

# IMPACT OF BREAST FEEDING BEHAVIOUR AND WEANING PRACTICES ON NUTRITIONAL STATUS AMONG CHILDREN ATTENDING AN URBAN CLINIC

A Dissertation in Partial Fulfilment for the Degree of  
Master of Philosophy (M. Phil) in Nutrition

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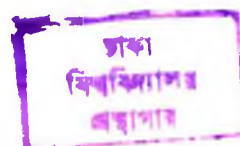
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**AUTHOR**



DEDICATED TO  
MY DEPARTED  
PARENTS

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## **ABSTRACT**

A cross sectional study was undertaken to see the association of breast feeding and weaning practices with nutritional status of under two years children attending Radda Barnen MCH clinic at Mirpur, Dhaka. Mothers of 508 under two years children were interviewed. Among them 348 were malnourished of grade – III and grade – II as per Gomez classification attending Nutrition Rehabilitation unit and 160 were well nourished children attending for immunization.

It was found in the study that socio-economic factors showed positive association with occurrence of malnutrition which are statistically significant ( $P=0.000$ ). Female children of higher birth order residing in urban slum had more chance of malnutrition. Children residing in building using safe drinking water and hygienic toilet had less chance of malnutrition. Higher income of family, higher education level of parents and more skilled job of father showed inverse effect on occurrence of malnutrition.

More mothers of well nourished group (40.76%) than mothers of malnourished group (20.24%) fed breast milk earlier (within 6 hrs after birth). Giving colostrum to the baby showed positive association with nutritional status. Duration of exclusive breast-feeding showed significant impact on the nutritional status of children. Most of the mothers in malnourished (73.38%) and well-nourished (65.00%) groups stated insufficient breast milk secretion as the cause of giving other milk to the baby. Regarding type of other milk, 58.56% of malnourished children were given adult formula whereas 67.50% of well-nourished children were given infant formula. Malnourished children were mostly

(58.55%) given other milk in diluted form and well nourished children in concentrated (46.25%) and correct (36.25%) form. Majority of the mothers of malnourished group (56.98%) stopped breast feeding on or before 6 months whereas majority of the mothers of well nourished group (54.07%) continued breast feeding up to 7-12 months and 40.74% beyond that period.

More mothers (55.75%) in malnourished group started weaning on or before 6 months of age whereas more mothers (59.37%) in well nourished group started weaning after 6 months of age. Cereal was started earlier to the malnourished children (86.49%  $\leq$  6 months) and meat was given late (68.39%  $>$  12 months). But to the well nourished children both was started mostly between 7-12 months ( $P=0.000$ ). Giving vegetables and fruits did not show much difference in both groups, which were given mostly between 7-12 months.

Vaccination was mostly incomplete (75.86%) in malnourished children but mostly complete (68.75%) in well nourished children. Most (87.93%) of the malnourished children had some disease in last month whereas most of the well-nourished children (72.50%) were disease free. Most of the mothers of well-nourished group (76.88%) took more food during lactation compared to normal period whereas in malnourished group some (47.13%) took more food and some (35.06%) took same amount.

Thus it may be concluded that emphasis should be given not only on breast-feeding. Simultaneously weaning practices should equally be stressed upon for proper nutrition of the young children.

# CHAPTER ONE

## INTRODUCTION

Malnutrition is complex in its aetiology and cumulative in its manifestations. It not only impairs physical and intellectual performance but also causes considerable ill health and contributes significantly to child morbidity and mortality. Bangladesh ranks prominently among the countries with the highest levels of malnutrition (67%) of pre-school children.<sup>1</sup> Child mortality is high, with 116 children per 1,000 births dying before they reach their fifth birth day.<sup>2</sup> The World Health Organization (WHO) has estimated that malnutrition and its associated diseases account for over 50% of these deaths.<sup>3</sup>

The nutritional status of infants and children under two years of age is of particular concern, since the early months of life are crucial for future growth and development. It is estimated that 50% of all children born alive in Bangladesh have low birth weight (<2,500 gm).<sup>4</sup> In the following months of life, the

nutritional status of these infants deteriorate further because of sub-optimal feeding practices and a relative decline in energy provision.<sup>5</sup>

The current nutritional status of Bangladeshi children as measured by anthropometric indicators is very critical. More than one third of all children of age 6-71 months are stunted and about a quarter severely under weight.<sup>6</sup> In most of the cases it is not due to the scarcity of food but probably due to the faulty feeding practices including breast feeding and weaning practices.

Briend A et al<sup>7</sup> suggested that in poor communities, children are malnourished mainly because they do not get enough food, and not because they suffer from diarrhoea. A food consumption survey<sup>8</sup> in another community in rural Bangladesh showed that the average intake of energy in this age group (6-35 month) was grossly inadequate (63-71 kcal/kg daily) representing about 55% of estimated energy needs of children of the same age. Ensuring that deprived children have enough food to eat still seems the best approach to alleviating the problem of malnutrition.

Food habits and in a more specific context, infant feeding practices are continuously affected by factors such as the availability of food, economic well-being and changes in social values precipitated by external influence and education. This is particularly the case in countries where poverty is not the problem of a few, but of the majority of the population, as in Bangladesh.<sup>9</sup>

Breast feeding enhances survival during infancy and ranks among the first four strategies promoted by UNICEF for improving infant and child survival.<sup>10</sup> Nevertheless, its impact in older children is still unknown.<sup>11</sup> A community study in Senegal<sup>12</sup> found an excess of death in 12-14 month old children when mother stopped breast feeding at the beginning of a new pregnancy. In patients admitted to the hospital for diarrhoea, measles and respiratory infections in Rwanda lower mortality was found in the breast-fed children up to 2 years of age, but interruption of breast feeding due to serious illness may have biased these results.<sup>13</sup>



Feeding practices during infancy are important determinants of future physical and mental well-being because of the rapid growth spurt and development of organs and tissues during the first year of life.<sup>14</sup> They vary with socio-economic stratification and are regulated by a variety of factors such as education, customs, beliefs and taboos.<sup>15</sup>

In communities undergoing changes, the incidence and duration of breast feeding decreases whereas bottle-feeding and solid feeding are introduced earlier.<sup>16</sup> Pattern of supplementary feeding during the first two years of life are increasingly recognized as important determinants of malnutrition.<sup>17</sup> On the other hand problems of nutrition during the weaning period are complex and type of food employed depends on the resources within the locality under consideration.<sup>18</sup>

It was only in the early 1980s that thoughts on components for child survival were put together. UNICEF initiated the revolution on child survival under the acronym of GOBI-FFF: which stands for growth monitoring, oral rehydration for

diarrhoea, breast feeding, immunization, food supplements, family spacing and female education.<sup>19</sup> A major breakthrough in knowledge on the virtues of breast feeding took place in the 1970s and 1980s through scientific research.<sup>20</sup> All findings suggest that breast-feeding is the most crucial component of child survival and development (CSD) programs.

