infant morbidity and mortality, especially among the more disadvantaged communities, WHO estimate that more than a million children's lives could be saved every year if all mothers gave their babies nothing but breast milk for the first four to six months of life (WHO 1993).

Bhandhari et al (1983) in their study of morbidity, mortality and growth in breast and top fed infants in Udaipur observed low morbidity, mortality and high weight gain among breast than top fed babies. This was because of higher incidence of infection in the latter group.

A recent scientific study from 'Matlab' Bangladesh has convincingly shown that the breast feeding offers a high level of protection against bacterial dysentery throughout the first three years of life, especially in malnourished children (Ahmed et al 1992). Breast feeding is an important strategy in the control of diarrhoeal disorders in children. Bhardwaj et al (1991) states that the importance of breast feeding lies both in its positive impact on child's health and survival and in its inhibiting effect on ovulation and therefore on fertility. WHO(1988) states that the studies have confirmed the benefit of early breast feeding in reducing weight loss, raising blood glucose level, lowering unconjugated bilirubin in the serums, reducing dehydration and leading to a more rapid return to birth weight.

World Alliance for Breast feeding Action (WABA), UNICEF and WHO (1993) listed the following advantages of breast feeding even where family can afford sufficient formula and have clean water to prepare it:

- reduce infant hospitalization during the first year from 8 percent to 2 percent and to protect babies from illness until age two.

- reduce the risk of Sudden Infant Death Syndrome (SIDS) currently the second leading cause of death in some developed countries.

- raise intelligence quotient (IQ) by 8.3 points even though, premature babies in the study were fed breastmilk through nasal tubes.

- reduce infant ear infection (Otitis media) by half among babies who are exclusively breast fed for the first four months.

- reduce upper and lower respiratory infections and diarrhoea.

- improve post-partum maternal recovery.

- reduce infant allergies and wheezing.

- prevent vaccine failure.

- save families on the cost of formula.

Children breast fed for atleast four months tend to have over all reduced rates of a childhood cancers and they are less likely to show symptoms of asthma and skin allergies. Some studies show that the development of the brain and consequently the IQ might be higher in breast fed children compared to bottle fed infants of the same socio-economic status; it also leads to unparalleled psycho-social bonding between a mother and her baby (Sriniviasan,1993).

Venkat (1990) states that human milk is in a form fitted to the human baby's digestive system just as goat's milk is fitted to goat babies and cow's milk to calves. It is easier for a baby to digest humanmilk and therefore more energy is conserved for the baby's brain and body to develop. The components in human milk cannot be duplicated in a laboratory. Psychological testing have confirmed that breast fed babies suffer much less from mental traumas and are generally well-adjusted , healthy and happy children.

While nursing, the child continues to hear the rhythm of the mother's breathing and heartbeat as it did in the womb, this induces a closeness and security

bonding. Khan (1988) also points out that this psychological attachment with the mother works as a source of emotional security. Moreover, Freud considers the nature of oral gratification that the infant receives while sucking breast on the first stage of life to be crucial for later emotional development (Jaya, 1993).

This emotional bonding is not only beneficial for the infant but the response by infant frequently has a reciprocal effect on the mother who has her nurturing role reinforced (Smith et al, 1987). The well documented studies on lactation carried out in different parts of world, including India suggest that the quality and composition of breast milk produced by poor undernourished mothers compares favourably with that of well nourished mothers (Rao, 1983). The same has been reported by Armstrong (1991). He states that the breast milk never becomes weak or bad the number of months of lactation, the age of the mother and even undernutrition in the mother do not significantly affect the quality of breast milk.

Recent trends and differentials in breast feeding practices have been shown to have a major impact on fertility. It is considered as a natural birth spacer.

(Dayal, 1982; Sablan, 1985). Studies of Buchanan (1975) and Gross and Eastman (1985) have reported that breast feeding reduces the probability of ovulation by increasing the postpartum amenorrhoeal period and thereby resulting in a wider gap between the two consecutive pregnancies. Despite the erosion of breast feeding practices in deveoping countries, it is known to provide protection against conception to about 3.4 million urban couples, while in rural areas, this number is estimated to be about ten times higher (McNeily et al 1980 and Chakravarty, 1982) Short (1976) reports that more births are prevented by lactation than by all other forms of contraception put together.

Recent study conducted in tribal females of Udaipur city in Rajasthan by Puri (1992) indicates that the tribal females were found to experience at least one and a half years of lactational amenorrhoea. As in many traditional societies, these tribals also breast fed their infants for longer period of time which helped in lengthening the infertile period among them and breast feeding played a major role as an effective natural contraceptive for these women who shy away from most of the modern contraceptive techniques. A study of Yanadi tribal women in Andhra Pradesh revealed that

the period of breast feeding has a negative association with fertility. The Yanadi tribal women with 12 months duration of breast feeding had the fertility of 4.8 live births and those who practised breast feeding for 37 months and above had a significantly lower fertility of 3.4 mean live births. Thus, it is evident that fertility declined as the period of breast feeding progressively increased (Gurumurthy, 1987).

Further more, there was a positive correlation between the frequency of breast feeding per day and length of amenorrhoeal period. Mothers who breast fed their infants four times a day, experienced an amenorrhoeal period of 11.6 months; while those who breast fed their infants 8.1 to 10 times a day has an amenorrhoeal period extending upto 14.5 months. This finding has been corroborated by several research workers (Buchaman, 1975; McNeilly, 1980; Knodel et al 1985; Wood et al 1985).

Now there are two more reasons for breast feeding, Nath (1993) confirms that scientists have discovered that mother's milk contains an antibiotic which kills food poisoning bugs called lacto felicine and some sort of tranquillizer. No wonder babies look content after feeding.

Indian Medical Associations study (1991) done on over 10,000 infants shows some of the disturbing facts about infant feeding practices:

- 33 percent infants received bottle feeds during 1st month of life.
- Only 20 percent babies were exclusively breast fed during first four months.
- 66 percent infants were on bottle-feds by six months of age.
- 75 percent infants started breast feeding 6 hours after birth.
- 25 percent infants did not receive solid food even at one year of age.

The studies reviewed in this chapter bring forth the many-sided miracles of breast feeding. Breast feeding has its socio-economic, psychological, biological and immunological advantages as proved by

research studies. It is an ideal, safe and complete food for infants and being available at a suitable temperature, it helps promote normal dental and facial development. Biologically, it leads to earlier uterine involution, thereby restoring the size of the extended uterus. Further, it is known to enhance the child's immunity, and saves the additional cost of milk and fuel.

C. Weaning practices

Weaning practices adopted differ widely over the various parts of the country. In a study conducted among 100 mothers in Vijayawada, Andhra Pradesh, Vijayasree and Vani (1992) found that majority of mothers (88%) started supplementary foods by sixth month after performing certain religious ceremonies and 12 percent did when the infant was between 7-12 months. Reasons given by the mothers included infant's aversion to foods (47%), lack of knowledge (29%) and problems of digestion and absorption (24%).

College educated (76%) and high income group mothers (57%) started weaning, with fruit juices gradually introducing other foods and relied mainly on

readymade foods while illiterate and school educated and low and middle income group mothers started weaning with cereal foods and preferred home made preparations. Rice and pulses were common supplements among all mothers. Most of the mothers irrespective of their educational level avoided giving fish, eggs, meal and roots and tubers to infants as they were considered to cause digestion problems. Majority of low and middle income mothers fed their infants with adult foods. Kusuma (1988) found that in her study that Sugalis mothers that they used soft rice, gruel and pulses as a major supplementary food after the age of one. An important finding was that by the age of one year almost all the children had tasted rice beer along breast milk. Eighty percent of the children were completely weaned between the age of 2 and 2½ years. They never used baby special containers for feeding and washed it only after feeding using mud or ash.

Narayanan and Gujral (1977) found in the high income group, there was a tendency to supplement early. Farex was widely used by the mothers to feed infants at the age of 3-4 months, while the low income group mothers started giving solid food late in small

quantities. This was probably due to their ignorance and low purchasing power. Armstrong (1991) comments that delayed supplementation, which is found in parts of India represents a serious problem with weaning.

Bhardwaj et al (1991) observed in their study of 212 pregnant women in Jawan block of Aligarh, Uttar Pradesh that only among high caste Brahmins and Thakurs weaning of infant was religiously performed after 4-6 months. Backward caste and scheduled caste women gave the same family food after the eruption of the first four teeth.

Onges tribal of Andaman Island supplemented infant diet at one month with fleshy portion of fish and non fibrous cooked tubers. Infants were given adult food from eighth month onwards. Lakshadweep islanders supplemented with arrowroot pudding, cow's milk, rice gruel, tender coconut kernel (Eshwariah, 1986). In Manne, tribe of Adilabad district of Andhra Pradesh, soft rice and ambli (thin jowar gruel) were introduced, in the child's diet between the age of eight months to one year (Yagathi, 1987).

Study done by Chandrasekhar et al (1990), among Irulas and Lambas of Attapadi Hills and Katchuvadi Hills respectively revealed that mothers were not aware of the availability of artificial infant food formulae and common supplements given were cow's milk, biscuits and routine family diets were started during four to six months. Only home made weaning foods were given in both the tribal communities. Either paladai or bottles were used to feed the liquid supplements.

A study conducted by Joshi et al (1989) in the rural ICDS block, Allahabad revealed that supplementary feeding was generally started by seventh month and common foods introduced were fruits, vegetables, juice, dal, dalia and rice mainly developed from family diet.

The first complementary food in the form of porridges, made of local food staples should be given between 4-6 months. An inadequate diet results in deterioration of the nutritional status and consequently increase the severity, duration and possibly the incidence of infectious diseases. Insufficient nutritious food as in the case of watery porridges or bread soaked in herb tea is fed frequently to children in certain disadvantaged settings (WHO, 1993).

Gopalan in his paper "Childhood malnutrition in South East Asia: concepts and strategies for control" presented in eighth Nutricia Symposium, 1990 states that in low income communities with poor hygienic conditions, the theoretical benefits of early supplementation is offset by the inevitable onset of diarrhoea episodes. Under such circumstances, the infant receiving early supplementation may arrive at their sixth month in a worse state of health and nutrition than the infants not receiving such early supplementation, the advantage in such cases may well lie in delaying the introduction of supplementary foods until the infant is six months old. However, the supplementary foods cannot be delayed beyond 6 months and most nutritionists agree.

A study conducted by Benakappa et al (1989) in rural area of Karnataka found that 20 percent mothers started supplementary foods like ragi, gangi, diluted cow's milk at the age of three months. Forty percent of infants received weaning foods at the age of six months, the supplementary foods being ragi or rice gangi, mashed rice, biscuits and soft roti soaked in milk.

