CHAPTER I
INTRODUCTION & REVIEW
OF LITERATURE
Healthy growth satisfaction of hunger, oral gratification, physical and emotional warmth, protection as nutrition environment and the frequent psycho-social specism with the mother are all associated with breast feeding. In fact breast feeding has its psychological significance and provides an attachment and close relationship with the mother and also a feeling of security to the child, which is necessary for the development of adequate personality. According to Bowlby (1969) breast feeding is also the basis for interpersonal relationship in later years. According to Hilgard et al (1975) attachment to mother reaches a peak at about 2 years of age and from then on the child becomes progressively more willing to detach himself from the mother. Absence of warmth and affection and failure to close attachment with the mother before two years may lead to many undesirable personality characteristics such as neuroticism, aggressiveness, extreme submissiveness and inability to control impulses. According to the psychoanalytical view, inappropriate breast feeding leads to fixation at oral stage of development of personality.

The physiology of lactation is complex but there is no doubt that the mother's educational response and her desire to feed the baby play a most important part. A relaxed mother

The infant the development in infancy depends on and sensation, emotional and physical care as well from a hostile and defence against infection. Of all mammalian interact the human infant is perhaps the one, most dependant on feeding mal agents for protection and stimulation. The biological sign other has always provided this care and effective interaction. To do so she must at least communicate with the infant and be physically able to provide care. From many points of view breast feeding helps to satisfy this.

Bonding or the attachment that occurs between mother and offspring, is a result of close and prolonged contact between them. Bonding in humans is in many ways like that in other mammals but it is based primarily on close interaction and body language. Physical contact is an important basis for bonding, and breast feeding therefore facilitates it. Breast feeding, on account of the fact that, it is a natural care eliciting, behaviour-giving food, oral contact, skin to skin contact and physical warmth helps to promote psychophysiological interactions. There are also a number of generalized body responses associated with breast feeding such as raised temperature of mammary skin and rhythmical contractions of the uterus.
is able to feed the baby better, sudden worry or anxiety adversely affects lactation.

**PHYSIOLOGY OF BREAST FEEDING:**

The milk is produced in the alveoli at the beginning of small ducts. The tissues around the ducts and the alveoli consist of fat, connective tissues and blood vessels. The amount of fat and connective tissues determines the size of the breast. During pregnancy the breast enlarges to 2-3 times their normal size and the ducts and alveoli are prepared for lactation. After delivery lactation is controlled by two reflexes:

1. **The milk production reflex:** As the baby suckles the breast, a hormone called prolactin is produced which causes the cells in the alveoli to produce milk. This milk collects in the milk ducts.

2. **The let-down reflex:** The baby's suckling also stimulates the production of another hormone called oxytocin, oxytocin makes the muscle cells around the alveoli contract so that the milk is forced towards the nipple. Quiet confidence encourages the let-down reflex and ensures successful lactation and establishment of a close and happy contact between mother and child. The psychosocial environment in which the mothers feed is also important. Emotional disturbance and anxiety in general can interfere with the let-down reflex and hence with the flow of milk (Margaret Cameron and Yngva Hofvander, 1983).

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Breast milk composition:

Colostrum:— For the first day or two, the small amount of milk that flows from the breast is called colostrum. This milk is extremely nourishing for the newborn. It contains less fat and lactose than mature milk and more sodium, chlorine and zinc. It is high in antibody-rich protein, especially secretary immunoglobulin-A and lactoferrin. Its function is primarily anti-infective, but by reason of its biochemical composition it may also have a laxative or proteolytic effect to facilitate clearing out the meconium and possibly to supply concentrated doses of certain nutrients such as zinc.

Mature milk:

Protein:— About 1-2 percent of breast milk is protein. This protein is made up of curd protein (Casein) and the whey proteins (lactoalbumin and lactoglobulin). When milk enters a baby's stomach, it is turned into a soft curd and whey which is easily digested and absorbed. The lactoglobulin fraction of milk protein contains highly specialized proteins (the immunoglobulins). These carry the antibodies against diseases (Penny and Andrew).

Fat:— About half the energy in human milk comes from fat which is absorbed much more readily by the infant than the fat of cow's milk due to the absence in the milk of lipase enzyme. The total fat content varies considerably from one woman to another, from one phase of lactation to another, according to the time of day and particularly during a feed. The first milk to flow during
suckling is called the fore milk. It has a fat content of only about 1-2 percent and looks thin. This watery milk helps satisfy the infant's thirst as he begins feeding. The later milk, called hind milk may contain at least three times more fat. This provides most of the energy.

**Lactose:** This sugar is the only carbohydrate in milk. The amount in human milk does not vary much and is higher than in cow's milk. It provides an easily digestible source of energy. Some lactose is converted in the intestine to lactic acid. Lactic acid helps to prevent the growth of undesirable bacteria and helps the absorption of calcium and other minerals.

**Minerals:** Human milk contains much less calcium than cow's milk but because it is more easily absorbed, it satisfies the needs of the infant. Both cow's milk and human milk contain only small amount of iron. However, about 75% of the iron in human milk is absorbed, compared with only 5-10% from other foods. Moreover, the infant's store of iron should be sufficient for his first month of life. Human milk also contains less sodium, potassium, phosphorus and chlorine but it is sufficient for the young infant.

**Vitamins:** If the mother's diet has been and still is adequate all the vitamins that are needed by the infant during the first four to six months are supplied through her milk. Breast milk contains more of vitamins A, C and E than cow's milk but less
vitamin K. There are only small amounts of vitamin D in the milk fat (Margaret Cameron).

**Water:** Human milk is water rich. In a normal infant most nutrients remain in the body. As a result, there is little waste for the kidneys to excrete. Infact an immature infant kidney cannot concentrate urine so well as adult kidney. So a dilute milk is necessary.

**Psychological Advantage of Breast Feeding:**

Even in social classes where bottle feeding can be done safely, breast feeding is of great psychological value to both mother and child. Nothing can imitate such a close contact. Many breast feeding mothers find that nursing a baby is an essential way of expressing love towards it. Through the intimacy of breast feeding it is easy for a mother to give her baby closeness, warmth and comfort, feeling that it derives nutrients for its body in the milk. Breast feeding provides it automatically. This close relationship can be seen as a logical continuation of pregnancy. Babies show how they like close contact by their clear enjoyment of being carried. Being carried fills their environment with the human warmth, movements and sounds that we are beginning to understand are important both before and after birth.