Breast-feeding strengthens and ensures the quality of the other CSD programs. If due attention is not given to breast feeding programs such as control of diarrhoeal diseases, acute respiratory infections (ARI), the expanded program on immunization (EPI), vitamin A deficiency and nutrition, will lose effectiveness and will not be sustained resulting in economic loss. A child who is exclusively breast-fed has 25 times and 4 times less chance of death from diarrhoea and ARI respectively than a child who is bottle-fed.<sup>21</sup> Breast-feeding reduces diarrhoeal and ARI severity and enhances recovery. Breast-feeding is considered the first immunization for the child. As a single activity breast-feeding provides optimum growth up to 5 months of age<sup>22</sup> is economical and helps develop the bond between mother and child.

There is consensus about the benefits of breast-feeding for infant growth and health, particularly in developing countries where it may be the only means to avoid malnutrition and a high risk of morbidity and mortality in the first year of life.<sup>23</sup> In addition, lactational infertility is one of the most important demographic variables in developing countries where prolonged breast-feeding is common and prevalence of contraceptive use is low.<sup>24</sup>

The benefits of breast-feeding are well recognized in terms of its affect on morbidity, mortality and growth during the first few months of life. Many of the physiological and psychological mechanisms for its advantage have also been documented. Additionally, there may be several differences in the physiological response of infants to breast milk compared with formula such as lower metabolic rates, slower heart rates, lower body temperature and decreased nutrient intake. Although there are many advantages that breast-feeding provides to infants, it is not the only factor that affects the growth and development of children. Other factors strongly associated with growth and development include the time of weaning, the types and amount of solid food first introduced into the

diet and the presence and severity of infection particularly febrile infection, respiratory infection and diarrhoeal infections. Underlying all of these factors are the presence of poverty, poor education, lack of resources to improve hygiene and other socio-economic condition.<sup>25</sup>

Universal and prolonged breast-feeding in developing countries has the twin effects of lengthening birth interval and reducing infant mortality. Breast milk is a vital source of nutritious uncontaminated food for infants. This is particularly important in poor areas of the world, where infant formula is likely to be improperly used and clean water is not always available.<sup>26</sup>

Exclusive breast feeding is essential for the proper growth and development of the young infant and it protects the child from several common morbidities and mortalities. The contribution of breast-feeding to infant's health is especially important in the context of developing countries like Bangladesh. It is, therefore, essential that breast- feeding is practiced vigorously in infancy.<sup>27</sup>

During 1970s & 1980s, there has been an increasing concern about changing patterns of breast-feeding particularly in the third world, where a downward trend has been noted in widely different countries, especially in urban areas. An increasing number of urban educated and well-to-do mothers resorted to bottle-feeding early in postnatal period. Increasing number of urban mothers had shorter period of breast feeding.<sup>28</sup> Concerned by this trend and its negative effect on child health & development, WHO organized a collaborative study in nine countries on breast-feeding patterns and influencing factors, the results of which were published in 1981.<sup>29</sup>

Premature introduction of additional food, particularly milk or formula given by bottle, may reduce the duration of breast-feeding and carries a great risk of causing diarrhoea and malnutrition.<sup>30</sup>

Fewer women in the developing world initiated breast feeding and those who breast-fed, did so for shorter periods resulting in a catastrophic increase in infant morbidity and mortality.<sup>31,32</sup> Duration of exclusive breast feeding is more likely

to be a socio-cultural phenomenon than the complete cessation of breast-feeding because after introducing supplement lactation failure is largely a physiological response to reduced nipple stimulation.<sup>33</sup>

Though it is agreed that exclusive breast-feeding has multilateral benefits, reports about growth of exclusive breast-fed infant are scarce and there is no unified agreement about the time span in which breast milk alone can support adequate growth. For some authors, breast-feeding provides all the required nutrient in the first 2 or 3 months of life but fails later on to support adequate growth in the majority of cases.<sup>34,35</sup> Others consider that exclusively breast-fed infants may require supplements at a later age than the one suggested by comparing their growth rate with the currently used reference curves.<sup>36,37</sup>

Thus the optimal age of introduction of complementary foods is controversial because of the so-called “weanling’s dilemma”<sup>38</sup>, whereby delayed initiation of these foods may result in low energy and nutrient intakes and consequent malnutrition, while premature introduction of these foods is often accompanied

by increased morbidity and mortality from infections.<sup>39,40,41</sup> The World Health Organization (WHO) currently recommends exclusive breast-feeding for 4-6 months<sup>42</sup>, although UNICEF states that complementary feeding should be initiated “at about six months”.<sup>43</sup>

Because of the considerably increased risk of infection associated with consumption of these foods, a two-month difference in the timing of these introduction could have important implications for global rates of diarrhoea and other illnesses. Seven prospective studies carried out in six low-income countries of Africa, Asia and Latin America provide relevant information on the relationship between infant feeding mode and growth velocity during the period from 4-6 months of age.<sup>44,45</sup> In none of these studies growth was enhanced when complementary foods were introduced prior to six months. To contrary, in three studies (two in Sudan & one in Indonesia) children who first received complementary foods after six months had greater growth increment than during the preceding two-months interval. These results, therefore, suggest that complementary foods, should not be introduced before six months.<sup>46</sup>

Breast milk is highly nutritious providing all the elements needed for infant health during the first six months of life. Afterwards it meets less and less demand of the child's need.<sup>47</sup> In many developing countries, there is a tradition of not feeding colostrum and suckling is allowed only when 24-72 hours have lapsed since delivery.<sup>48</sup> Thus other foods given instead of colostrum introduces infection to the newborn and causes malnutrition.<sup>49</sup>

Patterns of supplementary feeding during the first 2 years of life have attracted increasing interest as important determinants of malnutrition.<sup>17</sup> The popular concepts and use of such foods are fairly well known in developed countries where malnutrition is not a public health problem. In many developing countries the weaning patterns and the related introduction of supplementing foods are not very well known. During a transitional phase of social and cultural development there is a shift from traditional and well-established patterns to new ones, influenced by modern ideas.<sup>50</sup>