Bal and Singh (1982) in 400 rural families of Himachal Pradesh found that supplementary foods were given after three months. Among the tribals diluted buffalo or cow's milk was given to most of the children since undiluted milk was considered a heavy food. The common local supplementary foods given to children were laphi and lugra both considered nutritious by mothers. Tea was the main ancillary beverage given as early as first month.

A comparative study of feeding practices among urban, rural and urban slum dwellers in Varanasi district revealed that rice with dal, mashed potatoes and green vegetables, egg, suji, sago, rice with curd were frequently used as supplementary foods in urban group. Nineteen percent of their children were given solid and semi solid before sixth month, 55 percent between 7-12 months and adult diet was introduced after 24 months. Where as in rural and urban slum dwellers semi solids and solids were introduced much later and adult food was introduced by 12-18 months. In all the three groups meat, brinjal, jack fruit and root and tubers were avoided as they were considered to cause liver disorder. Majority of children (66.7 percent) in urban group were weaned before sixth month (Kaliyar et al, 1981).

A survey of infants and preschool children in Jammu by Dharam et al (1977) revealed that 42.4 percent of Urban and 15.9 percent of rural infants were receiving supplements even before the age of three months, 62.5 percent of urban and 42.4 percent of rural children were given supplementary food between three and five months. A high percentage of urban children were introduced to solid foods at an earlier age than rural children. The type of solids used determined the age of the infants.

In one of the study conducted by Jaiswal et al (1981) in Aligarh, it was found that literate mothers introduced solid and semi solids at an earlier age than illiterate mothers and used proper feeding bottles and the correct dilution of milk while it was vice versa with the illiterate mothers. Gopaldas et al (1983) observed that tribals had more appropriate feeding practices than non tribals, one of the commendable practice being the feeding of khichree, made of maize, bengal gram, seasonal greens and yellow pumpkin.

Women who had less than graduate education weaned by 4-6 months. On the other hand women who had graduate education and above, weaned by 3.9 months in Hyderabad

as reported by Thimayamma et al (1980). Another study done in Hyderabad among working women showed that 62 percent weaned their infants completely by sixth month. Working women in general were found to be anxious to wean as early as possible (Vijayadurgamba and Geervani, 1974). These two studies imply that there is a negative correlation between the mother's education and time of weaning and between working status of mother and time of weaning. Similar results have been found by Walia et al (1974), in Chandigarh.

The supplementary foods, introduced between 6-11 months by Tamil mothers of different income levels settled in Hyderabad showed that milk, fruits juice, rice and dhal, curds and commercial infant foods were the items introduced. There was no significant difference in the selection of weaning foods among different income levels (Mythili et al, 1980).

A report on the profile on tribal families in East Godavari district, Andhra Pradesh revealed that majority of children (40 percent) were breast fed upto 2 years without any supplementary food and 25 percent upto three years. As long as the child was breast fed hardly any supplementary food was given (Pushpamma et al 1983).

Geetha and Devadas (1986) observed that among 1246 infants aged 0-6 years in Coimbatore, no special weaning foods were prepared. Diluted milk formula feeding was practiced for 50 percent of the children, while 12 percent of the children received ready made foods and the family food was given to 38 percent. One of the significant finding was that only for two percent of children breast feeding was continued beyond two and a half year.

Except a small percentage of infants, none received supplements before the age of three months as reported by NNMB study of 538 rural children in different parts of India. Eighty six percent received supplements by one and half a year and 22 percent received between three and six months and another 25 percent during the subsequent months (6 - 9 months) of life. More than half (56.4 percent) of the children studied had supplementary food by the time they were a year old.

Ananthakrishna (1984) have found that 69.6 percent of ICDS mothers and 76.8 percent of non ICDS mothers gave cereal products as a supplementary food and only 30.4 percent of ICDS and 23.2 percent of non ICDS mothers gave milk products. They gave more importance to giving

cereal products than milk products to infants. The utensils used for feeding were bottle (50% ICDS and 37.6% Non ICDS), tumbler and spoon (22% ICDS and 25.6% Non ICDS) and Paladai (26.8% ICDS and 5.2% Non ICDS). Surprisingly, more ICDS mothers (12.4 percent) used ash for cleaning the utensil and only 2.8 percent in Non-ICDS used the same.

In a study conducted in urban and rural ICDS block in Andhra Pradesh by Bai et al (1979) they found that only 0.6 percent infants in urban and no children in rural area were given solids before three months of age. Many infants in rural areas were fed exclusively on cereals. About 25 percent were getting pulses, 10 percent an egg occasionally and 5 percent meat once a month. In urban population, more than 90 percent infant received pulses. The percentage of children received egg and mutton was nearly identical among rural and urban group except that the frequency of consumption was more in urban area. Boat-shaped, brandy bottles, gripe water bottles and even ink bottles were used by the mothers for feeding children. In rural area, a proper feedings bottle was used only by 10 percent mothers as compared to 20 percent in the urban areas. About 10 percent

mothers and 21 percent urban mothers boiled the bottle once or twice a day, the rest merely washed it with hot or cold water.

Studies conducted on the growth of breastfed children are somewhat contradictory as some suggest the need for complementary as some suggest the food only from the sixth month, where as some others suggest their introduction as early as the third month (UNESCO, 1983).

Attitudes and knowledge can be influenced strongly by culture, socio-economic status and education. Any practice is likely to change with changes in attitude and knowledge and weaning practices is no exception. With the passage of time, mothers and caregivers have adopted different weaning methods as evident from above cited studies.

Methodology

III. METHODOLOGY

The present study of infant feeding practices among tribals and non-tribals women in Sikkim involved the following steps:

- A. Selection of the area
- B. Selection of the sample
- C. Selection of the tool
- D. Collection of the data
- E. Analysis of data

A. Selection of the area

Small but beautiful Sikkim is situated in the Eastern Himalayas. Spread below the Mount Khangchenzonga the third highest mountain in the world and revered by the Sikkimese as their protective diety. A perfect symbol of the confluence of the past and present is Gangtok - the capital of Sikkim. Gangtok is unique in that it has a happy blend of tradition and modernity; of Lepchas , Bhuties and Nepalis who live in harmony.

Assam Lingzey, a rural constitutency, (Figure 1) 19 kilometre from the main town of Gangtok was choosen for conducting the study for the following advantageous reasons:

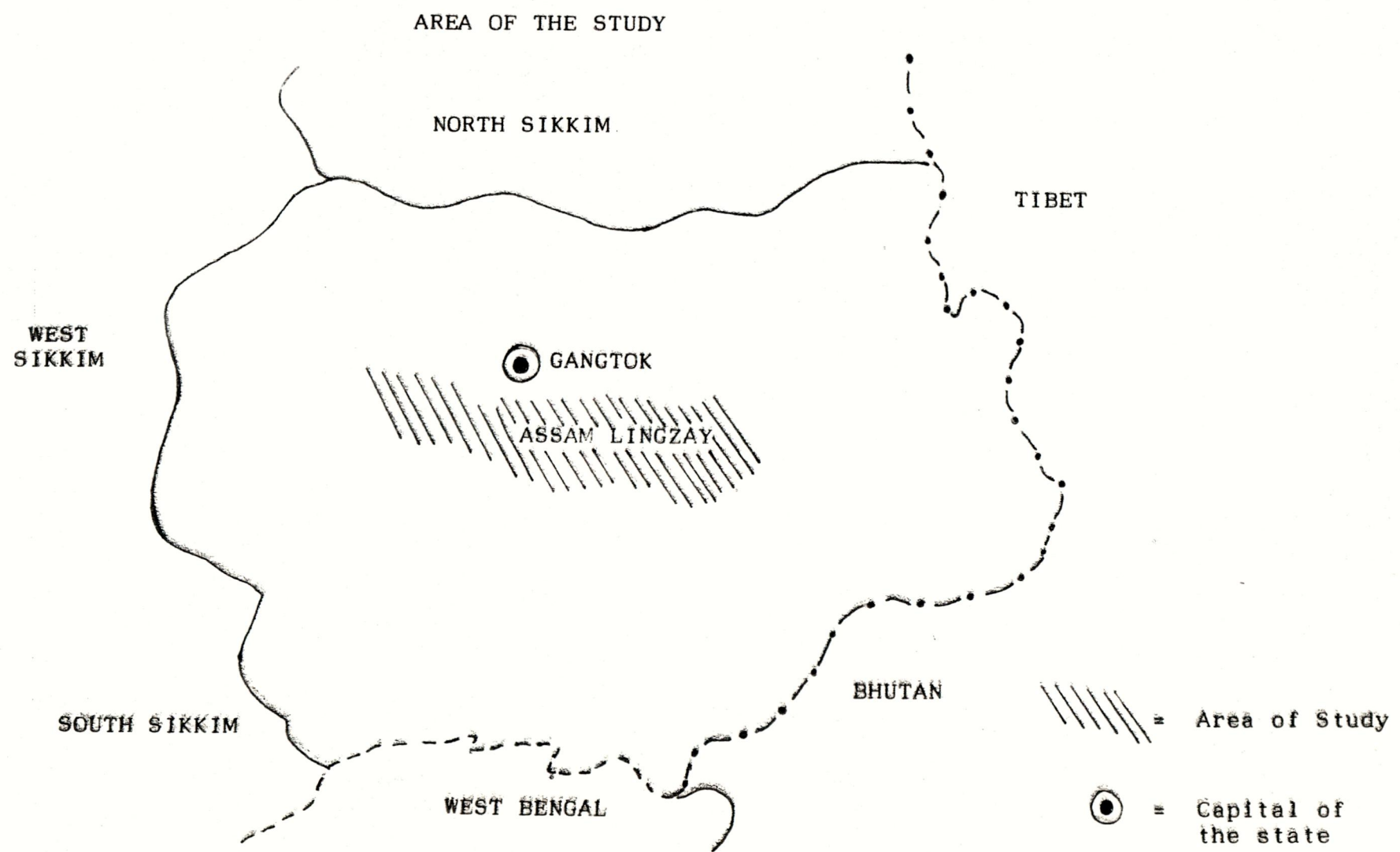


FIGURE 1

- Covers both tribal and non-tribal blocks
- easy accessibility
- represents social economic and cultural aspect of the state
- availability of ample number of Lepcha and non-tribal household within close proximity.

B. Selection of the sample

Selecting a sample for the purpose of investigation requires a great deal of minute details. Rossi et al (1983) defined sample as a subset of a larger population. Wilkinson and Bhandarkar (1984) suggested that sample should be small enough to avoid unnecessary expense and large enough to avoid sample error.