Breast feeding more than many other normal and physiological processes, depends for its success on the confidence of
the mother in her own ability to lactate. To a great extent it is a matter of attitude. The mother has to experience for herself that breast feeding is something natural, pleasant and positive and to really feel that she is indispensable to her child. The attitude of the family and of society should positively encourage breast feeding.

Other advantages of breast feeding:

Breast milk has anti-infective properties that protect from infection in the early months. Breast milk is a complete food and provides all the nutrients needed by the infant in the first few months.

Breast feeding is much cheaper than feeding breast milk substitutes.

Mothers who breast feed usually have longer periods of infertility after birth than non-lactators - a condition called as lactational amenorrhoea.

Breast fed infants are less likely to get colic, infantile allergies and eczema than those bottle fed.

Breast feeding immediately after delivery encourages the contraction of the womb and helps the mother regain her figure quickly.

Breast milk is always available and no utensil or water (which might carry germs) or fuel is needed to prepare it
Cunningham (1977, 1979) has shown that in a small town in the eastern part of the United States, breast feeding was associated with significantly less illnesses during the first year. Similar data have been published from the western part of the United States (Larsen and Homer 1978) and from Canada (Chandra, 1979).

In England, infections with the respiratory virus have been shown to be commoner in bottle-fed infants (Pullan, Toms, Martin, Gardner Webb and Appleton 1980).

Mathew and Coworkers (1977) have shown that the incidence of eczema in children with a strong family history of the problem is reduced if the babies are fed only from breast for the first six months of life.

Feeding practices of infants are as old as civilization itself. Mother's milk has been recommended as the ideal food for infant feeding in Biblical records (Brim 1936)\textsuperscript{10}, the holy Quran and ancient Hindu scriptures like 'Charak Samhita' and Puranas (Venkatad^alain et al, 1971)\textsuperscript{11}. 'Breast feeding with love leads to better child care' was the theme of the XVth International Congress of Paediatrics (1977). In the 17th century Cennert and Zuckert recommended breast milk as the sole food till the child reached 1½ years of age (Still 1961)\textsuperscript{12}. In the early part of the 19th century few infants survived unless they were breast fed. In London at that time it was estimated that among infants who were not breast fed seven out of eight died (Forsyth 1911). Because of the high infant mortality the employment of wet nurses was relatively common when a mother was unable to breast feed her infant. Elaborate rules were formulated for selection of nurses (Hamilton, 1793\textsuperscript{13}, Underwood, 1806\textsuperscript{14}, Dewees 1826)\textsuperscript{15}. Some of them like freedom from tuberculosis or other chronic or bodily disease were logical, others like freedom of mind from

\textsuperscript{13} Hamilton, A. A treatise on the management of female complaints and of children in early infancy, New York. Samuel Compbell, 1795.
\textsuperscript{14} Underwood, M: A treatise on the diseases of children with special refererdictions for management of infants. 2nd Ed. American Ed. Boston, David West, 1806.
permutations, like fear, sorrow, melancholy, grief appeared to be irrational. Consequent upon the observation that white infants exhibited the mannerisms and accents of their black wet nurses, this practice started weaning (Fomon 1974)\textsuperscript{16}. Although other modes of feeding like nursing from udders of goats, cows and asses were attempted unsuccessfully, breast feeding by far the most common until well into the 20th century.

Between 1911 and 1916, 58\% of the infants in U.S.A. were breast fed at the age of 1 year (Woodbury, 1925)\textsuperscript{17}. In the later part of the 19th century and first two decades of the 20th century far reaching changes in the development of safer water supply and sanitary standards for handling and storage of milk, development of easily cleaned and sterilised bottles, alteration in curd tension of milk and supplementation with vitamins (Fomon, 1974)\textsuperscript{16} social emancipation of women and increasing permissiveness, set in motion the general decline in breast feeding in the U.S.A. and other developed countries of the west.

The gradual appearance of processed infant foods specifically adapted to the nutritional needs of infants, and safer than unprocessed animal milk, met a need. Their widespread marketing


served to promote their use even further. The use of breast milk substitutes has been in turn associated with an increased use of feeding bottles which often are used also for feeding the infant with fluids other than formulas.

On the whole, information about changing patterns of infant feeding, especially breast feeding, is relatively sparse and concerns mainly developed countries, however, recently, increasing attention has been paid to the developing world. Historical accounts indicate that the decline in breast feeding was associated with industrialization, and that by the late nineteenth century, and certainly by the early twentieth century, alternative forms of feeding were relatively common in industrial urban communities.

**Trends in developed countries:**

The incidence of breast feeding has registered a slow albeit steady decrease since 1910 when breast feeding was universal (Salber et al, 1978). In the U.S.A., analysis of infant feeding practices by birth cohort shows that two out of three mothers born before 1920 breast fed their first child. Of the cohorts born in 1936-40 and 1941-45, however, only about in 3 breast fed the first child. Thus, whereas in 1946, 38.1% of the newborn breast fed (Bain, 1948), only 21.0% babies did so in

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1956 (Meyer, 1958)\textsuperscript{20}. Robertson (1961)\textsuperscript{64} noted that while 21% of infants were breast fed up to the corresponding figures at 8 weeks, 14 weeks and 18 weeks were 15%, 10% and 7% respectively. The incidence of breast feeding continued to register at further fall and according to Salber and Feinleib (1966)\textsuperscript{54} 22% of the newborn received breast milk and only 5% continued to suck up to 6 months. In 1968, Decastro\textsuperscript{22} found the incidence to be 11% at birth, whereas in the study by Martinez (1979)\textsuperscript{23} by 2 months only 10-15% infants were breast fed. In 1975 (Fomon)\textsuperscript{24} found that the incidence of breast feeding at 1 month was 20%, while only 5% infants continued to suck at breast by 5 months of age.

Trends in breast feeding in other developed countries of the west were similar to those in U.S.A. with respect to the rarity of breast feeding after 6 months. In U.K. Spence (1968)\textsuperscript{25}


\textsuperscript{22} Decastro, E.J. Decline of breast feeding. Clinical Pediatric 7: 703, 1968.


revealed that incidence of breast feeding at birth had fallen from 87.8% in 1963 to 74.6% in 1966 and by 1 months only 30% babies continued to be given breast milk. According to DHSS report (1974) 26 80% of the babies leaving the hospitals were breast fed, the corresponding figure at 3 months and 6 months were 50% and 40% respectively. The decline continued unabated in 1982 Newson and Newson reported the incidence at birth as 83%, at 2 months 60% and at 6 months only 10%.