It is generally agreed that beyond about 6 months of age breast milk alone is insufficient to maintain normal infant growth.<sup>51</sup> When breast-feeding is continued beyond this age and supplementation is insufficient or absent, malnutrition may result. When it occurs there is a causal link between inadequate supplementation and malnutrition. Such a link is uncontroversial and WHO guidelines recommend that in order to meet their nutritional requirements, nearly all children aged >6 months should be receiving complementary foods in addition to breast milk. These guidelines also recommend that children should be breast-fed for at least 1 year and preferably up to 2 years or more. However, it has been suggested that prolonged breast feeding may adversely affect a child's nutritional status even when adequate supplementary foods are provided, by affecting the child's acceptance of these supplement or by disturbing the regulation of appetite. Suggestion that breast feeding may be detrimental to the child has provoked strong and sometimes hostile responses.<sup>52</sup>

Once complementary foods are introduced, the amount of these foods that should be provided depends on children's total energy and nutrient requirements at

different ages and the corresponding amounts of these provided by breast milk. Information on energy consumption from breast milk was recently compiled from 21 published studies conducted in developing countries.<sup>53</sup> Mean breast milk energy intakes reported from these studies were 413, 379 and 346 kcal/day by children 6-8, 9-11 and 12-23 months of age respectively. Current estimates of children's average energy needs are 682, 830 and 1092 kcal/day for the same age group.<sup>54</sup> Thus the respective age specific average (rounded) amounts of energy required from complementary foods are approximately 275, 450 and 750 kcal/day.

Current recommended nutrient intakes (RNIs) state that women who are breast feeding should increase their energy and nutrient intakes to the levels above those of non-pregnant, non-lactating women. American recommended dietary allowances (US RDAs) for an increase of 500 kcal are based on a consideration of the amount of milk produced by breast feeding women.<sup>55</sup> The Australian RNI for energy intake also assumes that the overall dietary energy requirement will be less than the theoretical energy cost of milk production if some maternal body

stores are used as an energy source. However, it is acknowledged that weight and fat losses during lactation are highly variable and it cannot be assumed that maternal fat is necessarily drawn upon for the support of lactation.<sup>56</sup> There is evidence to suggest that lactation may be maintained for up to 4 months postpartum with energy intake lower than recommendation.<sup>57</sup>

Exclusive breast-feeding on demand, with a high frequency of feeding episodes in 24 hours, determines optimal infant growth and has a very positive impact on infant health. It is also associated with a delayed recovery of ovarian function and with a period of amenorrhoea that provides effective contraceptive protection to women who wish or need to postpone the initiation of other methods.<sup>58</sup> For this reason women should be encouraged to breast-feed on demand for as long as possible. Both the families and the health services should be aware of the effort that this feeding pattern represents for the individual woman, particularly if she has other children and work to take care of and should provide them with the support that is needed.

Though during last one decade breast feeding improved in developing countries, a great erosion in the practice of breast feeding and weaning has been recorded.<sup>59</sup>

Colostrum, by tradition is largely discarded in Bangladesh, prelacteal feeds are given to almost all newborns, initiation of breast-feeding by most mothers takes place on the 3<sup>rd</sup> or 4<sup>th</sup> day; exclusive breast feeding for 6 months is almost non-existent, there is high prevalence of bottle-feeding even in the villages, unethical marketing of breast milk substitutes (BMs) is widespread, health care providers often prescribe BMs, there is withdrawal of breast feeding during illness, specially during diarrhoea and ARI. Weaning is started too early or too late and mostly by diluted rice gruel or diluted milk formula, given in small quantity and in large interval, meat or fish is given too late, utensils used are usually contaminated. Also, mothers take less food during pregnancy, for fear of having large baby causing difficulty in delivery. Some foods are restricted during lactation and some withdrawn during illness of child leading mother to poor nutrition. Nutritional status of young children are not improving though many efforts are given by Govt. and NGOs.

In this situation this study aims to see the impact of breast feeding and weaning practices on the nutritional status of children attending an urban clinic. Radda Barnen MCH Clinic, situated at Section- 10, Mirpur, Dhaka serves the under five children by giving treatment for common illnesses and malnutrition, and providing EPI services. Thus Radda Barnen MCH Clinic was selected to investigate the impact of feeding practices on nutritional status of under two years children.

## RATIONALE OF THE STUDY

Studies on breast feeding, specially in developing countries, have been receiving much interest and attention in recent years by scientists and policy makers because of its manifold implications for maternal and child health. Khan MU<sup>60</sup> examined whether breast feeding alone or with a supplement maintained normal growth and whether the incidence of diarrhoea was different in two groups. Briend A et al<sup>61</sup> examined effect of breast feeding on nutritional state, morbidity and child survival in a community in rural Bangladesh. Much more emphasis has been given on the breast-feeding and many researches have been done in this issue than other part i.e. weaning of the child feeding practice. Other researches were conducted to see the breast-feeding and weaning pattern in different socio-economic cultures. But their relation with nutritional status of children were hardly documented. This study aims to highlight the benefits of correct weaning practices as well as breast feeding in maintaining nutritional status and evils of inter-current infections on occurrence of malnutrition in under 2 years children. Because breast feeding and weaning mostly affect this group of children and infections are more common in this group.

## OBJECTIVES

**a. General Objective:**

To investigate the relationship of feeding practices and other factors with the occurrence of malnutrition in children of under two years age.

**b. Specific Objectives:**

1.To examine the pattern of breast feeding and weaning among the malnourished under two years children and well nourished children of the same age group.

2.To determine the association of breast feeding and weaning practices with occurrence of malnutrition.

3.To determine other associated factors in the occurrence of malnutrition i.e. socio-economic factors, inter-current infection and immunization of the children, and food taken by the mothers during lactation.

## **VARIABLES USED IN THE STUDY**

The variables considered in this study are given below:

1. Age of the child
2. Weight of the child
3. Height of the child
4. Birth order of child
5. Sex of the child
6. Place birth
7. Father's education
8. Mother's education
9. Father's occupation
10. Mother's occupation



11. Area of residence
12. Housing type
13. Drinking water
14. Toilet facilities
15. Age of the mother
16. Monthly income of the family
17. Age of starting weaning
18. Type of first food
19. Time of first breast feeding
20. Use of colostrum
21. Status of breast feeding
22. Duration of exclusive breast feeding
23. Duration of continuous breast feeding

24. Type of other milk

25. Causes of giving other milk

26. Concentration of other milk ??

27. Reason for stopping breast feeding

28. Person suggesting for stopping breast feeding

29. Age of starting weaning – cereal, meat, vegetables and fruits

30. Vaccination status

31. Illness of child in last month

32. Mother's diet during lactation

## **OPERATIONAL DEFINITION**

### **1. Exclusive breast feeding:**

The children who receive only the mother's milk but no other liquid, semisolid or solid as food. Taking water and medicine are ignored.