Judgement or purposive sampling is a method of sampling in which the investigator includes those samples which she thinks are most typical with regard to the characteristics under investigation to save time. Fifty Lepcha tribal and fifty non-tribal mothers having youngest child below two years of age were chosen for this study.

C. Selection of the tool

Interview schedule is the most widely used method of collecting data because of its many advantages. In an interview schedule, bias is very limited, interviewer can change and present the questions keeping in mind the informants reactions and to probe for further details, enhancing the reliability of the data (Gupta, 1991).

Rath (1991) feels interview provide data with precision, focus, reliability and validity. Interview is a face to face contact with the person from whom the information is to be obtained (Kothari, 1990). Hence an interview schedule was formulated for this study.

The Interview schedule formulated (Appendix I) consisted of questions regarding family background which pertains to income, education, occupation, type of family, religion and whether they are land owners or landless. The second part of interview schedule was focused on breast feeding practices which included first offer of breast milk, colostrum and prelacteal feeding, pattern and length of breast feeding and top feeding practices. The third part consisted of introductions of supplementary food, time

of weaning, foods avoided and problems faced regarding the same. Many open ended questions were included to allow respondents to answer freely.

D. Collection of the data

After selecting the samples, adequate rapport was established with the mothers and the investigator interviewed mothers personally using the interview schedule. The investigator being from the same tribe and place knew the language and hence had no problems while collecting data. The mothers were very co-operative in providing information.

E. Analysis of data

Kothari (1990) advises that the data thus collected need to be processed and analysed in accordance with the outline laid down for the purpose at the time of research plan. In this study 't' value (Appendix II) was calculated to find the significant difference between the tribals and non tribals regarding first offer of breast milk, length of breast feeding, frequency of demand and schedule feeding

and the time of introduction of weaning food. Correlation coefficient value was calculated to find out the relationship of mothers education, family income and first offer of breast milk, length of breast feeding and time of introduction of supplementary feeding.

Results and Discussion

IV. RESULTS AND DISCUSSION

The results of the comparative study of infant feeding practices among tribals and non-tribals in Sikkim are presented and discussed under the following headings.

A. Background information of the respondents

B. Breast feeding practices

C. Weaning practices

A. Background information of the respondents

The background information of the respondents in terms of income level, education of mothers, occupation, type of family and marital status are shown in Table I.

TABLE I
BACKGROUND INFORMATION OF THE RESPONDENTS

Sl. No.	Items	Description	Tribal N	Tribal %	Non Tribal N	Non Tribal %	Total percentage N=100
1.	Income level *	Low	40	80	42	84	82
		Middle	10	20	7	14	17
		High	0	0	1	2	1
2.	Education	Illiterate	29	58	28	56	57
		Primary	15	30	14	28	29
		Middle	3	6	2	4	5
		S.S.L.C.	2	4	4	8	6
		Plus two	1	2	2	4	3
3.	Occupation	Government Servant	5	10	5	10	10
		Agricultural Labourer	45	90	45	90	90
4.	Type of family	Nuclear	46	92	48	96	94
		Joint	4	8	2	4	6
5.	Marital status	Married	48	96	47	94	95
		Widow	2	4	3	6	5

* HUDCO Classification (1993)

Table I clearly shows that 82 per cent of the sample belonged to low income group and 90 per cent of respondents were agricultural labourers and only ten per cent were engaged in government services. Totally 57 per cent of the selected sample were illiterates of which the Lepcha tribal and non-tribal illiterates were 58 and 56 per cent respectively. None in both the groups had graduated. Obviously there was no big difference between the groups at other levels of education.

B. Breast feeding practices

Mother's milk has been the main stay of the infants diet from the beginning of life on earth. Hence, protecting, promoting and supporting breast feeding should be the foremost aim of all communities. Apparently, mothers of Sikkim were positive about breast feeding their new borns as observed by the investigator. All the Lepcha and non-Lepcha mothers surveyed had followed this healthy practice. Presented below are the breast feeding practices of selected Lepcha tribal and non-tribal groups.

1. First offer of breast milk

The percentage distribution of mothers according to the first offer of breast milk after delivery is shown in Table II and Figure 2.

TABLE II
FIRST OFFER OF BREAST MILK

Hours after delivery	Tribal N	Tribal %	Non Tribal N	Non Tribal %	Total Percentage	't' value
Within 1 hour	24	48	18	36	42	
1-6 hours	18	36	22	44	40	.5150 NS
6-12 hours	8	16	10	20	18	

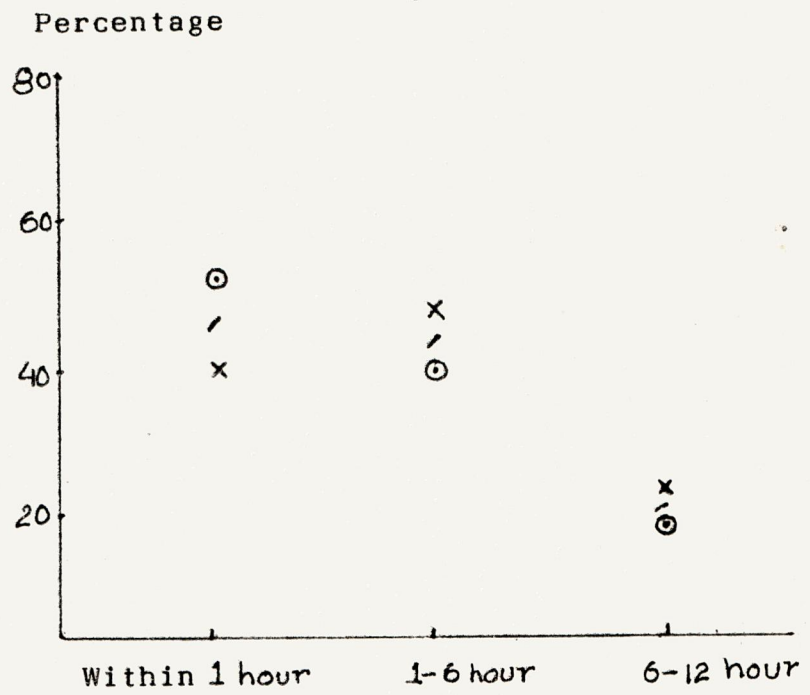
NS - Not Significant

Table II reveals that on the whole, 42 per cent of mothers had breast fed their babies within one hour of delivery. This was mainly because of home delivery and 'rooming in' of baby along with mother. In contrast, eighty

per cent of tribal mothers in Orissa breast fed only after two or three days (Lenka et al 1992). Lepcha tribal mothers offered breast milk earlier than the non-tribal women however no significant difference was observed between the two groups.

Forty per cent of both Lepcha tribal and non-tribal mothers had breast fed their new borns within one and half hour to six hours after delivery and eighteen per cent put the baby to breast within 6 - 12 hours after delivery. Sixty seven per cent of Irula mothers of Nilgiris and fifty per cent tribal mothers of Hill korwas in Madhya Pradesh breast fed their babies within 6 - 12 hours after delivery (Suman and Jaya 1986, Pandey and Tiwary 1993).

FIRST OFFER OF BREAST MILK



⊙ = Tribal
x = Non-tribal
/ = Combined

FIGURE 2

2. Prelacteal feeds offered

Table III and Figure 3 show the prelacteal feeds offered by the mothers to the newborns.

TABLE III
PRELACTEAL FEEDS OFFERED

Item	Tribal N=50		Non-tribal N=46		Total Percentage N=96
	N	%	N	%	
Honey	1	2	14	30.43	15.62
Sweetened water	8	16	32	69.56	41.66
Raw butter	41	82	0	0	42.70

While raw butter was exclusively used by a majority of Lepcha mothers as a prelacteal food, sweetened water was used by a majority of the non-tribal mothers. Honey was the second most used product by the non-tribal mothers, the reason being to tide over hunger until lactation begins. Raw butter was the special feature of prelacteal feed practice exclusively found in Lepcha tribals in Sikkim as they considered it holy. Kusuma (1988) reported that honey and sugar water were given immediately after birth among Sugalis in Andhra Pradesh. These findings reflect that

PRELACTEAL FEEDS OFFERED

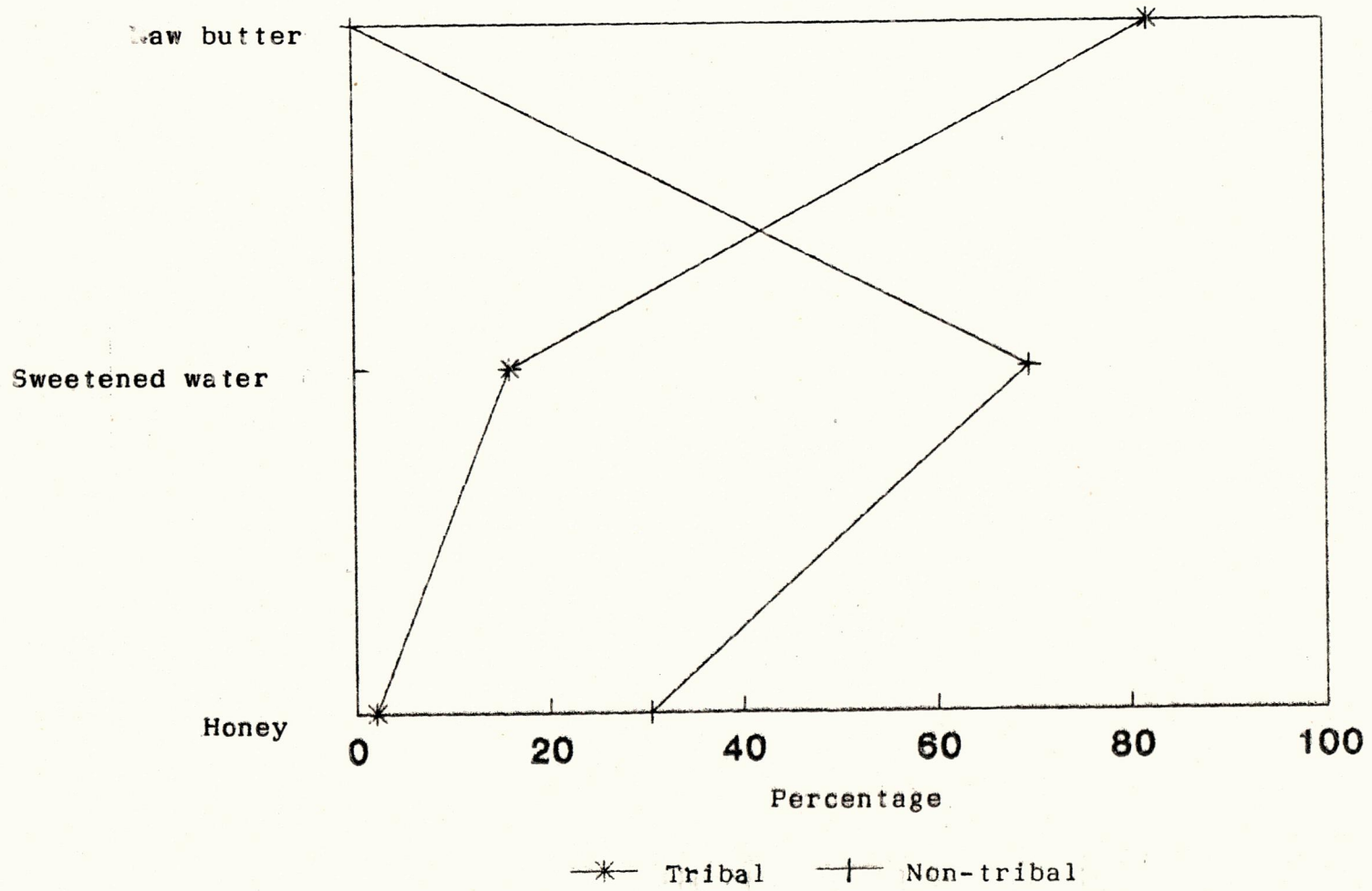


Figure 3

each tribe follows certain practices characterizing their culture.