In 1947-48, 41% of babies followed in a study in New-Castle-upon-Tyne, England, were on some form of mixed feeding at one month of age and by 3 months the proportion had risen to 76%. A further study about the same time reported that in another area of England, Southport 76% of the babies followed up were being at least partially bottle fed at 8 weeks. Information for other areas suggests a similar trend according to a 1968 survey in Dundee, Scotland, only 42% of the babies studied were still being wholly breast fed at 2 weeks, and in London, in 1969, it was estimated that only 33% of mothers were wholly breast feeding beyond the first 4 weeks (WHO, 1981). 27

Studies in Warsaw, Poland suggest that until 1937-38 patterns of breast feeding had not altered much, at 3 months,

81% of infants were being breast fed. Further studies in 1963–64, however, suggest that a change had occurred, at 3 months, only 24% of mothers studied were still at least partially breast feeding. Similar trends are reported for Hungary in the period 1960–69, more marked in Budapest, however, than in rural area (WHO, 1981).27

In Norway where as in 1944, 90% babies were breast fed at about 2 weeks, in 1972 only 25% of 2 months old babies and only 5% of 5 months olds were breast fed (Helsing, 1975).28

The best documented changes have been those that took place in Sweden between 1944 and 1972. In 1944, 85% of mothers in Stockholm were wholly breast feeding at 2 months; and, in 1953, 74%. By 1960, the figure for the country as a whole had fallen to 65%. In 1965, to 54%; and in 1970, to 35%. It is interesting to note, however, that the WHO collaborative study (1981)27, which included Sweden, reports that 93% of the mothers studied in 1976 began breast feeding, and at 4 months about 50% were still breast feeding, although with regular food supplements.

About 30% of the mothers in Northern Europe were breast feeding their babies. In Sweden, Norway and Finland the figure had risen to over 90%. Similar reversals are being recorded in

many other nations including Australia, New Zealand, Denmark, France, Japan, Spain and the United States by Grant James (1984)29. In these developed countries inspite of earlier introduction of weaning the other factors like standard of living, sanitation and access to health services had beneficial effect on infant health. Besides when the trend of decline in breast feeding started, these European countries already had reached on infant mortality rate of 50 and in some countries like Sweden below 20. Hence artificial feeding did not have much influence on the continued decline in infant mortality.

Trends in India and other developing countries:— Various workers from different parts of our country have reported the universal practice of breast feeding ranging from 95% in Bombay (Karkal, 1975)30, 96.2% in Kashmir (Thaman et al, 1968)30, 97% in urban Jammu (Sharma and Lahori, 1977)32 and 98% in Surat (Mehta and Pawar, 1972)33 to 100% in South India (Ghosh, 1966)34, Rajasthan (Saxena and Garg, 1968)35, Chandigarh (Walia et al.,

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1974)\textsuperscript{41}, Delhi (Dutta Benik, 1975\textsuperscript{36}, Ghosh et al, 1976)\textsuperscript{40}, Bhopal (Bhandari and Patel, 1973)\textsuperscript{45}, tribal belt of Jabalpur (Mudgal et al, 1979)\textsuperscript{37}, Jhansi rural area (Awasthi 1983)\textsuperscript{38}, Bangalore (Prabhakara, 1987)\textsuperscript{40}, Gorakhpur (Kushwaha, 1987)\textsuperscript{41} and Andhra Pradesh (Vimal and Ratna Prabha, 1987)\textsuperscript{39}.

However, the duration of breast feeding shows variations with increasing urbanization, subtle promotional drives by manufacturers of baby food, the tendency to ape the west, breast feeding is considered to be "countrified" and the trend for early cessation of breast feeding is becoming noticeable in mothers with college education living in metropolitan cities. Thus whereas, 39\% of the mothers in Bombay (Karkal 1975)\textsuperscript{30} stopped breast feeding by 6 months, 22.4\% of mothers in Delhi (Ghosh et al, 1976)\textsuperscript{40} did so by that age. The corresponding figures from other parts of the country were 15\% in Srinagar.


Although there is a trend of decline in breast feeding in urban areas especially amongst urban elite, but still it has not reached the stage of irreversibility (Agarwal et al, 1982); Shama and Lahori, 1977; Bhandari and Patel, 1973; Ojha, 1979; Banik, 1975; Thaman and Manchanda, 1968; Mehta et al, 1972; Narayanan et al, 1974; Ghosh et al, 1976; Sethi and Ghai, 1971; Rao et al, 1972 and Walia et al, 1974.)

47. Seth, V., Ghai, O.P. Feeding habits of infants and preschool children in urban, semi urban and rural community. Ind. Pediatr., 1971, 8: 452-455.
The specific report (No. 4) of nutrition foundation of India has compiled data on breast feeding from three big metropolitan cities of Calcutta, Madras and Bombay showing that even at the end of first year more than 90% in Calcutta, 85% in Bombay and 70% at Madras were still receiving breast milk. But still there are disturbing findings like colostrum rejection (Agarwal et al, 1982; Ojha, 1979), a decline in percentage of mothers doing exclusive breast feeding by 4 months and early introduction of commercial baby food.

The decline observed in developed countries has also taken place in certain parts of the developing world, although the changes have shown distinct regional and socio-economic differences. In 1966, 30% of 300 infants born in major hospital in San Carlos, Costa Rica had been weaned by the 15th day, in rural areas of Costa Rica, at the same time, 60% of infants were still breast fed at 6 months and 28% at one year. All the reports for urban Costa Rica indicate no significant change since 1966. (WHO/UNICEF, 1981)

In Brazil (1979) data from Companas indicate that 17% of the 855 primiparae studied did not start to breast feeding, and that, of those who did, 50% had weaned their babies by 2-1/2 months (Villar and Belizan, 1980). In Uruguay, in 1946, the average duration of breast feeding among low-income mothers was estimated to be 5 months;

In 1949, 4 months and in 1977, less than 2 months. Recent data for Argentina indicate that, in some places, upto 80% of infants were weaned by 3 months (Davies, 1978).

A national survey in Ghana, illustrates the regional character of infant-feeding practices, and especially the differences between the north and south of the country. In the north, 88% of infants were being wholly breast fed at 6 months, and in the south, 51%. Proportions varied also with degree of urbanization (Amhold, 1986).