### **2. Complementary feeding:**

Use of other milk like cow's milk, adult or infant formula to substitute the breast milk when it is absent or insufficient.

### **3. Weaning:**

Introduction of semisolids or solids other than breast milk or adapted formula. This is a transition of young child's diet from milk alone to one based on the regular family meals.

# CHAPTER TWO

## **LITERATURE REVIEW**

There are many literatures available on nutritional status of children, their feeding practices and socio-economic factors influencing feeding and nutrition.

Some of the literatures are reviewed here:-

### **1. Nutritional status of children:-**

Child malnutrition is widespread in its serious form in most of the developing countries particularly in children below 3 years of age. Thirty six percent of the world children under-5 are malnourished. Children of Asia, particularly south Asia are mostly affected. Nearly one child in two bears the burden of malnutrition in Asia. Almost half of the world's malnourished children live in the nations of South Asia<sup>62</sup>.

Bangladesh Bureau of statistics<sup>63</sup> in the latest survey on child nutritional status showed that 35.2% of the study children were severely stunted and another 30.3% were moderately stunted.

Feeding patterns during the first year of life influence growth, development and morbidity. Waterlow et al<sup>35</sup> opined that normal weight gain of an exclusive breast-fed infant can be maintained for 4-6 months only under favourable condition, beyond that age growth slows down unless additional food is provided.

Nutritional status of infant depends on feeding practices prevalent in the community. Exclusive breast feeding for the first 4-6 months of life and timely introduction of weaning foods are important for laying down proper foundations of growth in later childhood.<sup>64</sup>

Serventi M et al<sup>65</sup> found in a study in Tanzania that for 62% of the mothers interviewed, the precipitating cause of PEM was a sudden cessation of breast feeding. The main reason the mothers gave for stopping breast-feeding was that they believed their milk was “bad”. This was because of breast infection, a new pregnancy, mother’s illness etc. Failure of breast feeding due to lack of or insufficient breast milk, or due to death of or separation from the mother, may be

important causes of nutritional marasmus, specially in poor communities where breast feeding is the best method to provide young children with adequate nutrients.<sup>31</sup>

Piechulek H et al<sup>9</sup> in a study in Bangladesh found that malnutrition was already present among children up to five months of age, with prevalence rates of 9%, 26% and 14% for acute, chronic and low weight respectively. The nutritional status of infants deteriorated rapidly from the sixth month. Overall, 19% of children under five years of age were acutely malnourished, 52% were chronically malnourished and 57% were of low weight.

It was found in Dharavi slum, Bombay<sup>66</sup> that a higher proportion of infants who were exclusively breast-fed for the first 6 months of life were in the standard grade of nutrition, when compared to those who received breast milk and supplements. Non breast-fed infants tend to be significantly less well nourished than those receiving breast milk, whether with or without supplements. This indicates very clearly the dangers of early weaning with relation to the infant's

health. There was no difference in nutritional status between infants who were exclusively breast-fed between 6 and 11 months and those receiving breast milk and supplements. This was a surprising finding as it is expected that food supplements will be essential over 6 months of age to maintain an adequate nutritional status. It suggests that quantity and quality of food supplements given were insufficient to allow normal growth.

Health analysis of the rural children in Hubei Province, China<sup>25</sup> indicated that children who were breast fed for >12 months had greater Height for age, Weight for age and Weight for height Z scores than did children who stopped breast feeding before their first birth day.

Breast feeding is specially important in developing countries not only because of the prevailing microbial ecology but also as the alternatives to maternal milk whether fresh animal milk or commercial formula, are expensive and may become over diluted, which may lead to inadequate calorie intake. Furthermore,



the feeding utensils, including feeding bottles are often contaminated because of ignorance, poverty and poor hygiene.<sup>67</sup>

## 2. Socio-economic factors influencing feeding & nutrition:-

Family income and maternal education are already influential socio-demographic factors explaining infant health status.<sup>68,69</sup> Education has emerged as an important factor for child nutrition. Higher educated women are more likely to breast-feed exclusively and to delay the introduction of formula than are less educated women.

In another study Dugdale A.E.<sup>70</sup> showed that the type of feeding in educated and wealthy families is largely a matter of convenience for the mother than welfare of the infant. Talukder et al.<sup>71</sup> showed negative co-relation between breast feeding and mother's education & family income.

Walia BNS et al.<sup>72</sup> in their study in Chandigarh, India found that 60% of the mothers received advice about infant feeding and supplementation from other

women and the rest from the elder women of the family. Seventy percent of the upper class were seen weaned completely by the age of 9 months.

In a study among the women with higher level of education and family income groups in Nigeria, Fagbule D.O and Losebikan A<sup>73</sup> found that they breast fed their babies for a shorter period and tended to wean earlier than the illiterate and low income group.

Kuwaitee mothers from high income families were seen less likely to practice breast feeding.<sup>74</sup> Cent percent of them weaned their infants suddenly.

It is a common practice among the affluent and in developed society to provide a variety of liquid and semisolid foods to the infants before 6 months of age. Allan and Haywood<sup>75</sup> reported that 70% of the mothers in Sydney, Australia introduced supplementary food predominately vit-c syrup in the first month and 48% were having solids mainly commercially prepared cereal food before two months.

Khaleda et al<sup>76</sup> in their study among the urban population observed that majority of the mothers received information about infant feeding from doctors. Health

clinics were the main sources of information that influenced in making decision on supplementary feeding among the mothers in Wageningen, the Netherland.<sup>77</sup>

Al-Mazrou YY et al<sup>78</sup> found in a study in Saudi Arabia that duration of breast feeding varied according to mother's age. Median duration of breast-feeding in mothers under 20 years of age was 10.1 months. Median duration of breast feeding in 20-24, 25-29 and 30-34 years old mothers were 14.2, 13.3 and 14.6 months respectively. Median duration increased to 19.4 months in the 35-39 year age group mother.

Nagra SA and Gilani AH<sup>15</sup> in a study in Pakistan showed that the duration of breast feeding was the longest in low income group and that for artificial feeding longest in high income group. The age at which solids were introduced in the infants' diet appeared to be governed by socio-economic status. The dilution of artificial feeds and bottle hygiene were generally improper.

Ashraf RN et al<sup>67</sup> found in his study in Lahore, Pakistan that all the newborns received some prelacteal feeds, which varied between urban and rural settings. It

is a common observation that the first feed in the Indo-Pak subcontinent is ceremonially given by an important family member. Cultural belief is that this process imprints the moral values of the person who gives the first feed to the neonates. Most prelacteal feeds are also believed to act as laxatives to facilitate the rapid evacuation of meconium to clear the gastrointestinal tract of the baby. Honey was the most popular in urban slum.