3. Colostrum feeding

The colostrum feeding practice and the reason for not giving as cited by the mothers is presented in Table IV.

TABLE IV
COLOSTRUM FEEDING PRACTICE

Group	Whether fed colostrum Number said		Reason for not giving Number said		
	Given	Not Given	Tradition	Engroement	Dirty
Tribal N=50	50	-	-	-	-
Non-tribal N=50	40	10	5	2	3

It is encouraging to note that none of the Lepcha tribal mothers discarded colostrum but fed their new borns, although they did not know the advantages of it. Only ten non-tribal mothers did not give colostrum for cultural

reasons (50%), engorgement (20%) and as they considered it dirty (30%). Such beliefs should be averted through effective education programmes at the grass root level. Pandey and Tiwary (1993) observed that the tribals of Hill Korwas, Madhya Pradesh also did not discard the colostrum while Madhumathi (1993) reported that among tribals of Prakasham district of Andhra Pradesh, all the mothers discarded colostrum. This is an area that needs greater focus in all the tribal areas.

4. Pattern of breast feeding

The pattern of breast feeding practised by the selected mothers is indicated in Table V and Figure 4.

TABLE V
PATTERN OF BREAST FEEDING

Pattern	Tribal N=50		Non-tribal N=50		Total Percentage
	N	%	N	%	
Demand	35	70	26	52	61
Schedule	15	30	24	48	39

Demand feeding connotes the child being given breast milk everytime he demanded. This was adhered to by 70 and 52 per cent of Lepcha and non-tribal mothers respectively. Mothers believed that child cries whenever she is hungry and hence fed them everytime the baby cried. Another reason facilitating this practice was their working area being adjacent to their home. Seventy per cent of the tribal mothers could practice demand feeding without any problems. It has also been observed to be very common in tribal community of Sugali's in Andhra Pradesh (Kusuma, 1983) and in Shankergarh, Allahabad, Uttar Pradesh (Joshi et al 1989). On the whole 39 per cent of mothers surveyed had adopted schedule feeding where as 15 were Lepchas and 24 were non-tribals. These mothers included those serving government services and complained that due to their job schedule, they had to adhere to schedule feeding. Many of the mothers reported that demand feeding initiated bad habits in infants. They stated that the babies learnt to demand everything by their cries and became stubborn to receive whatever they liked.

PATTERN OF BREAST FEEDING

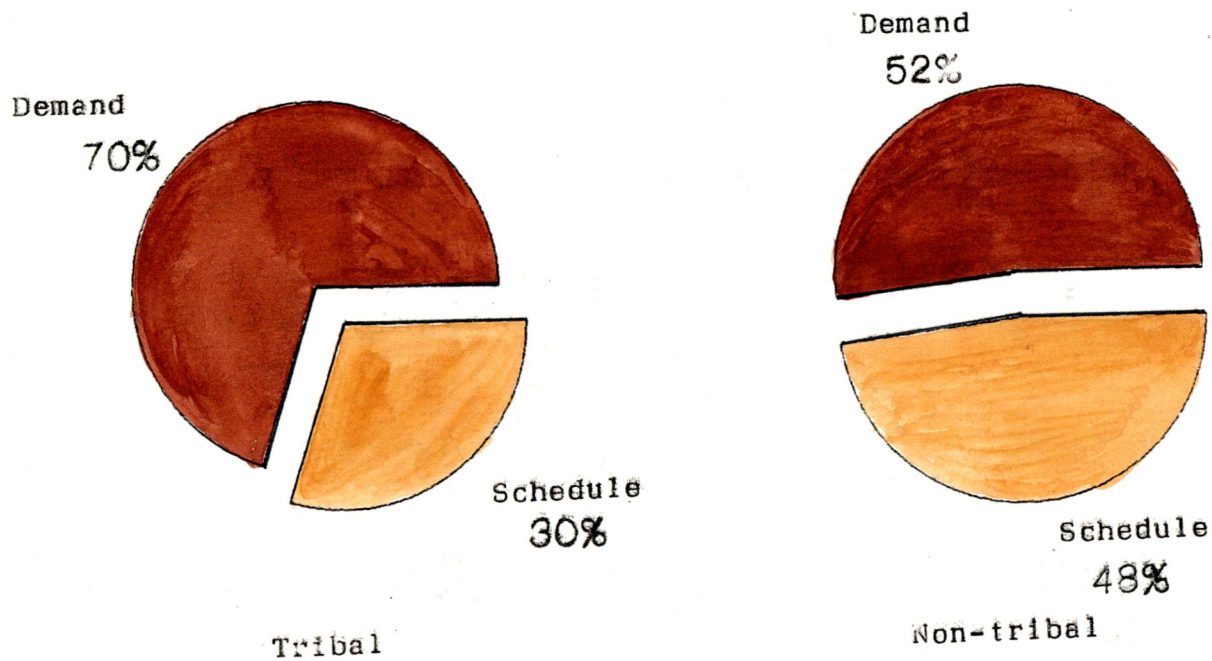


Figure 4.

5. Frequency of demand and schedule feeding

The frequency of the demand and schedule feeding among mothers is shown in Table VI.

TABLE VI
FREQUENCY OF DEMAND AND SCHEDULE FEEDING

Pattern	Frequency per day	Tribals N=35		Non-tribals N=26		Total Percentage N=61		't' value
		N	%	N	%	N	%	
Demand	3-4 times	5	14.2	11	42.3	16	26.2	2.3292*
	5-6 times	14	40	8	30.7	22	36	
	7-8 times	11	31.4	6	23	17	27.8	
	9-10 times	5	14.2	1	3.8	6	9.8	
Schedule		N=15		N=24		N=39		1.336 NS
	2-3 times	6	40	15	62.5	21	53.84	
	4-5 times	6	40	6	25	12	30.76	
	6-7 times	3	20	3	12.5	6	15.38	

* - Significant

NS- Not significant

Table VI shows that majority of Lepcha mothers (40%) who adopted demand feeding fed their children 5-6 times per day, while majority of non-tribal mothers (42.3%) fed 3-4 times a day which signified that tribal children were more frequently breast fed than non-tribals. The reasons facilitating this frequent demand feeding were mother's belief that child cries when she/he is hungry and working place being nearer to their house. Significant difference was observed in the frequency of demand feeding between the two groups.

Mothers who practised schedule feeding fed at regular intervals. Forty per cent of tribal mothers and 62.5 per cent of non-tribals fed only 2-3 times per day because of job timings, working area being far off and convenience. They complained of lack of time due to household work. Mothers should be supported and encouraged to breast feed in their working areas. Creches in all the places wherever there are more than 50 women working should be established with legal support.

6. Exclusive breast feeding practice

Table VII highlights the number of mothers who had the practice of exclusive breast feeding.

TABLE VII
EXCLUSIVE BREAST FEEDING

Group	Whether exclusively breast fed				Reasons for not adopting Tradition Breast milk alone is not enough			
	Yes		No		Tradition		Breast milk alone is not enough	
	N	%	N	%	N	%	N	%
Tribal N = 50	0	0	50	100	50	100	50	100
Non-tribal N = 50	4	8	46	92	46	92	46	92

None of the Lepcha mothers practised exclusive breast feeding as all of them felt that breast milk alone is not enough for the baby and also the tradition of offering prelacteal feeds immediately after birth. Exclusive breast feeding message does not seem to have reached this group. The report of NIPCCD (1990) reflects the same situation. On the contrary, Eshwaran and Goswami (1989) observed that among Khasis tribes of Meghalaya all children were exclusively breast fed for three months. Ninety per cent non-tribals mother who did not practice exclusive breast feeding cited the similar reasons as that of Lepcha mothers. Four mothers who breast fed exclusively for three to four months did not know the advantages of it but practised it due to economic compulsion. This finding implies that the mother's confidence need to be enhanced on their capacity to increase breast milk and to feed the babies.

7. Length of breast feeding

Table VIII and Figure 5 reveals the length of breast feeding amongst women in Lepcha tribe and non-tribals in Sikkim.