In the Phillippines in 1965 90% of babies born in low-income parts of Manila were still being breast fed at 12 months, but by 1974 the proportion had fallen to 50%. Data for the Philippines show that the decline was much more pronounced in the cities than in rural communities (Solon et al., 1976). The result of the WHO collaborative study 1981 for the Philippines confirm these urban/rural differences; they indicate also that the decline in breast feeding was continued. In the cities 32% of the well-to-do mothers who were interviewed in 1976-77 had never breast fed the youngest child. Similarly, almost 15% of urban poor mothers and only 6% of rural mothers, had never breast fed their children.

In developing countries there is a trend towards shortening

the duration and making more extensive use of breast milk substitutes. This tendency is spreading from privileged to less privileged classes, especially in towns. Jelliffe (1988) marks that the trend away from breast feeding towards artificial feeding with cow's milk, usually employing a bottle, is one of the most disastrous exportations from the western world in recent times.

Causes of decline of breast feeding:

(1) **Human cosmic Pile Osmosis hypothesis**: According to Salber et al (1966) in the field of human group behaviour there is a trickling through in human cosmic pile of various attitudes, mores and practices originating in the higher levels; only after many years do they influence those with lower education and economic level. Thus in the thirties, the hitherto universal practice of breast feeding began to be replaced by bottle feeding which was embraced enthusiastically by upper and middle classes. Those on the lower levels of social structure, however, cling to breast feeding in infants, presently breast feeding is the "inthing" amongst members of the upper strata while bottle feeding still holds away in the lower levels of the "Cosmic Pile". It is logical to expect the pendulum to swing back gradually to breast

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feeding in the group to which it is psychologically and economically advantageous in the coming years.

**Female Emancipation Theory:**

The Bismarckian dictum of "Kinder-Kuche-Kirdee" has undergone as serious erosin in its meaning in the industrialized countries. Many women who are employed professionally are enticed by the attraction and illusions of the consumer society, and hence are no longer driven instinctively to breast feed. Increasing permissive attitudes have also contributed to this decline in breast feeding. According to Meyer (1968) some women feel that breast feeding is a vestigial expediency dating from the time when this form of nurture stood between the attrition and perpetuation of the species, and is no longer necessary now.

**Breast as an organ of sex:**

According to Call (1969) the present decline in breast feeding is related to the increasing cultural definition of the female breast as a sex organ rather than a functional organ for infant feeding. Sex is freely, even-glibly, discussed without shame and the breast stands glorified as symbol of sex. To

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discuss breast feeding is embarrassing and to actually do so is to invite ridicule in the present cultural environment (Meyer, 1968). Some women regard breast feeding as a castration threat (Call, 1969). The physician, according to Hazlett (1966) is a reflection of his culture. The majority of American physicians were raised at a time when the inherent shame of coitus was being transferred to suckling a process that is continuous even today.

**Personality differences in breast fed and bottle fed babies:**

The finding that no consistent difference were observed in the personality between breast fed and bottle fed babies in contrast to the Freudian theories suggesting that early experiences in taking food are of great significance in subsequent personality formation contributed to the decline of breast feeding (Guthrie et al, 1966).

**Conflict in acceptance of biological maternal role:**

Presently there is a conflict in acceptance of a biological maternal role by women who consider breast feeding as "Primitive".

**Revolusion for the whole process:**

A deep seated revulsion for the whole process, often inexplicable by the mother herself, is seen nowadays (Newson and Newson, 1962).


Role of Medical Practitioners:

The Psychiatrist argument of the advantages occurring out of breast feeding has lost force with paediatricians and obstetricians in U.S.A. (Fomon, 1974) and even British authors who are far more in favour of breast feeding are now having second thoughts whether they should insist on mothers to breast feeding their babies.

The resurgence of breast feeding:

The low incidence of breast feeding in the U.S. and other developed countries of the west is showing incipient signs of reversal. Guthrie and Guthrie (1966) reported that in U.K. the incidence of breast feeding at 2 weeks was found to be 50%. More significantly, however, is their observation that 54 of the 55 mothers in their study expressed the desire to nurse any future baby. An enlightened appreciation of the advantages of breast feeding in terms of convenience, health benefits for the baby, close mother child relationship, no preparation of formula and pleasantness of the experience has lead to its revival.

Also a better appreciation of the Psycho-affective mother child relationship is now taking place. In experimental animals "critical periods" during first few weeks of life have been identified when "imprintive"- learning which is remarkably
persistant to modification—occurs (Klaus and Kennell, 1970\textsuperscript{60}, Klaus et al, 1982\textsuperscript{61}).

Jepson et al (1986)\textsuperscript{140} from Sheffield have shown that whereas in 1983, 40 percent mothers expressed their intention to breast feeding, their percentage increased to 50\% (approximately in 1984), 55\% in 1985 and 62\% in 1986.

In the U.S., Harris and Ghan (1979)\textsuperscript{62} have reported that 41\% of the mothers were breast feeding their babies between 1-4 weeks of age. Out of this, 27.1\% were physicians wives. According to Rivera (1981)\textsuperscript{65}, 25\% of middle class mothers breast fed their babies at 1 month of age. Population in U.S. most likely to breast feed are college students (Salber et al, 1978)\textsuperscript{18}, physicians wives (Harris and Chan, 1979)\textsuperscript{62} and health food enthusiasts. The DHSS study group (1974)\textsuperscript{26} recommends that breast feeding should be continued for a minimum of 2 weeks and preferably for 4-6 months of life.