### **3. Breast feeding practices:**

Breast milk is the natural means for maintenance of life of different species and their off springs. It is the natures' and mothers' gift to the infant. Breast milk is still the best in early months of life, though the controversies persist about the duration and adequacy of breast -feeding.

In order to obtain the best possible start in life it is now widely accepted that an infant should be put to the breast as soon as possible after birth. This is likely to promote the chance of successful breast feeding<sup>79</sup> and allows the infant to obtain the early breast milk or colostrum, which gives specific protection against

infection.<sup>80</sup> Breast milk alone is nutritionally adequate for most infants until about six month of life. Indeed it is desirable up to 6 months that food supplements are not given as they are likely to introduce infections to the child.<sup>79</sup>

In spite of the many virtues of breast feeding the practice has declined in developed countries. In some developing countries more than 90% of mothers breast feed for one year, but the health status of these children is very poor compared to that of the children in developed countries. It has been reported that breast feeding even in developed countries reduces morbidity.<sup>60</sup>

Indian infants who were exclusively breast fed showed satisfactory growth during the first 4-6 months.<sup>81</sup>

In a study in Saudi Arabia<sup>82</sup> it was found that the percentage of children who were still breast feeding with or without supplementation was on the average 90% with a range of 87-92% in different mother's age group. Mean age at supplementation with solids was 5.3 months for all ages.

Srivastava SP et al<sup>83</sup> found that a vast majority (87.9%) of mothers used prelacteal feeds which included sugar in water (47.5%), plain water (16.0%), diluted cow milk (13.5%), honey (7.8%) and milk powder (3.1%). Unhygienic methods such as cotton swab, dropper and finger tip were more commonly used to give these feeds in less educated and low socio-economic status mothers.

The Government of the United Republic of Tanzania has been exhorting women to breast feed their infants frequently and for a long duration. Along with breast feeding campaigns operated through clinics and nutrition centers, working women are given 84 days' maternity leave. Thereafter they are entitled to breaks during working hours specially for nursing their children. Due to strong attitudes in favour of breast-feeding more than 97% of Tanzanian infants are breast-fed for at least some time. This suggests that any reduction in breast feeding is likely to be reflected in a fall in the average duration of breast-feeding, rather than a decline in the percentage of infants ever breast-fed.<sup>26</sup>

Diaz S et al<sup>58</sup> in a study in a poor urban children population found 63% and 24% of mothers breast feeding for 6 and 12 months respectively. The median ages at introduction of non-dairy food and of milk supplements were 6.0 and 7.4 months respectively. The probability of remaining fully breast-fed for 12 months was significantly higher in infants with higher birth weight and higher maternal weight and infant who were breast-fed 7 times/ days up to 6 months of age.

Omer MIA et al<sup>28</sup> in a study among different groups in Sudan found that breast feeding was initiated within the first half hour after delivery by 72% of the rural mothers, while 57% of the urban groups did so between half and 24 hours after delivery. About 15% of urban elite and urban poor delayed breast feeding more than 24 hours.

In the urban slum of Dharavi in Bombay<sup>66</sup> it was found that there was a steady decline in exclusive breast feeding from 1 month onwards. After 6 months only 57% of the infants were exclusively receiving breast milk. Supplements up to this age consisted almost entirely of animal or commercial milk. By 11 months of

age, 14% of infants still received breast milk and by this age, breast milk would be wholly inadequate when given alone. These infants were likely to be at great risk of malnutrition and therefore disease.<sup>79</sup>

A study conducted in the province of New Brunswick, Canada<sup>84</sup> showed that prevalence of exclusive breast-feeding was very low after the first few weeks, reaching 13% at 3 months and 1% at 6 months. Fifty six percent of infants were breast-fed at birth, the percentage decreased to 31% at 3 months and 16% at 6 months. Forty four percent of babies were never breast-fed. By 6 months of age, more than 80% of babies had received at least one component of milk other than water.

In a study in Madrid<sup>85</sup> it was found that 83% of the mothers started breast feeding after birth. Of these mothers, 11% combined breast-feeding with administration of infant formula. A slightly higher rate of initial breast-feeding could be found in the highest socio-economic group, but difference was not statistically significant. Prevalence of breast-feeding refers to the proportion of babies still



breast-fed at specific ages, even if the infants were also receiving infant formula or solid food.

#### 4. Weaning Practices:-

In a study by Bavdekar SB et al<sup>86</sup> in India, it was found that timely introduction of weaning foods were not encouraging. Timely complementary feeding rate was only 48%, thereby implying that in the age group of 6-10 months, the majority of children did not receive complementary food. This late introduction of weaning food by Indian mothers is a well documented fact and is considered to be a major cause of infant malnutrition.<sup>87</sup>

Jelliffe (et al<sup>88</sup>) and Mata (et al<sup>89</sup>) observed that without proper supplementation, prolonged breast feeding alone is not associated with higher weight gain of children. Laurine V Brown et al<sup>90</sup> found that Bangladeshi children gain weight within the first few months after birth but before 4-6 months weight gains falter relative to international standard. Brown KH et al<sup>8</sup> also observed the same trend in Bangladeshi rural children.

Cent percent of Bangladeshi children are breast-fed. Extensive work has been done on infant supplementation in the lower socio-economic group. Bangladesh Bureau of Statistics<sup>63</sup> in its study found that 30% of the mothers introduced solid food to their children by the age of 6 months. More than 80% of the children do receive rice based food as the first weaning food. Data among the upper socio-economic group on infant supplementation is poor.

Khan M U<sup>91</sup> in his study on the infant feeding practices among the Bangladeshi population showed that 39% of the urban elite supply rice and wheat products to their children by the age of six months.

Irapant and Choltia<sup>92</sup> while working among the mothers of high income group of urban Baroda, India found that the mothers stopped breast feeding when the child was 3-6 months and initiated supplementation by 4-6 months mainly with the commercial baby food.

Kumar et al<sup>93</sup> conducted a prospective study in privileged urban families in Chandigar, India and found that 98.8% babies were given semisolid food by 6

months of age (mean age 4.4 months) with processed cereals such as rice and wheat as the first weaning food. Fish, egg and meat were given to a very few babies and that too after 6 months of age.

In a comparative study among the two socio-economic groups in an urban community in Delhi, India. ND Datta Banik<sup>94</sup> revealed that most of the mothers from higher socio-economic group started solid food at about 6 months of age of the infants, while mothers from lower socio-economic group started solid food after one year of age. Interestingly very few mothers from well-to-do families were seen using dried tinned milk, rather they preferred cow's or buffalo's milk.