TABLE VIII
LENGTH OF BREAST FEEDING

Length of breast feeding	Tribal N=50		Non-tribal N=50		Total Percentage	't' value
	N	%	N	%		
0 - 12 months	0	0	18	36	18	*
12-24 months	31	62	24	48	55	-4.2481
24 months onwards	19	38	8	16	27	

* - Significant

It is encouraging to know that all the Lepcha mothers continued breast feeding beyond one year after delivery, while 36 per cent of non-tribal mothers stopped breast feeding after one year. Thirty eight per cent of Lepcha and 16 per cent of non-tribal mothers breast fed beyond two years. These mothers felt that one should breast feed as long as possible. The mean length of

LENGTH OF BREAST FEEDING

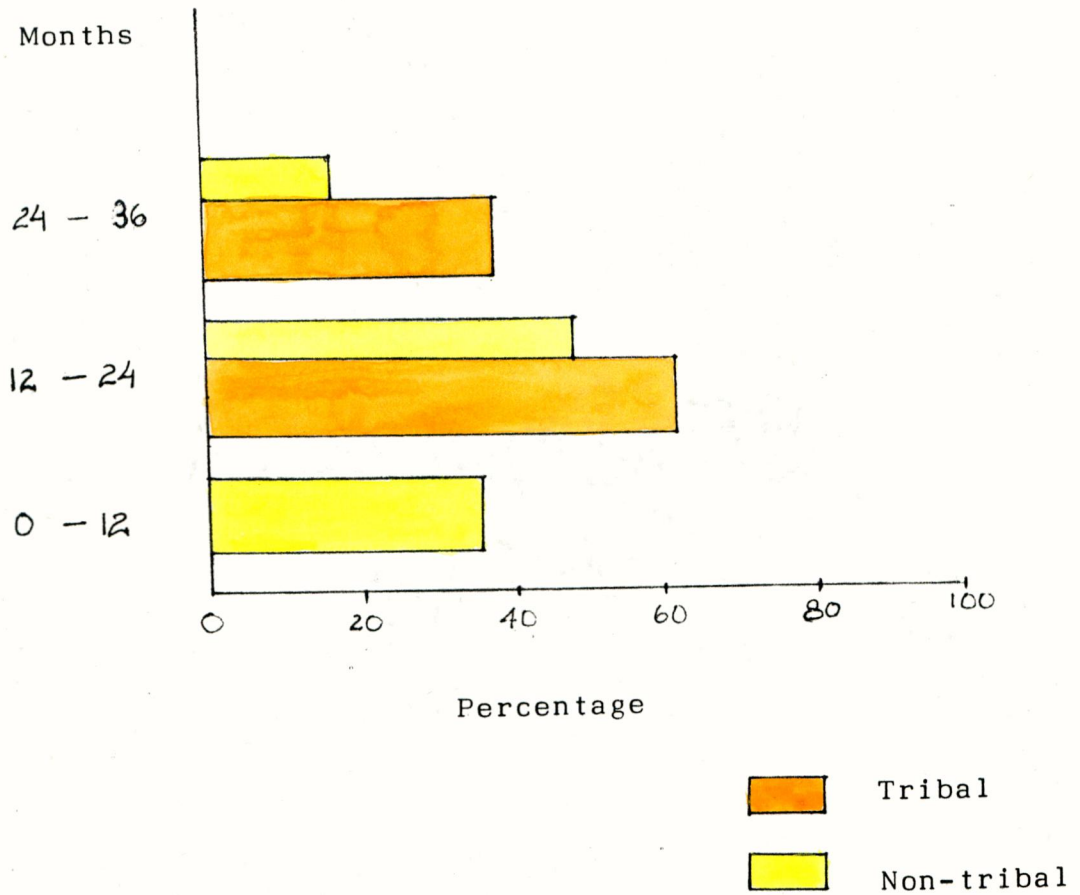


Figure 5

breast feeding for tribals was 18 months and it was 13 months for non-tribals. Lepchas breast fed for a longer duration of period than non-Lepchas. Comparatively, there is difference of six months in the mean length of breast feeding between the groups. Significant difference was observed in terms of length of breast feeding between mothers of Lepcha and non-tribals.

8. Precautions taken prior to breast feeding

Table IX highlight the precautions taken prior to breast feeding by tribal and non-tribal mothers.

TABLE IX
PRECAUTIONS TAKEN PRIOR TO BREAST FEEDING

Sl. No.	Precautions	Tribal		Non-tribal		Total Percentage
		N	%	N	%	
1.	Sponge and wash the breast and nipples	1	2	1	2	2
2.	Squeeze out the first 2/3 drops of breast milk	5	10	0	0	5
3.	Smear mothers saliva around the nipple	6	12	2	4	8
4.	Take care that nobody is around	18	36	21	42	39
5.	Nothing special done	29	58	29	58	58

Majority of the mothers did not do anything special prior to breast feeding, while 86 per cent of Lepcha mothers and 12 per cent of non-tribals took care to see that nobody was around while breast feeding. The mothers believed open breast feeding cause indigestion to the baby due to evil eyes cast. Such superstitions should be averted through appropriate educational inputs. This finding is in contrast to Kusuma's (1988) study of Sugali tribe where mother fed her baby publicly without any kind of privacy.

Twelve per cent of tribal and four per cent of non-tribal mothers smear saliva around the nipple and ten per cent of Lepcha mother believed that squeezing the first two or three drops of breast milk will prevent evil eyes. This was mainly practised after coming from markets and neighbourhood. Just two mothers sponged or washed the breast and nipple with soft cotton wet cloth prior to breast feeding which implies this is an area of educational inputs.

Like in Sugali's community, infant was never denied breast milk even if the infant or mother or both were ill.

This healthy practice prevalent in both tribal and non-tribal community was due to economic reasons as they did not know the anti-infective properties of breast milk.

9. Special foods consumed by lactating mothers

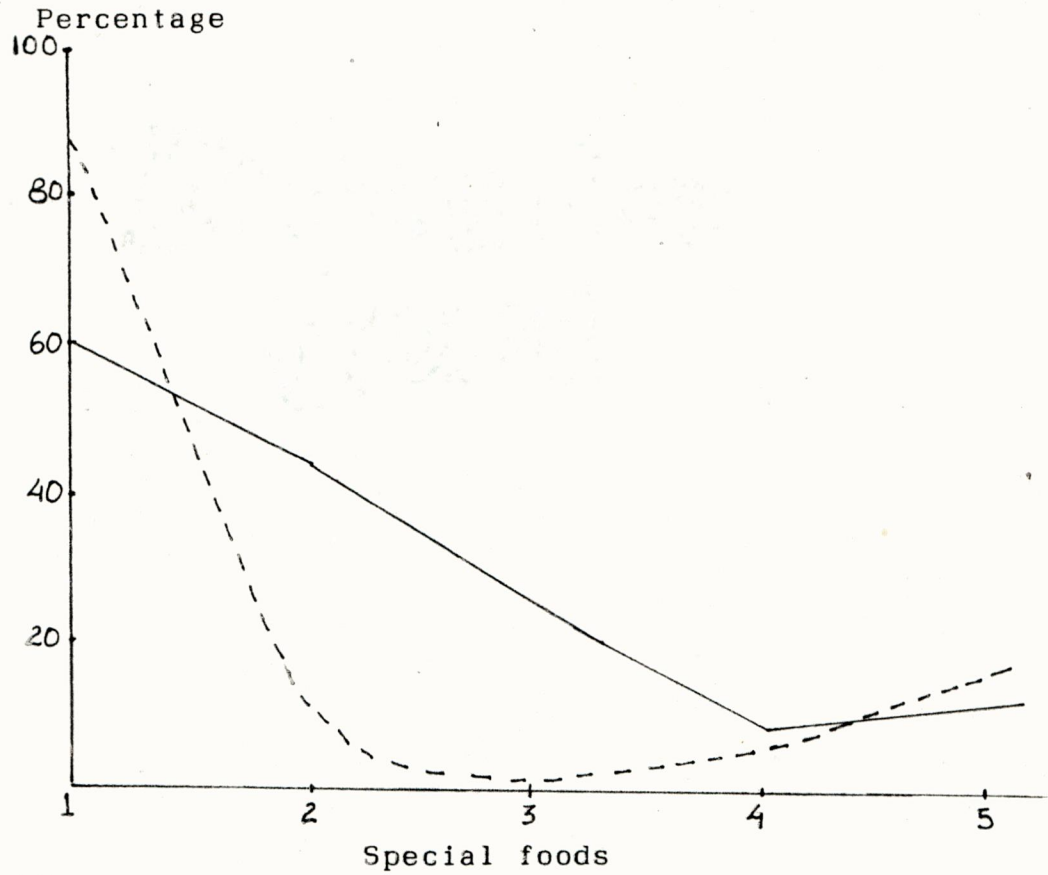
Special foods taken by mothers to increase breast milk is given in Table X and Figure 6.

TABLE X
SPECIAL FOODS TAKEN BY THE MOTHERS TO INCREASE
BREAST MILK

Sl. No.	Foods taken	Tribal N=50		Non-tribal N=50		Total Percentage	*
		N	%	N	%		
1.	Tea	29	58	44	88	73	
2.	Fermented millets	21	42	3	6	24	
3.	Soup	11	22	0	0	11	
4.	Green leafy vegetables	5	10	1	2	6	
5.	Nothing special	7	14	8	16	15	

* Multiple responses

**SPECIAL FOODS TAKEN BY MOTHERS
TO INCREASE BREAST MILK**



1 = Tea

2 = Fermented millets

3 = Soup

4 = Green leavy vegetables

5 = Nothing special

———— = Tribal

----- = Non-tribal

Figure 6

Each culture believes in milk producing substances to ensure an abundant milk supply or to overcome milk insufficiency. In this study fifty eight per cent of Lepcha mothers and 88 per cent of non-tribal mothers took sugar tea (usually people in rural area in Sikkim take tea with salt) which they believed will enhance the milk supply. Fermented millets or 'chi' (commonly referred by Sikkimese) was one of the significant traditional foods taken by 42 per cent of Lepcha and six per cent of non-tribals, which they believed not only would enhance the flow of breast milk but also will restore the strength of mothers. Beef and chicken soup made out of tail bones and adult roosters respectively were used by 22 per cent of Lepcha mothers while non-tribals did not consume any non vegetarian foods. This findings coincides with that of Zhi-Chien Ho's (1978), who reported that mothers in South China took soups of tail bones of beef and adult roosters to promote lactation.

10. Source of information on breast feeding

Table XI gives source of information on breast feeding as mentioned by the selected mothers.

TABLE XI
SOURCES OF INFORMATION ON BREAST FEEDING

Source of information	Tribal N=21		Non-tribal N=16	
	N	%	N	%
Mothers	12	57	10	62.5
Mothers-in-law	9	43	6	37.5
Primary Health Centres	4	19	9	56
Radio	12	57	16	100
Television	2	9.5	1	6
<u>Messages received</u>				
To breast feed as long as possible	17	81	10	62.5
Convenience	2	9.5	3	19
Not to breast feed everytime the child cries	1	5	2	12.5
Not to breast feed in front of people and outside	1	5	1	6

Out of hundred mothers surveyed, only 37 per cent (42% Lepchas and 32% non-tribals) received information on breast feeding from various sources while a majority of them (63%) did not receive any information on breast feeding. This was because they did not seek any information as mothers felt they knew everything and took breast feeding for granted.

Although majority of mothers surveyed were from nuclear family, mothers and mother-in-laws played an important role, as a major sources of information in both groups. This was because they resided near paternal or maternal home. Comparatively less number of tribals received information from radio and primary health centres than non-tribal mothers. This finding calls for strengthening the infrastructure in the area.