Variables of breast feeding:

(1) **Social class:** Social class appears to be an important


\textsuperscript{63} Rivera, J. The frequency for the use of various kinds of milk during infancy in middle and lower income families. American Journal of Public Health. 61: 277, 1981.
variable influencing breast feeding both in the United States and other developed countries of the west as well as the developing countries of the third world. From 1930 (Garland and Rich)\cite{131} till 1946 (Davis and Havighurst)\cite{109} breast feeding was more common in lower social class in the United States. Sears et al (1957)\cite{76}, however, noted the first wind of change and found that more middle class mothers (37%) breast feeding their infants than lower social class mothers. Subsequently studies by Boek (1967)\cite{28} and Salber et al (1978)\cite{18} corroborated this view. However, Robertson (1961)\cite{64} found that breast feeding was less frequent amongst middle class mothers than amongst upper and lower social class mothers. Since the early 1960's breast feeding has been shown to be decisively more common in upper rather than lower social class (Salber and Feinleib, 1966\cite{54}; Rivera, 1981\cite{65}; Foman and Anderson, 1972\cite{67}). A similar trend has been reported in Sweden (Klackbenberg and Klackbenberg, 1968)\cite{68} in J.K. (Newson and Newson, 1962\cite{59}; Guthrie and Guthrie, 1966\cite{58}; Bernal and Richards, 1974\cite{66}).

\begin{thebibliography}{99}
\bibitem{65}Rivera, J. The frequency for the use of various kinds of milk during infancy in middle and lower income families. American Jour. of Public Health, 61: 277, 1981.
\bibitem{67}Foman, S.J. and Anderson, J.A. Practices of low income families in feeding infants and small children with particular reference to cultural groups DHEW Publication (HSM)5605,1972.
\end{thebibliography}
in Australia (Newton, 1986)\textsuperscript{36}. In India, however, incidence of breast feeding is higher in lower socio-economic groups (Thoman et al, 1968)\textsuperscript{31} and breast feeding also tends to be prolonged in low socio-economic groups (Jelliffe, 1988)\textsuperscript{53}, Anand and Rama Rao (1972)\textsuperscript{48}, Thoman et al. (1984)\textsuperscript{43}, Saxena and Garg (1968)\textsuperscript{35}, Seth and Ghal (1971)\textsuperscript{47}, Venkatachalam (1971)\textsuperscript{11}, Mehta et al. (1972)\textsuperscript{33}, Bhandari and Pate (1973)\textsuperscript{45}, Datta Banik (1975)\textsuperscript{36}, and Lalita Bahal (1987)\textsuperscript{69} and R.K. Kushwaha (1987)\textsuperscript{91}. However, Walia et al (1974)\textsuperscript{40} observed that irrespective of socio-economic status, breast feeding is continued for inordinate length of time.

**Urban, Semiurban and Rural influence:**

Bain (1948) found that breast feeding was practiced less in metropolitan areas and adjacent urban areas than rural areas. Robertson (1961)\textsuperscript{74} did not find any significant difference in breast feeding in urban and rural mothers. Chejecka (1964)\textsuperscript{70} in Poland found that women in rural areas and smaller towns nurse for longer periods than do their urban counterparts. Salber and Feinleib (1966)\textsuperscript{54} found that more mothers in Baston and its

\begin{itemize}
\item \textsuperscript{70} Chejecka, M. Incidence and duration of breast feeding in Polish infants. Pediatrics Pol. 38: 77, 1964.
\item \textsuperscript{71} Bain, K. The incidence of breast feeding in hospitals in the United States. Pediatrics, 2: 313, 1948.
\end{itemize}
suburbs were practicing breast feeding than other women. Meyer (1968)\(^{57}\) held a similar view. Ghai et al (1971)\(^{93}\) found that breast feeding was practiced more by rural women and its duration also tended to be prolonged in these women. Madhavi et al (1973)\(^{72}\) and Indira Narayana et al (1974)\(^{21}\) also held a similar view. However, according to Ghosh et al (1976)\(^{40}\) length of urban stay did not significantly influence the duration of breast feeding.

**Mother's age:** According to Senn and Anderson (1967)\(^{74}\) and Salber et al (1978)\(^{18}\) maternal age did not influence for or against her decision to breast feeding. Robertson (1961)\(^{64}\) and Ghosh (1966)\(^{34}\) also held a similar view. However, according to Salber and Feinleib (1966)\(^{54}\) mothers age 30 years and above attempted nursing less frequently. According to Newton (1986)\(^{73}\) incidence of breast feeding was found to be low in woman under 20. Meyer (1968)\(^{57}\) found no such difference. Ghosh et al. (1976)\(^{40}\), however, held opposite opinion to that of Newton (1986)\(^{73}\) and found that younger women (age below 20 years) tend to breast feed relatively longer than older women (age above 40 years).

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Mother's Parity: Doiglas (1980)\textsuperscript{75} found that mothers of first child attempted to breast feed more frequently than did multiparous women. Sears et al (1957)\textsuperscript{76} also found that a greater number of first born babies were breast fed for a longer time than others. Call (1969)\textsuperscript{55} however found that mother's parity does not influence her decision to breast feed, although multiparous women were slightly more successful than primigravidas (48\% and 90\% respectively) in breast feeding. Robertson (1961)\textsuperscript{64} and Salber and Feinbeib (1966)\textsuperscript{54} corroborated the view of Doiglas, however, Ghosh (1966)\textsuperscript{34} found no such difference. Meyer (1968)\textsuperscript{57} found that mother's parity had no influence on the incidence and duration of breast feeding. According to Bhandari and Patel (1973)\textsuperscript{78} first and second born babies were breast fed for longer periods than subsequent one.

Mother's education: Incidence of breast feeding is higher in mothers having education up to college level (Salber et al, 1978\textsuperscript{13}; Guthrie and Guthrie 1966\textsuperscript{58}; Meyer 1968\textsuperscript{57}; Martinez 1979\textsuperscript{77}; Pastel et al, 1981\textsuperscript{78}; Walia et al, 1987\textsuperscript{79}). However the duration

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of breast feeding decreases as the maternal literacy status improves (Ghosh et al., 1976; Walia et al., 1987).

**Working mother or not:** Breast feeding is declining in working class mothers (Newson et al., 1962; Salber et al., 1978; Ghosh et al., 1976).

**Mother’s personality and her attitude:** Levy (1945) suggested that mother’s personality was an important factor in the choice of feeding method. Sears et al. (1957), however, disputed this claim. Salber (1978) found a high concentration between mother’s expressed attitude during antenatal clinic and subsequent initiation of breast feeding. Newton and Newton, however, supported Levy’s claim and put forward the view that success at breast feeding is related to mother’s positive attitude about nursing and child rearing. Un-motherliness, anxiety and sophistication are encountered more frequently in mothers who have difficulty in milk production (Call, 1969).

**Previous experience:** According to Salber et al. (1978), previous experience with children had little significance on her decision to breast feed. However, Decastro (1968) put forward the view that probability of successful breast feeding was greater among women who had been successful before.

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Rooming-in mother or Non-rooming in mother: Rooming in mothers breast fed significantly longer than non-rooming mothers (Jackson, 1986\textsuperscript{80}). Robertson (1961)\textsuperscript{64}, however, found no such difference in "rooming in" and non-rooming in mothers.