Gayatry RA and Reddy DCS<sup>95</sup> in their study in an urban community in Baranasi, India found that mothers' usual practice of introducing semisolid and solid food to their infant was at about 10 months of age.

Jackson D A et al<sup>96</sup> in their study in Thailand found that infants were given supplementary food when they were at 4 months of age. Mothers who gave infant formula as the first supplementary food stopped breast feeding earlier.

Among the Bangladeshi families living in London, Jones VM<sup>97</sup> found high incidence of late weaning and very late progression to family foods.

Dettwyler KA<sup>82</sup> while working in Mali, found an average of 20.8 months for weaning. Bottle or formula use was very rare. In contrast to many other populations, however a number of infants in this community showed improved growth after weaning. Whitehead<sup>98</sup> in his study among the Cambridge infants observed that bottle fed children were in general given solid food sooner, 10.6 weeks for boys and 13.9 weeks for girls.

In Northern Nigeria, Mc Intosh<sup>99</sup> found majority of the working class primipara mothers introducing solid food relatively early usually as a problem solving device. The Housas<sup>100</sup> were seen introducing supplementary food between 5-9 months of age with diet usually deficient in energy, essential nutrients and protein. Introduction of supplementary foods were seen significantly earlier to infants born in a large household in Thailand and a tendency was seen among the

older mothers to supplement earlier. Meat, fish or eggs and purchased snacks were not seen given until after 6 months of age.<sup>96</sup>

In a comparative study among the Turkish mothers living in Istanbul and Stockholm, 60% of the mothers residing in Stockholm were found to start supplementation at 3 months of age. Whereas, only 7% of the Istanbul mothers started supplementation at the same age. The diets of infants living in Stockholm relied totally on commercial food and received meat or egg containing semisolid more often. On the other hand the infants living in Istanbul received mainly home made mixtures.<sup>101</sup>

John Worobey<sup>102</sup> reported that formula feeding mothers were quicker to introduce their infants to solid foods. In Hungary 80% of the mothers who started supplementation before 3 months were reported to have insufficient milk production.<sup>29</sup> Fomon SJ et al<sup>103</sup> in a summarized data in U.S. showed that cereals were introduced first followed by strained food, juice and vegetables. A large proportion of mothers started regular supplementation by 2-3 months. Among

affluent urban groups the prevalence of early supplementation was much higher. Cereals were rarely used before 3 months and were commonly used after 3 months.

A trend towards early introduction of supplementary feeding was observed in a study in Sudan by Omer MIA et al<sup>28</sup>, although the mean duration of breast feeding ranged between 14.2 and 16.7 months in the various socio-economic groups. Solid foods were introduced before the age of 6 months by 47.3% of urban elite mothers compared to one third of all other groups. Sudden weaning was the rule in the latter group.

Bagenholm G et al<sup>50</sup> in a study of child feeding habits in Yemen found that introduction of family food before 6 months of age was seen only in the slum area. At the age of 1 year 80% of the urban, 79% of the slum and 60% of the rural children were regularly taking a portion of the family's diet. At the age of 18-24 months urban and slum children had practically all been transferred to the

family's diet, whereas in the rural area 20-30% of the children were still not introduced to the family's diet.

Garza C et al<sup>104</sup> in a study compared the intakes of breast fed infants given solid foods before 6 months with those of infants given solid foods at 6 months or later. Because human milk intake declined in the former group as solid foods were added, there were no significant differences in energy intake between groups. In both the groups downward trend in Z scores continued after the introduction of complementary foods. This would not be expected if growth faltering were the basis for the decline.

# CHAPTER THREE



## METHODOLOGY

A cross sectional study was undertaken to see the association of breast feeding and weaning practices with nutritional status of under two years children.

i. Place of study:

The study was conducted in Radda Barnen MCH clinic situated at section – 10, Mirpur, Dhaka. This clinic has both preventive and curative services on an out patient basis. Nutrition Rehabilitation Unit and EPI programme are the most important components of the clinic.

ii. Study population:

Children under 2 years of age both male and female attending for treatment of malnutrition in the Nutrition Rehabilitation unit of the clinic was taken as the study group. Malnutrition was considered as per Gomez Classification, which is also followed in this clinic as standard chart. Weight of age 75-89% of the reference – Grade 1 (Mild), 60-74% - Grade II (Moderate) and less than 60% -

*why this classification, Rd  
for*

Grade III (Severe) malnutrition. Study population was selected from grade III and some of grade II. Well-nourished children attending for immunization were taken as control group.

iii. Sample size:

Data was collected from 348 malnourished under 2 years children (study group) and 160 well nourished children of same age group (control group). Comparison was made regarding socio-economic factors, breast-feeding, weaning and inter-current infection/ immunization on both groups.

iv. Sampling technique:

Radda Barnen MCH clinic serves the under five children and antenatal mothers. The services include EPI, antenatal check-up, consultation for mothers & children and supplementary feeding for malnourished children. In this center, around two thousand under five children with different medical problems come for consultation per month. Among them quite a sizeable portion are malnourished of different grades and of them around 40% are under 2 years of

age. From these, mothers of about 7-8 children were interviewed each day and continued till the envisaged number of 508 was obtained.

v. Period of study:

Total period of study was about 12 months.

vi. Methods of data collection:

Data were collected by face to face interview of the mothers of the selected children. A pre-tested structured interview schedule was used. The interview schedule consisted of:

- a. Part – 1: This part of the interview schedule contained questions on general information like age of the child, its birth order, area of residence, housing condition & sanitation, education of parents, occupation of father & mother, income of the family.
- b. Part – 2 : This part contained details of breast feeding and weaning e.g. on which day breast feeding started, practice of feeding colostrum, duration of

breast feeding, reason for stopping breast feeding, time of starting weaning, different food items given at different ages.

- c. Part – 3 : This part contained information about immunization status of child, disease of child in past months, maternal nutrition. Interview was taken when the mothers were waiting for EPI service, or for feeding care in nutrition center.

vii. Data analysis:

At the end of data collection, they were edited; coded and entered into a computer in Data base file. Later the data was translated to SPSSPC+ programme and analyzed. Simple frequency with percentage has been calculated to see the distribution of different variables in different groups. Bivariate analysis has been done to see the association between two variables and the difference in results between the variables and the class intervals were tested by calculating the chisquare value in Pearson method.

# CHAPTER FOUR

## RESULTS

Table-1 show the frequency distribution with percentage of different socio-economic factors in malnourished and well nourished under 2 years children. Detail analysis is in the next tables and figure.