11. Advantages of breast feeding

Advantages of breast feeding as cited by selected Lepcha and non-tribal mothers are in Table XII and Figure 7.

TABLE XII
ADVANTAGE OF BREAST FEEDING

Advantages	Tribal N=50		Non-tribal N=50		Total Percentage *
	N	%	N	%	
Convenience	40	80	43	86	83
Nutritious	29	58	9	18	38
Economical	22	44	34	68	36
Psychological satisfaction	2	4	7	14	9

* Multiple response

Majority of both Lepcha mothers and non-tribal mothers cited convenience as the major advantage of breast feeding. Although all the mothers were ignorant about the scientific advantages of breast feeding, 58 per cent Lepcha and 18 per cent of non-tribal mothers felt that it is good for growing babies. Forty four per cent of tribals and 68 per cent of non tribals regarded breast feeding economical. Less than 15 per cent of mothers said

ADVANTAGES OF BREAST FEEDING

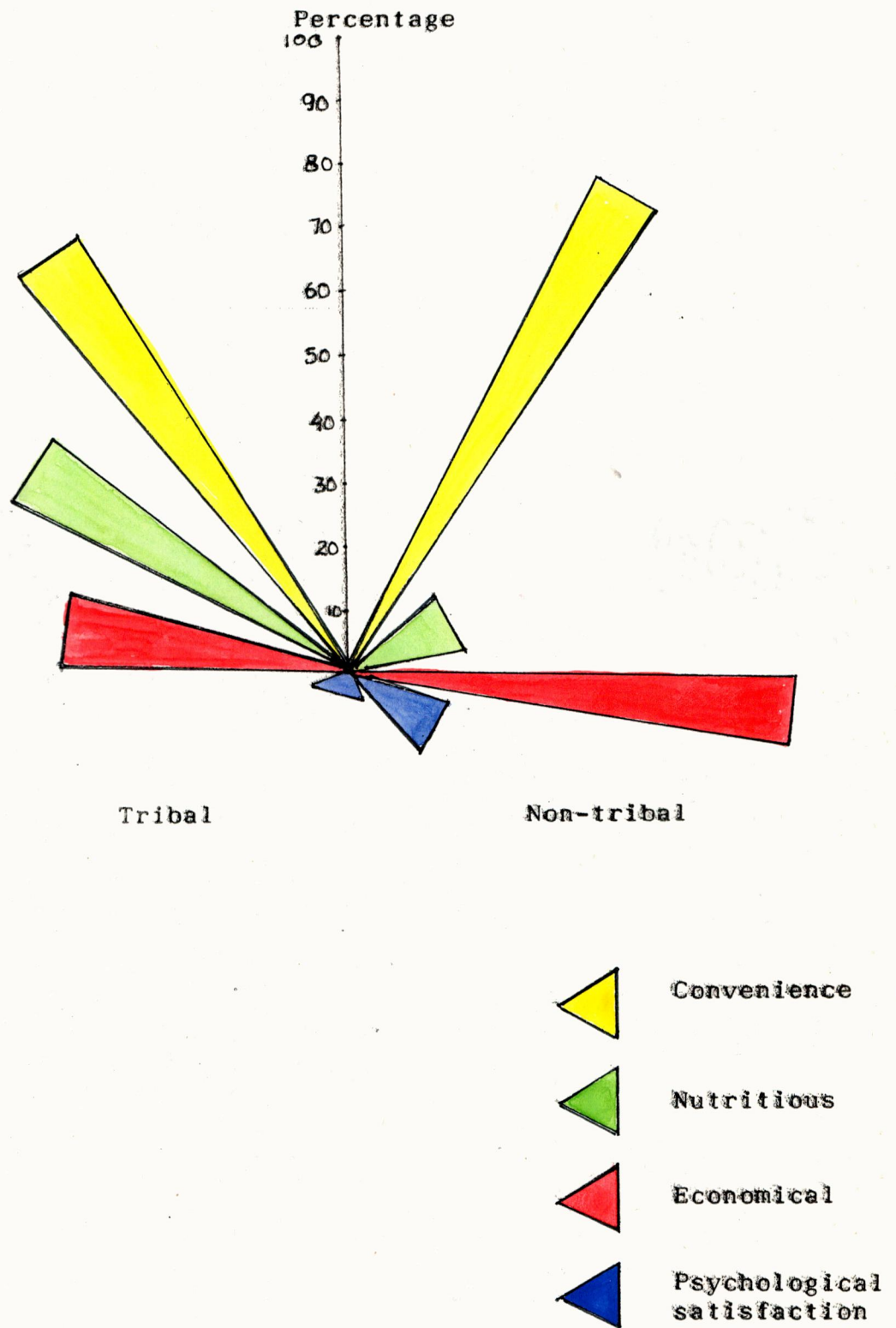


FIGURE 7

that breast feeding provides psychological satisfaction to them but none of the mothers were aware of emotional security breast feeding provides to the babies. Advocacy programme on advantages of breast feeding in tribal areas need to be planned and executed.

12. Problems faced by mothers during breast feeding.

The problems encountered by the selected mothers while breast feeding is depicted in Table XIII.

TABLE XIII
PROBLEMS FACED BY MOTHERS DURING BREAST FEEDING

	Faced problems						Problems faced			
	Yes		No		Sore nipple		Putting baby to breast		Baby did not suck	
	N	%	N	%	N	%	N	%	N	%
Tribal	5	10	45	90	2	40	2	40	1	20
Non-tribal	3	6	47	94	2	66.66	0	0	1	33.33
Total	8		92		4		2		2	

Encouragingly majority of both Lepcha (90%) and non-tribal mothers (94%) did not face any problems while breast feeding. Less than ten per cent of the selected sample faced problems like sore nipple, putting baby to breast and baby's inability to suck. In spite of these problems, mothers breast fed their infants. The health workers and personnel associated with welfare programmes must focus on educating these tribal women on preventing problems related to breast feeding.

13. Top feeding practices

Table XIV reveals top feeding practices of selected Lepcha and non Lepcha mothers.

TABLE XIV
TOP FEEDING PRACTICES

Sl. No.	Item	Details	Tribal		Non-tribal	
			N	%	N	%
1.	Whether top fed	Yes	25	50	24	48
		No	25	50	26	52
2.	Milk used	Cow's milk	18	72	13	54
		Powdered milk	7	28	11	46
3.	Cleaning feeding bottles	Soap with hot water	5	20	2	8
		Ash	11	44	7	29
		Only water	9	36	15	62
4.	Frequency of cleaning	Before and after feed	5	20	3	12.5
		After every feed	20	80	21	87

Despite the fact that mothers in Sikkim were eager to breast feed their babies, 50 per cent of Lepchas and 48 per cent of non-tribal mothers opted for top feeding owing to household tasks and government jobs, insufficient breast milk and baby's refusal to suck. Ghosh (1992) says truth is that in most cases these women do not lack milk but they lack confidence that their milk alone is sufficient for the baby.

Bottles used for the top feeding were either made of glass or plastic. Mothers were of the opinion that feeding with cup and spoon might choke the baby. Cleanliness of feeding bottles was not proper. Washing before feeding was regarded as a waste of time. There was gross lack of knowledge about the appropriate method and agents used for cleaning feeding bottles. Majority of mothers opted ash for cleaning bottles as it was easily available and believed that it would kill germs. Kusuma (1988) reported that Sugali mothers also used ash and mud to wash feeding utensils and washed only after feeding. There is a need for comprehensive educational programme to revolutionize the unhealthy practices particularly in tribal areas of the state.

C. Weaning Practices

Weaning starts at different times in different communities and is likely to change with changes in attitude and knowledge. It is a crucial time in a child's life marked by gradual shift from breast feeding to the adult diet. The following tables describe weaning practices of selected Lepcha and non-tribal groups in Sikkim.

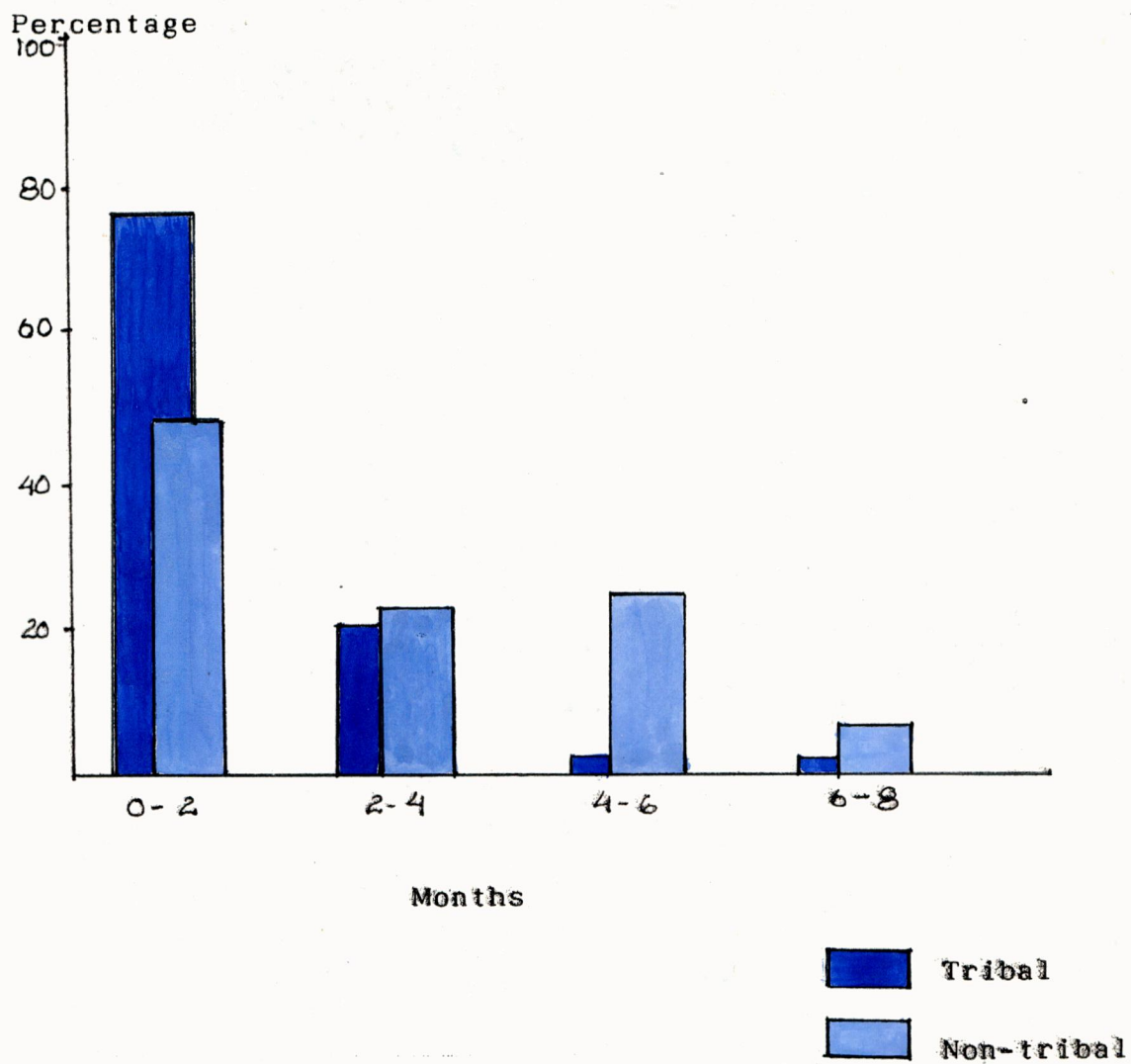
1. Supplementary food

Introduction of supplementary foods at different period by the selected Lepcha and non-tribal mothers is depicted in Table XV and Figure 8.