Regional variation: Well marked regional variations in breast feeding have been reported from the United States. Incidence of breast feeding shows striking difference in North Coast states (like New England and New York) and south west states and mountain (Pray, 1975\textsuperscript{81}, Yankaver, 1978\textsuperscript{82}, Corsa, 1988\textsuperscript{83}, Meyer, 1968\textsuperscript{57}, Robertson, 1961\textsuperscript{64}). According to Meyer (1968)\textsuperscript{57} in New England states incidence was 12\% whereas in south and south-east states it was 23\%. According to Robertson (1961)\textsuperscript{64} incidence varied from 16\% in New England states to 44\% in pacific states and mountain. However, Senn and Anderson (1967)\textsuperscript{76} claimed that geographical location did not influence the incidence of breast feeding. In India, however, such well marked regional variations in breast feeding are not seen.

Tradition and cultural influence: They exercise a profound influence in a woman's decision to breast feed (Bhavanivelavady

\textsuperscript{80} Jackson. As cited in infant nutrition. Fomon, S.J. Editor, Philadelphia, W.B. Saunders Co. 1986.


et al., 1979; Thamon et al., 1984; Sangur et al., 1980; Lal and Desai, 1981; Madhavi et al., 1973; Indira Narayanan et al., 1974; Walia et al., 1974; Datta Banik, 1975).

Sex of the baby: Sex of the baby has not been shown to influence breast feeding (Salber et al., 1958; Salber and Feinlein, 1966; Ghosh et al., 1976) however found that the trend is to favour the female infant but it was low to be significant.

Religion: Roman catholic women breast feed significantly less as compared to their protestant counterparts (Salber, 1958; Salber and Feinlein, 1966). According to Indira Narayanan et al. (1974) Harijans breast fed for longer duration than non-Harijans. No extensive study of variation in breast feeding in Muslim and other cultural groups have been undertaken till now.

Perhaps no single factor in an infant's environment influences his innate genetic potential as decisively as nutrition. Nutrition itself, however, depends upon a large number of variables including climate, soil, rainfall, agriculture, degree of industrialisation, socio-economic status and


availability which determines the choice of food to be used for infant feeding. However, apart from these, infant rearing practices many times have their roots in ill defined socio-cultural pattern and religious beliefs and restrictive taboos prevalent in a community. It is no wonder, therefore, that infant feeding practices vary not only from country to country but even within the boundaries of a state.

Artificial Feeding: Till 1910, breast feeding was universal in the United States (Committee on Nutrition 1978). With rapid advances in development of safe water supply, sanitary standards for handling and storage of milk (Fomon 1974) development of easily cleaned and sterilized bottle and nipples (Drake, 1977), social emancipation of women increasing permissive attitudes and no tangible difference in the personality of breast fed and bottle fed babies (Salber et al, 1958) in contrast to the prevailing Freudian concept and simplicity of formula, incidence of breast feeding started weaning and bottle feeding become increasingly popular since the mid thirties (Fomon, 1974). Steam (1979) observed that infants who were fed on cow’s milk continued to increase the percentage of nitrogen content of their babies at rates approximately the foetal increase. As human milk contains

half as much nitrogen, the nitrogen content of the body of the breast fed infants remains at birth level or even decreases. Stevenson (1967) expressed the opinion that great majority of illness were respiratory regardless of the method of feeding.

Over the year artificial feeding has come to be accepted as the method of choice for infants feeding in the United States. Thus, in 1956-57, its incidence at birth was 34.9% and another 27% was getting breast in addition to milk (American Acad. of Paediatric Report, 1957), it steadily rose to 73% in 1965-66 (Salber et al, 1966). According to Meyer (1968) 72.6% of all babies born in U.S. Hospital left the nursery bottle fed.

In contrast to this, the situation in India shows some significant variations. Thus artificial feeding is not given before 1 year of age in low socio-economic status in Rajasthan (Saxena and Garg, 1968) in Hyderabad (Madhavi, V. et al, 1973), in Delhi (Dutta Banik, 1975) and in 16.0% of the series reported by Ghosh et al (1976) from Delhi. It is given between 6 months to 1 year in high socio-economic groups in Bangalore (Prabhakara, 1987) and in Gorakhpur (Kushwaha, 1987).

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In Najafgarh, 66% babies in town and 63% in villages were given artificial feeds (Anand and Rama Rao, 1962)\(^92\). In Delhi according to Ghai (1971)\(^93\) the incidence was 25% at 3 months and 58.6% at 6 months and 75% at 9 months, whereas in 1975 (Datta Banik)\(^36\) incidence was 16% at 1 month and 54.7% at 3 months. In 1976 Ghosh et al. from Delhi reported incidence to be 61.4% and 77.1% at 6 months and one year respectively. In Surat incidence of artificial feeding is reported to be 49% at birth (Mehta and Pawar, 1972)\(^33\). In Bhopal according to Bhandari et al. (1973)\(^45\) at one month it was 11% and at 3 months it was 56.8%. Sharma et al. (1977)\(^32\) observed that 25% urban and 11.9% rural infants in Jammu had been started on supplementary artificial milk feeds, between 3 to 6 months.

In India, various types of artificial formulas are used for infant feeding, like Buffalo milk (Ghai, 1971)\(^73\); Datta Banik, 1975\(^36\); Ghosh et al, 1976\(^40\). Also frequently used is cow's milk (Anand and Rama Rao, 1962\(^92\); Thaman et al, 1968\(^31\); Indira Narayan et al, 1974\(^21\)). Both cow and buffalo are used quite often (Ghosh, 1976\(^40\); Thoman et al, 1968;\(^31\) Bhandari and Patel, 1973\(^45\)). Dairy milk is less popular (Mehta and Pawar, 1972\(^33\); Ghosh et al, 1976\(^40\)) as is goat's milk (Mehta and Pawar 1972\(^33\); Bhandari and Patel 1973\(^45\); Indira Narayan et al 1974\(^21\)).