**Table – 1**  
**Socio-demographic characteristic of children having different nutritional status**

Sociodemographic characteristics	Malnourished		Well-nourished		Total	
	N=348		N= 160		N=508	
	No.	%	No.	%	No.	%
Mean Age (In month)	12.32		12.09			
<b>Sex :</b>						
Male	142	40.80	107	66.87	249	49.02
Female	206	59.20	53	33.13	259	50.98
<b>Place of birth:</b>						
Home	299	85.92	90	56.25	389	76.57
Hospital	49	14.08	70	43.75	119	23.43
<b>Father's education:</b>						
Illiterate	151	43.39	4	2.50	155	30.51
Primary - S.S.C	165	47.41	66	41.25	231	45.47
H.S.C. & above	32	9.20	90	56.25	122	24.02
<b>Mother's education</b>						
Illiterate	209	60.06	20	12.50	229	45.08
Primary - S.S.C	127	36.50	106	66.25	233	45.86
H.S.C. & above	12	3.44	34	21.25	46	9.06
<b>Father's occupation:</b>						
Service	76	21.84	91	56.88	167	32.87
Business	49	14.08	44	27.50	93	18.31
Skilled labor	70	20.11	19	11.87	89	17.52
Unskilled labor	153	43.97	6	3.75	159	31.30
<b>Mother's occupation</b>						
House wife	281	80.75	142	88.75	423	83.27
Skilled labor	37	10.63	10	6.25	47	9.25
Unskilled labor	30	8.62	8	5.00	38	7.48
<b>Area of Residence</b>						
Urban slum	165	47.41	4	2.50	169	33.27
Urban nonslum	176	50.58	151	94.38	327	64.37
Rural	7	2.01	5	3.12	12	2.36
<b>Housing type</b>						
Building	30	8.62	71	44.37	101	19.88
Tin shade	63	18.10	76	47.50	139	27.36
Kucha	255	73.28	13	8.13	268	52.76
<b>Drinking water</b>						
Safe water	95	27.30	104	65.00	199	39.17
Unsafe water	253	72.70	56	35.00	309	60.83
<b>Toilet Facilities</b>						
Unhygienic	318	91.38	25	15.62	343	67.52
Hygienic	30	8.62	135	84.38	165	32.48

Table - 2

**Distribution of means of characteristics among children having  
different nutritional status**

Characteristics	Malnourished (N=348)	Well nourished (N=160)
Age (in month)	12.32 (4.30)	12.09 (4.12)
Weight (in Kg)	7.7 (1.65)	8.06 (1.33)
Height (in cm)	73.45 (8.20)	75.1 (6.48)
Birth order	2.17 (1.39)	1.98 (1.90)
Age of Mothers	23.72 (4.89)	22.69 (4.06)
Monthly Family Income	2512.40 (1570.44)	4923.45 (2723.69)
Duration of exclusive breast feeding (in month)	3.54 (1.27)	4.33 (2.06)
Duration of continuous breast feeding along with other food (in month)	5.27 (2.36)	12.12 (4.76)
Age of starting weaning food (in month)	3.70 (1.60)	4.45 (1.50)

Standard Deviation (SD) is given within parenthesis.

Table-2 shows the means and standard deviation (SD) of some characteristics among the children having different nutritional status. Mean age of children and mothers and birth order were lower in well nourished than in malnourished group. Weight and height of the children and income of the family in well

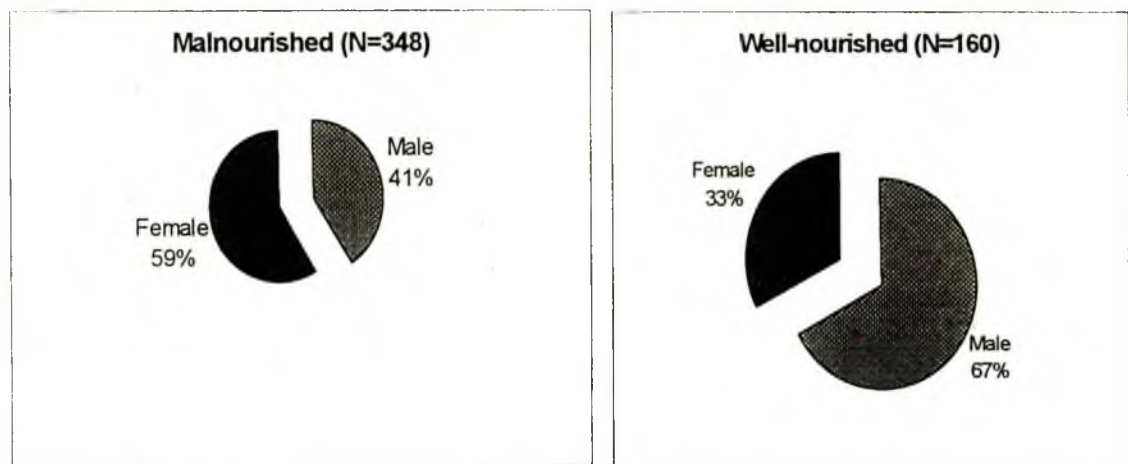
nourished group were higher than malnourished group. Duration of exclusive breast feeding, duration of continuous breast feeding along with other food and age of starting weaning were more in well nourished than in malnourished group.

**A. Socio-economic Factors:**

(1) Relationship of sex, birth place and birth order of child with Nutritional status:

**Figure-1**

**Sex of children and their nutritional status**



$\chi^2=126.3038$

$df=1$

$p=0.000$

It was found in the study that more female (59%) than male (41%) children were malnourished whereas most of the well nourished children (67%) were male. Sex of the children has significant ( $P=0.000$ ) effect on nutritional status (Figure-1).



**Table - 3**  
**Birth place of the children and their nutritional status**

Place of birth	Malnourished		Well-nourished		Total	
	No.	%	No	%	No.	%
Home	299	85.92	90	56.25	389	76.57
Hospital/Clinic	49	14.08	70	43.75	119	23.43
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 53.8407$$

$$df = 1$$

$$p = 0.000$$

Most of the malnourished children (85.92%) were delivered in home and only few (14.08%) in hospital. In case of well-nourished children home delivery (56.25%) and hospital delivery (43.75%) were almost equal. Children delivered in hospital has significant ( $p=0.000$ ) chance of becoming well nourished than the children of home delivery (Table - 3).