TABLE XV
INTRODUCTION OF SUPPLEMENTARY FOOD

Age in months	Tribal N = 50		Non tribal N=50		Total Percentage	't' value
	N	%	N	%		
0 - 2	38	76	24	48	62	
2 - 4	10	20	11	22	21	4.2088*
4 - 6	1	2	12	24	13	
6 - 8	1	2	3	6	4	
Supplementary foods given						
Lito	17	34	43	86	60	
Champa	24	48	0	0	24	
Rice porridge	7	14	3	6	10	
Commercial food	2	4	4	8	6	

* Significant

TIME OF INTRODUCTION OF SUPPLEMENTARY FOOD**FIGURE 8**

SUPPLEMENTARY FOODS

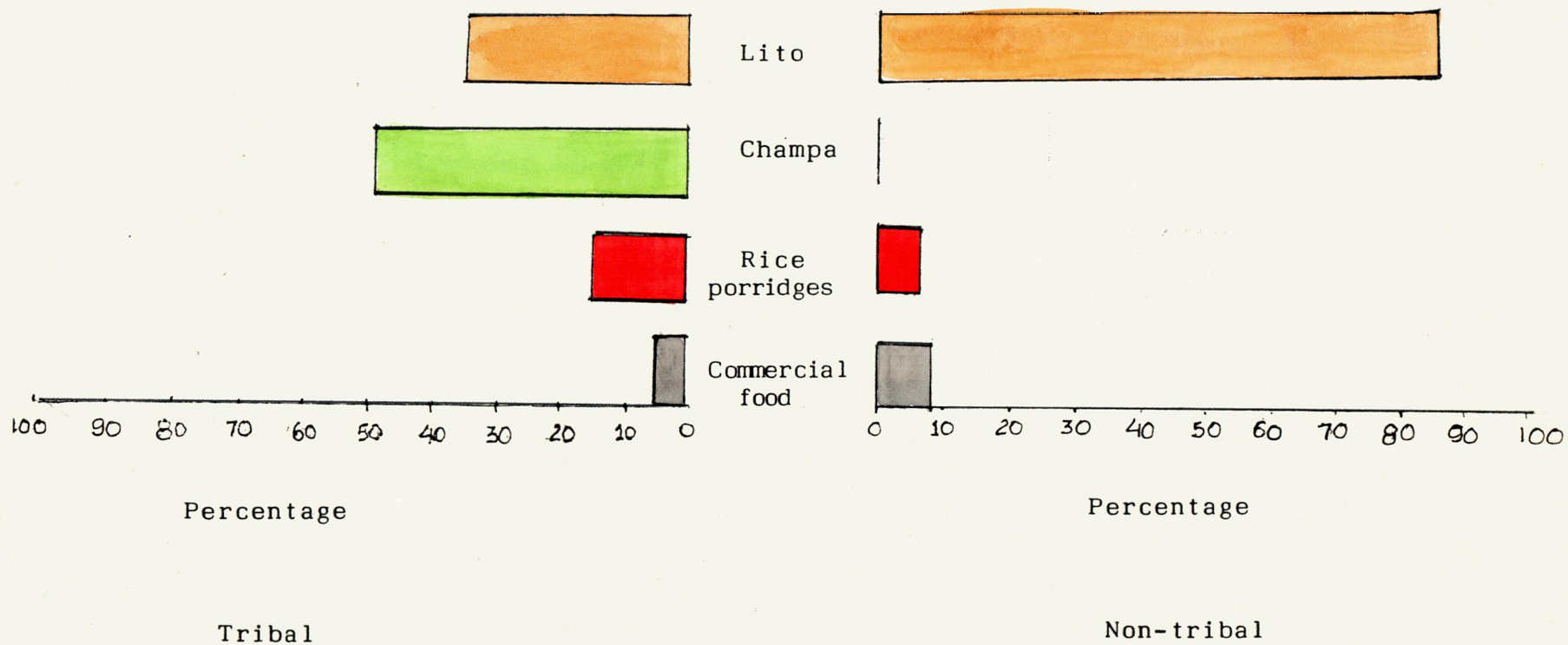


FIGURE 8

All Lepcha mothers introduced semi solids prior to six months of infants age as they opined that breast milk alone will not be sufficient to meet all their nutritional needs. Gujral and Rajbhandari (1981) reported that Nepalese mothers made certain to introduce supplementary food before six months of age.

A majority of non-tribal (86%) mothers introduced lito (roasted rice powder given with milk) against lesser number of Lepcha mothers (34%) while non-tribals did not give champaa (roasted wheat or maize powder given with butter and milk) to their infants, it was used by 48 per cent of tribal mothers. All the infants in the community were taking adult diet with little modification by the time they were one year old. Mothers in Sikkim did not know about the low cost infant supplements. They reasoned that they had never heard and thought of it. This implies that this is a thrust area to be covered through nutrition education programme. Less than ten per cent mothers opted for commercial foods because they could not afford to buy it. Significant difference was observed in the time of introduction of supplementary food between the Lepchas and non-tribal mothers where non-tribal time

of introduction of weaning food was timely (4-6 months) to that of very early weaning food supplementation offered by Lepcha mothers (0-2 months).

None of the mothers from both groups sought advice from doctors and health workers regarding weaning as they would recommend foods that they cannot afford. Mothers complained that the health workers when sought for advice by very poor women as to what she should feed her baby which is not thriving on her breast milk, most of them are in no position to give realistic advice. Under such circumstances they often advised commercial infant foods which the only affluent could buy and give.

These findings indicate the need for training health personnel and augmenting health services. The health workers should be trained to think about the low cost weaning foods available and suitable to the local context.

2. Foods avoided during weaning

Table XVI reveal food that were avoided by the mothers while weaning their infants.

TABLE XVI
FOODS AVOIDED DURING WEANING

Foods avoided	Tribal N=50		Non-tribal N=50		Total Percentage*
	N	%	N	%	
Spicy food	50	100	50	100	100
Egg	43	86	50	100	93
Green vegetables	32	64	15	30	47
Fruits	15	30	32	64	47
Meat	0	0	50	100	50

* Multiple responses

All the Lepcha and non Lepcha mothers avoided spices and spicy food during weaning as they believed it to be the cause of indigestion and colic pain in the child's abdomen. Eggs were avoided by 86 per cent of Lepcha and all non-tribal mothers for they believed it would cause poor muscle development. Such baseless assumptions need to be changed through adequate education. Sixty four and thirty per cent Lepcha and non-tribal mothers respectively thought green leafy vegetables are difficult to be digested and thus avoided as weaning foods. However, boiled meat was customarily given only to tribal infants.

3. Factors considered during weaning

The factors considered by the mothers while introducing supplementary food are mentioned in Table XVII.

TABLE XVII
FACTORS CONSIDERED DURING WEANING

Factors considered	Tribal N=50		Non-tribal N=50		Total percentage*
	N	%	N	%	
Availability	47	94	50	100	97
Cost	42	84	50	100	92
Age	32	64	40	80	72
Tradition	37	74	17	34	54

* Multiple responses

All Lepcha and non-tribal mothers felt that cost and availability of supplementary foods are important aspects to be considered while offering weaning foods for infants. It may be because most of the respondents were from low income group. Almost all the mothers mentioned that they would make use of available food. More than half of the total mothers surveyed said that age of

infants should be kept in mind. Comparatively lower per cent of non-tribal mothers pointed out 'tradition' to be considered while introducing supplementary food.

4. Relationship between mother's education; family income and certain selected variables

Infant feeding practices are likely to change with change in knowledge and socio-economic status. Table XVIII reflects the relationship between mother's education; family income and first offer of breast milk, length of breast feeding and time of introduction of supplementary food.

TABLE XVIII
RELATIONSHIP BETWEEN MOTHER'S EDUCATION; FAMILY INCOME
AND SELECTED VARIABLES

Variables	Group	'r' values		
		First offer of breast milk	Length of breast feeding	Time of introduction of supplementary food
Education of mother	Tribal	-0.039	-0.165	-0.24
	Non-tribal	-0.075	-0.144	0.083
Income of family	Tribal	-0.235	0.065	-0.063
	Non-tribal	-0.031	0.061	0.0191

The 'r' values show negative correlation between the education of mothers; income of family and breast feeding behavior of Lepcha mothers. This finding implies that early initiation of breast milk, longer duration of breast feeding and early introduction of supplementary food among Lepchas were perhaps due to some other factors rather than mothers education and family income. It may be attributed to their strong cultural practices or traditions that determine their parenting style.

Though there have been much interchange of practices between tribals and non-tribals, surprisingly, there is a difference when education of mothers and income of family are concerned. In case of non-tribals positive relation between mother's education and time of introduction of supplementary food and between mother's education and first offer of breast milk was observed. However, length of breast feeding decreased as the education of mothers increased establishing a negative relation between the two variables.

Non-tribal's family income seems to have no significant relation with the first offer of breast milk, length of breast feeding and introduction of supplementary food. Here again the reasons may be assumed to their age old practices which they have been following irrespective of their education and socio-economic status.

To ensure wholesome growth and development of infants, proper infant feeding practice is a must and to attain it, a positive social support must be advocated to encourage mothers to breast feed. Maternal nutrition and provision to take babies to working area should be given priority. A radical change and multifaceted approach in this perspective is needed to help children enjoy good health.