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Weaning: Weaning means removing the child from the breast and putting him on other forms of nourishment. Weaning should commence around the 6th months of life. In the west the child is weaned completely by the 9th month. Weaning is divided into two parts: (1) Partial weaning, (2) Complete weaning. Partial weaning is considered to be started as soon as any supplementary food either liquid (excluding milk which is termed as artificial feeding) semisolid or solid other than mothers milk is added to the baby's diet and it has been considered complete when the child is totally detached from the mother's breast. Weaning is, therefore, an important period of adaptation from breast milk, which satisfies all the nutritional needs of infant for the first few months, to a mixed diet containing solid food, weaning practices, like breast feeding are vulnerable to social pressures. Urbanization and industrialization change the demographic structure of society and the physical relation of the people to agricultural land.

History: From the Biblical records it appear that weaning was done around the 2nd or 3rd year of life (Adams, 1959). Though the classical writers like Hippocrates, Soranus and Galen mentioned the addition of some solid food besides breast feeding, they made no mention of introduction of vegetable (Adams, 1959).

Since the era of the classical writers till the middle ages information about weaning is scanty. In the 13th century solids were not introduced till the age of 4-5 years (Brennemann, 1923)\textsuperscript{95}. In 1505, Simone-de-Vallambert, recommended solid food like white bread and egg yolk as early as three months (Still, 1961)\textsuperscript{12}. This view was too revolutionary to be accepted by the conservative society and so infants continued to be weaned around 2-3 years of age. No change seemed to take place in infant feeding over the next two centuries.

John Peachy in 1697, added solid food to the infants diet at $\frac{1}{2}$ to 2 years of age in the form of boiled potatoes. This is the first mention of the use of specific vegetable (Forsyth, 1911\textsuperscript{96}, Mixsell, 1916\textsuperscript{97}; Wicks, 1953\textsuperscript{98}). The French school represented by Bouchet (1855)\textsuperscript{99} continued to follow old feeding methods and completely oblivious to the changes taking place outside France (Drake, 1930)\textsuperscript{122}.

\begin{itemize}
\item \textsuperscript{95} Brennemann, J. Artificial feeding of infants in Pediatrics by various authors, Vol. 2 (Abt. I Ed) Philadelphia W.B. Saunders Co., Chap. 23, 1923.
\item \textsuperscript{96} Forsyth, H.O. Studies in the adaptation of an artificial food to human milk. Am. J. Dis. Child. 19, 8, 1911.
\item \textsuperscript{97} Mixsell, H.R. A short history of infant feeding from Elizabethan times. Proceedings of Royal Society of Medicine, 4: 110, 1916.
\item \textsuperscript{98} Wicks, I.G. A history of Infant feeding (1) Primitive people ancient works (2) Seventeenth and nineteenth (3) Eighteenth and nineteenth century writers. Arch. Diseases of childhood 20: 151, 232, 332, 1953.
\item \textsuperscript{99} Bouchet, M.E. Practical treatise on the disease of children and infants or breast, including the hygiene and physical education of young children (Trans. from French by Bird, P.H.) London John Churchill, 1855.
\end{itemize}
During the 19th century, infant feeding habits were largely influenced by Buchan, Hamilton and Smith. Buchan (1974) recommended a balance of animals and vegetable food in a child's diet after he had his teeth. At the time he warned that roots, which he thought contained a crude juice, should be given sparingly to children as they fill the body with gross humours and tend to produce eruptive disease. Smith (1972) claimed that some of the 'finest' children were those raised on milk, bread, meat broth and jellies for the first 5 to 6 years and warned against the use of vegetable. Hamilton (1895) was more conservative and doing to the prevalent theory of giving only milk and farinaceous food.

The 19th century witnessed a certain amount of permissiveness in the hitherto conservative attitudes of adding solids including vegetables to the child's diet (Combe, 1840; Pererira, 1843; Wewees, 1858) but however, more conservative


attitudes continued to prevail (Underwood, 1841; Condie, 1843; Hogg, 1849; Eberle, 1857; Johnson, 1857). As the 19th century progressed physiology as related to infant feeding became the keynote to various workers (Brinton, 1861; Von Mansfelds, 1874; Davies, 1896). Human digestive tracts were compared to their animal counterparts. Great debates raged about the immaturity and delicacy of the child's digestive tract, the presence or absence of saliva and the lack of development of the jaw, gums, hard palate and teeth. All of them were correlated with physiological immaturity (Pavy, 1881; Cheadle, 1889; Stowee, 1894). Jacob (1887) the father


109. Cheadle, W. On the principles and exact conditions to be observed in the artificial feeding of infants. London, Smith Elder, 1889.


of American pediatrics, still held certain conservative views and recommended that before two years vegetables should not be added in a child's diet. Rotch (1896) also held a similar view. However, the down of a new era was clearly in the offing, wherein meat, pea, vegetables, celery wine were recommended for an infant (Davies, 1896).

Till 1920, solid foods were seldom offered to infants before 1 year of age (American Academy Paediatrics, Council of Food, 1958 except for strained vegetable (Camerer, 1908), Czemy (1910), Courtney et al. (1917), Mclean (1920).

The 20th century has witnessed a remarkable change in the west from no solid supplement in 1 year to its introduction in the first few days of life (Epps and Jolley, 1963; Oates, 1983; Maslansky et al., 1974; Fomon, 1975; Kohler et al., 1987).

Trends in India: In India and other developing countries the present state of affairs is very akin to the condition which was prevalent in the United States and western Europe at the end of the 17th and beginning of the 20th century. According to Madhavi V. et al (1973) in Hyderabad pulses and vegetables were not given till the child was 3 years old. Dutta Banik (1975) reported that in some groups of people in Delhi chappati (Flattened wheat cake) was not introduced till the age of 1 year. In the Todas of Nilgiri Hills (Bhavanibelavady et al (1979) vegetables and fruits were not introduced before 1 year of age.

In India commonest age of introduction of solid appears to be 9-12 months. According to Saxena and Garg (1968) in Rajasthan 45% mothers gave solids at 1 year of age. In Kashmir (Thoman et al, 1984) 37.5% of babies were given solids by 1 year. Seth and Ghai (1971) from Delhi reported that by 9 months of age 75% of babies were getting solids. In Punjab (Thoman et al, 1968) 62.5% babies were given solids by 1 year. According to Mehta and Pawar (1972) in Surat by 1 year 52.3% infants were getting solids.

According to Walia (1974) by 9 months of age 75% mothers in upper socio-economic groups had introduced solids.

whereas only 3.9% poor mothers did so. According to Sharma et al (1977) in Jammu 35% of urban and 22% of rural infants were given solid supplements. According to Ghosh et al (1976) in Delhi the age of introduction of semi-solid was commonly between 10-12 months and of solids between 13-18 months. In Himachal Pradesh (Lalita Bahl et al 1987) 58.0% babies were given solids between 4-6 months.

The WHD collaborative study (1984) was able to identify three fairly distinct patterns of weaning. The first was a steep fall in the prevalence of breast feeding with the age of infant, so that by 6 months over 50% of the infants in all population groups had been completely weaned. This pattern was in all the economically well off groups, except in Zaire and India.

At the other extreme, with third type of weaning pattern only about 10% of infants were completely weaned at 6 months, at 12 months, the proportion was still less than 25%, even at 18 months more than 65% of infants were still being breast fed. The groups following this pattern included the rural and urban poor Africa and India.

The intermediate pattern was a linear fall in the

prevalence of breast feeding with the age of the infants, with about half the infants weaned by 12 months.

Cultural influences were apparent in three groups that behaved a typically as compared to other groups of the same socio-economic status, namely the well-to-do of India and Zaire, where weaning took place later, and the urban poor of Chile, who weaned their infants earlier.

The Psychological benefit of early introduction of solid:

Glazier (1933)\(^{124}\) contended that the earlier introduction of solid food exercised a favourable effect on the food habits and showed that children fed "solid food" during the 2nd or 3rd month had better food habits and fewer food dislikes than those infants fed such feeds at 10 months of age. Dowers (1935)\(^{126}\) agreed with this view. Meyer (1972)\(^{125}\) also reported a similar experience and said that acquaintance of the infants palate of foods of widely different flavours and textures augurs well for the education of the gustatory sense so that feeding problem inherent in the modern infant in the 2nd year, could be partly circumvented. Beal (1957)\(^{126}\) however, viewed this psychological

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benefit with skepticism and showed that crying, fussing and splitting occurred when, solids were introduced earlier at 2-2½ months of age. He further observed that at 4-6 months of age the infant accepted them willingly and said that it was the adult responsible for administration of solid to the infant at an earlier age, who was more satisfied emotionally rather than the baby. Mellender and Vahlquist (1977)\textsuperscript{128} showed that earlier introduction of solid foods led to taller children.

The committee on nutrition of the American academy of Pediatrics (1988)\textsuperscript{129} attempted to clear this maze of confusion by succinctly expressing its view, thus:

The present trend towards earlier introduction of solids was based on "competitive empiricism" among the physicians and parents as well rather than on sound nutritional knowledge. The committee is of the view that no nutritional superiority or psychologic benefit result from the introduction of solid food into the infants diet prior to 2½ to 3 months of age.

However, the zealous enthusiasts of early introduction of solid food continued to pursue their ideas so that 80% of the well babies attending the Mayo clinic receiving cereals at

\begin{itemize}
\item \textsuperscript{127} Beal, V.A. On the acceptance of solid foods and other food patterns of infants and children. Pediatrics, 20: 448, 1957.
\end{itemize}
1 month or earlier (Harris and Chan, 1969). Other workers have also confirmed the above findings of early introduction of solid by 1-2 months to the infants diet (Kahn, 1969; Fomon and Anderson, 1972; Beargie et al, 1973; Jones, 1973; Maslansky et al, 1974; Fomon, 1975).

In U.K, the commonest age of introduction of solid to the infant diet was similar to that in the United States and according to Oates (1983) the commonest age of starting solids was 3-4 weeks. The DHSS report (1974) showed that 80-90% of infants were started on solid food by 3 months.

In Sweden the age of introduction of Belkost (food other than milk or formula fed to infants) is 4 months (Kohler et al, 1987; Jung et al, 1987).

Davies et al (1989) confirmed the views of committee on nutrition (1988) and have shown no advantage or benefit to health of the infant by early introduction of solids. They warn that this practice may in fact, be harmful for it might lead to hyperosmolar states and consequent brain damage.

Completion of weaning: Bhavanibavady et al. (1979) wrote that no Toda child in Nilgiri Hills was completely weaned before the end of first year. Madhavi et al (1973) from Hyderabad also had a similar experience to report. Seth and Ghai (1971) found that in Delhi 36.8% urban, 4.5% semi-urban and 2.1% rural mothers had completely weaned their babies from breast by 12 months of age. Walia et al (1987) observed that in 17.7% of all socio-economic groups, breast feeding was continued between 6-12 months of age. In 30.8% attempt to wean the baby off breast was made between 10-12 months, although 70-76% of children continued to be breast fed beyond 12 months. Shah (1985) observed that 38.4% rural mothers at Palghar weaned their babies from breast between 9-11 months of age. Dutta Banik (1975) reported that in Delhi whereas in 54.7% of 3 months old infants artificial milk feeds were introduced, there were only 24.5% one year old infants who were put on complete artificial milk preparation. According to Ghosh et al (1976) 18% of babies

were not given semi-solids till the age of one year of age as many as 37% of them had not received solids by one year of age. Surprisingly introduction of solid food was delayed till after one year of age by as much as 25% of the graduate mothers also. According to Kumar et al (1981) 138 16.5% of infants in Agra were weaned from breast by one year of age. Sangur et al (1980) 85 reported that Mexican rural women generally weaned their infants between 12 and 18 months, though by the age of 6 months all women had started giving semisolid foods to children. According to Prabhakara et al. (1987) 90 in Bangalore, Gupta et al. (1980) 121 in Gwalior and Indira Bai (1981) 139 in Andhra Pradesh were weaned from breast by 6-12 months and there was maximum coverage by 18 months of lactation.

Breast feeding is a valuable measure of beliefs, practices and traditions associated with infant feeding. It is also a subtle indicator of the changes that occur in the social, economic and cultural values of a society. In fact breast feeding was on the decline all over the world, attempts have been constantly made to keep it under surveillance. The processes of technological and social advancement have affected this oldest practice of human nutrition.


The Main Objectives of the Study:

1. To study the prevailing breast feeding practices with reference to first feed after birth, time of initiation of breast feeding, utilization of the colostrum and total duration of breast feeding etc.

2. To assess the maternal knowledge and belief regarding breast feeding in relation to their education, socio-economic status and type of family.

3. To determine whether there is any difference in breast feeding between rural and urban women.

4. To evaluate the role of various psycho-social factors in relation to breast feeding.

5. To identify the time of weaning and various weaning foods used in different educational and socio-economic group.

6. Correlation, if any, between breast feeding and spacing of children.