Summary and Conclusion

V SUMMARY AND CONCLUSION

Every child has the undeniable right to the best possible conditions such as adequate health care, nutrition, education and social services for its growth and development. Feeding practices have an effect on the general physical and mental make up besides the personality and character development. Breast feeding is an unequalled way of providing ideal food for the healthy growth and development of all children. Right time and right kind of supplementary food provided during the weaning period further strengthens the basic foundation of life.

Infant feeding practices vary greatly in different tribal milieu. Hence it is highly imperative that the feeding practices prevalent in a specific tribal community be thoroughly surveyed so that proper action plan can be chalked out to initiate, support and strengthen healthy infant feeding practices. To highlight the feeding practices among Lepcha (tribal) and non-tribal groups, the investigator undertook this study titled 'infant feeding practices among tribals and non-tribals in Sikkim'. Fifty Lepcha and fifty non-tribal mothers were selected from rural constituency of Assam Lingzay. The necessary data was collected using an interview schedule which included questions on the respondents

family background, breast feeding, weaning practices and related issues.

The major findings of the study are as follows:

1. Eighty two per cent of the sample were from low income group (below Rs.1000/-) and only one family belonged to high income group (above Rs.4000/-). A majority of the mothers (90%) were agricultural labourers.
2. Of the selected mothers, 57 per cent were illiterates; 29 per cent had completed upto Vth Std and the rest had middle and high school education. None of the mothers from Lepcha and non-tribal group was a graduate.
3. All the children born in the community were breast fed within the first day of delivery. More than 40 per cent of the selected mothers had breast fed the new born within a hour after delivery. No significant difference was observed in the practice of first offer breast milk among Lepchas and non-tribals.

4. Colostrum was fed to new borns by all Lepcha mothers. Only ten per cent non-tribal mothers discarded it. Use of raw butter by Lepcha mothers (82%) and sweetened water by non-tribals (70%) was the special feature of prelacteal feeding practice in Sikkim.
5. No single infant was exclusively breast fed among Lepcha community and only eight per cent non-tribals breast fed exclusively for three to four months.
6. Sixty two per cent of Lepcha mothers breast fed for two years, while 48 per cent non-tribals breast fed for one and a half year. Significant difference was observed in the length of breast feeding between lepcha and non-tribal mothers.
7. On the whole, 61 per cent of the mothers breast fed on demand and the rest practised schedule feeding.
8. Lepcha and non-tribals breast fed 5-6 times and 3-4 times per day respectively. Significant difference was observed in the frequency of demand feeding between the two groups.

9. In case of tribal sample, education had negative relationship with the duration of breast feeding. On the other hand, family income was positively related to duration of breast feeding in the non-tribal group.

10. Sugar tea (tea with sugar) was considered as the best stimulant to increase breast milk by 58 per cent and 88 per cent of Lepcha and non-tribal mothers, respectively. Fermented millets such as 'Chi' were special foods taken traditionally by Lepcha mothers to enhance flow of breast milk.

11. Mothers and mother-in-laws played an important role as sources of information on breast feeding for more than 50 per cent of mothers in both the Lepcha and non-tribal groups.

12. Only nine per cent of the mothers opined psychological satisfaction as the advantage of breast feeding. Convenience was the predominant answer given by 83 per cent of the mothers.

13. Fifty per cent of Lepcha and 48 per cent of non-tribal mothers adopted top feeding. Bottle used for top feeding was washed with ash after feeding by 44 per cent and 62 per cent of Lepcha and non-tribal mothers respectively.

14. Supplementary food was introduced within two months after birth by 76 per cent of Lepcha mothers and the rest had it by the age of six months. Among non-tribals, 48 per cent introduced supplementary food within two months after birth and the rest had it by the age of eight months. Calculated 't' value showed that there was significant difference in the aspect of time of introduction of supplementary foods between the two groups.

15. The 'r' values showed a positive correlation between education of mothers; income of the family and time of introduction of supplementary food. On the other hand, negative correlation was observed between Lepcha mother's education; family income and time of introduction of supplementary food.

The analysis of breast feeding pattern in relation to education of mothers, family income and weaning practices of Lepcha and non-tribals in this study give rise to following recommendations:

Recommendations

1. Concentrated and determined approach is needed to raise the literacy level of the rural tribal mothers in all the states of India.
2. Government must plan and execute a comprehensive nutritional intervention programme to encourage mothers to breast feed their babies and to uphold and strengthen their healthy traditional practices like colostrum feeding and early offer of breast milk.
3. Concentrated efforts must be undertaken to ensure optimum nutrition by encouraging exclusive breast feeding upto four months.

4. There is a need for provision of day care services such as creche for infants of working women near their working area. The creche service must follow an integrated approach to child care.
5. There is a need for training grass root health workers to educate tribal women on special care during breast feeding, weaning and the strengths of suitable, low cost weaning foods.
6. Factories Act 1948 advocating a suitable room for the use of children with trained women incharge have to be amended to suit the changing economic situation and working women.
7. The welfare programmes at present target women as general members of the poverty group, with little attempt to adjust to women's occupational role demands such as timings. The latter will have to be seriously viewed and taken into consideration by welfare programmes.

It requires a sincere and determined spirit to work for the rural and tribal people because they are not only illiterate and backward, but also conservative. They need guidance to become aware of the merits and demerits of the various practices. Of equal importance is the need for intensive case studies with various groups of tribes which will throw light on the management of infant feeding and it's related issues.

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Appendices

APPENDIX I

**AN INTERVIEW SCHEDULE TO ELICIT INFORMATION ABOUT
THE INFANT - FEEDING PRACTICES AMONG TRIBALS
AND NON-TRIBALS IN SIKKIM**

Date :

I. GENERAL PARTICULAR

1. Name of the Investigator :

2. Name of the respondent :

address :

religion :

Caste :

3. Type of the family : Joint

Nuclear

4. Landowner : Landless

II. FAMILY BACKGROUND

Sl. No.	Name of the members	Relation to the head	Age	Sex	Marital Status	Education	Occupation	Income per month
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Other sources of income

- a. Business earnings
- b. Receipts from properties
 - i) Land
 - ii) Building
- c. Income from investments
- d. Allowances from parents/in laws
- e. Other earnings

Total family income/Month

III. DETAILS REGARDING BREAST FEEDING

1. When did you breast feed the new born?

Hours after delivery	Reasons	Did not Breast feed	Reasons
<hr/>			
<hr/>			

2. Did you give the first milk (colostrum) to your baby?

Yes Reasons No Reasons

3. Did you offer prelacteal feed to the new born?

prelacteal food Age at which Frequency
 offered given

4. What was the pattern of breast feeding adopted by you?

Demand feeding	Frequency	Till what age	Reasons	Schedule feeding	Frequency	Reasons
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5. Did you adopt exclusive feeding for your baby?

Yes	No	Till which age	Reasons
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6. How long did you breast feed your baby?

Length of breast feeding	Reasons	How long will you continue	Reasons
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7. What cautions/measures did you take before breast feeding the baby?

- a. Sponge/wash the breast/nipple
- b. Take care nobody is around
- c. Smear mother's saliva round the nipple
- d. Squeeze out the first 2/3 drops of breast milk
- e. Did not do anything special

8. Did you continue breast feeding when

Yes

No

- a. Mother is having diarrhoea.
- b. Child is having diarrhoea
- c. Mother is having fever
- d. Child is having fever
- e. Mother is having cough and cold
- f. Child is having cough and cold

9. What special herbs/foods did you consume to increase breast milk?

Special Foods

Frequency/day

10. What advice/suggestions did your family member offer on breast feeding?

Family members

Suggestions

11. What do you think are the advantages of breast feeding?

12. From where did you get the information on breast feeding? .

- a. Doctor
- b. Television
- c. Radio
- d. Newspaper/magazines
- e. Primary Health Centre
- f. Posters/Pictures
- g. Elders in the family

13. What are the problems faced by you in breast feeding?

Sl.No.	Problems	Methods adopted to solve it	Effect of the method adopted
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IV. DETAILS REGARDING TOP FEEDING

1. What milk do you think is best for the baby?

- a. Breast milk
- b. Cow's milk
- c. Powder milk
- d. Goat's milk
- e. Buffalo's milk

2. Did you top feed your baby?

Age at which started Reasons Age till continued Reasons

3. What milk did you use to top feed your baby?

Milk used item used for top feeding Type of cleaning Frequency of cleaning

4. What are the problems faced by you during top feeding?

Sl.No. Problems Methods adopted to serve them Effect of method adopted

V. DETAILS REGARDING WEANING

1. When did you start and complete weaning your baby?

Sl.No.	Age at which weaning started	Age at which it is completed	Reasons
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2. What are the methods adopted by you to wean your child?

Sl.No.	Methods adopted	Reasons
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3. When did you introduce supplementary feeds to our baby?

Sl.No.	Name of the Supplementary	Quantity	Age of which started	Frequency reasons
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4. What are the factors considered while introducing supplementary food for your child?

5. In what form were the supplementary foods introduced at different period of weaning?

Period in months	Form Given	Quantity	Reason

6. What are the foods avoided/introduced while weaning the child?

Sl.No.	Food avoided	Food introduced	Reasons

7. Is there any food unaccepted by the child during the weaning period?

8. Did you have any problems with your child at the time of weaning?

Sl.No.	Problems	Methods adopted to solve	Effect
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3

APPENDIX II

STATISTICAL APPRAISAL

Students 't' test of significance was used to find out whether there is any difference in the practice of first offer of breast milk, length of breast feeding, frequency and time of introduction of supplementary food among the selected group of Lepcha and non-tribal mothers. 't' value was calculated using the formula.

$$t = \frac{\text{Difference in means}}{\text{Standard error of difference in means}}$$

$$= \frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{(1/n_1) + (1/n_2)}}$$

Where, \bar{x}_1 = mean of first sample

\bar{x}_2 = mean of second sample

n_1 = Number of observations in first sample

n_2 = Number of observations in second sample

$$S = \sqrt{\frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2}}$$

Where, S_1 = Standard deviation of first sample

S_2 = Standard deviation of second sample

The degree of relationship between the variables under consideration is measured through the correlation analysis. Coefficient of Correlation was calculated to see whether or not there is any relationship between the education of mothers and income of the family with their practice of first offer of breast milk, length of breast feeding and time of introduction of supplementary food. Using the following formula

$$Cr = \frac{\text{Covariance (X, Y)}}{\sqrt{SSX, SSY}}$$

$$SS_x = \sum X^2 - \frac{(\sum X)^2}{n}$$

$$SS_y = \sum Y^2 - \frac{(\sum Y)^2}{n}$$