**Figure - 2**  
**Nutritional status of children having different birth order**

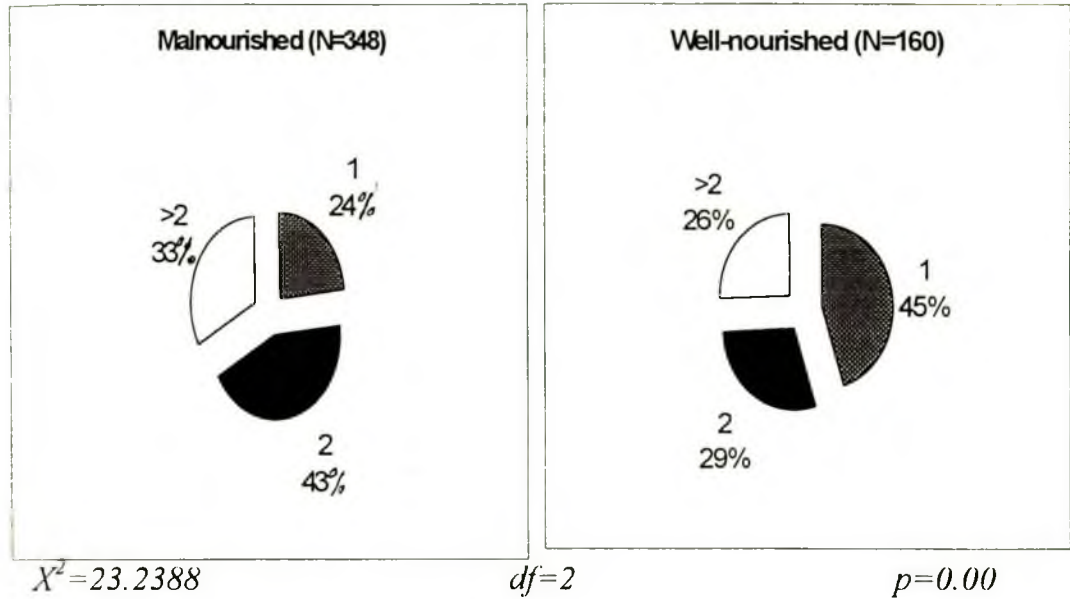
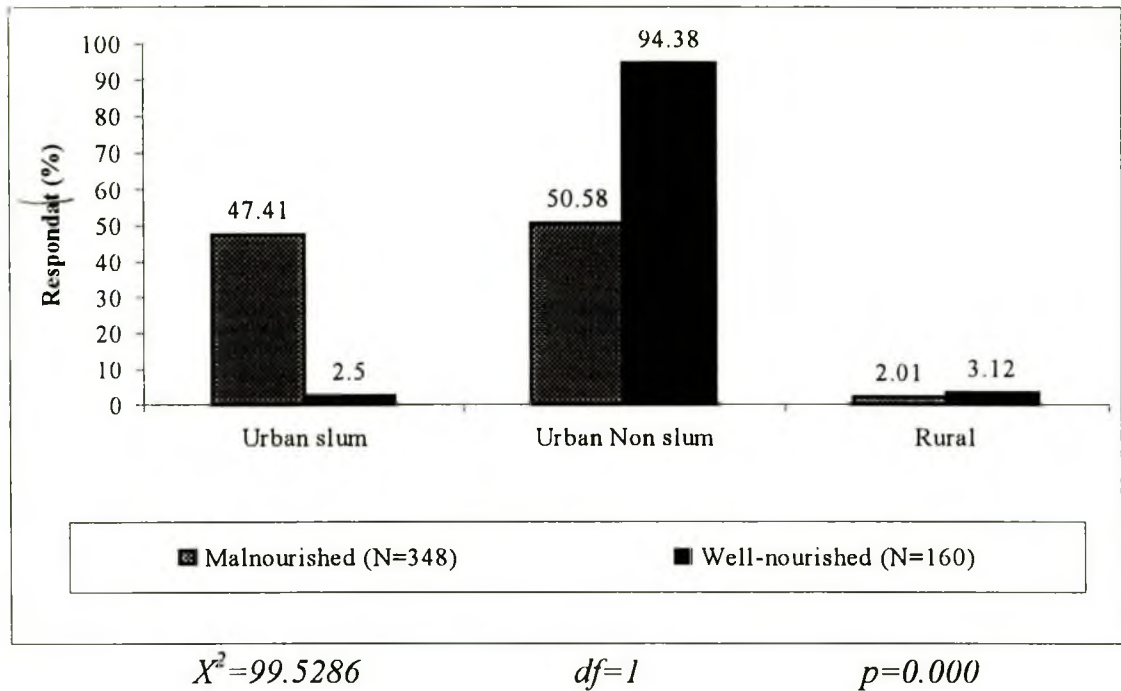


Figure-2 shows that malnourished children have 1<sup>st</sup> birth order – 24%, 2<sup>nd</sup> – 43%, >2<sup>nd</sup> – 33% whereas well-nourished children have 1<sup>st</sup> birth order – 45%, 2<sup>nd</sup> – 29% and >2<sup>nd</sup> – 26%. It is evident that when the birth order is more, the chance of malnutrition is also more (p=0.000).

(2) Influence of area of residence, housing condition, drinking water and toilet facilities on occurrence of malnutrition:

**Figure-3**

**Area of residence and nutritional status of children**



From the study we found that among the malnourished children urban slum (47.41%) and urban non-slum (50.58) dwellers were almost equal. But the well-nourished children were mostly (94.38%) from urban non-slum area. Thus area of residence has an influence on the occurrence of malnutrition which is statistically significant ( $p=0.000$ ) (Figure-3).

**Table – 4**  
**Housing facilities and nutritional status of children**

Housing type	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Building	30	8.62	71	44.37	101	19.88
Tin shade	63	18.10	76	47.50	139	27.36
Kuccha	255	73.28	13	8.13	268	52.76
Total	348	68.50	160	31.50	508	100.00

$X^2 = 193.2828$

df = 2

p = 0.000

Most of the malnourished children (73.28%) lived in Kuccha house and only 18.10% in Tin shade and 8.62% in building. Whereas most of the well nourished children lived in building (44.37%) and Tin-shade (47.50%). Better housing condition confers better nutritional status is highly significant (p=0.000) (Table-4).

**Table – 5**  
**Source of drinking water and nutritional status of children**

Source of drinking water	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Safe water	95	27.30	104	65.00	199	39.17
Unsafe water	253	72.70	56	35.00	309	60.83
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 65.25,$$

$$df=1$$

$$p=0.000$$

Most of the malnourished children (72.70%) had unsafe drinking water whereas most well nourished children (65.00%) got safe water supply (Table-5). It is evident that drinking unsafe water has a significant impact on malnutrition (p=0.000).

**Figure-4**  
**Type of Toilet facilities and nutritional status of children**

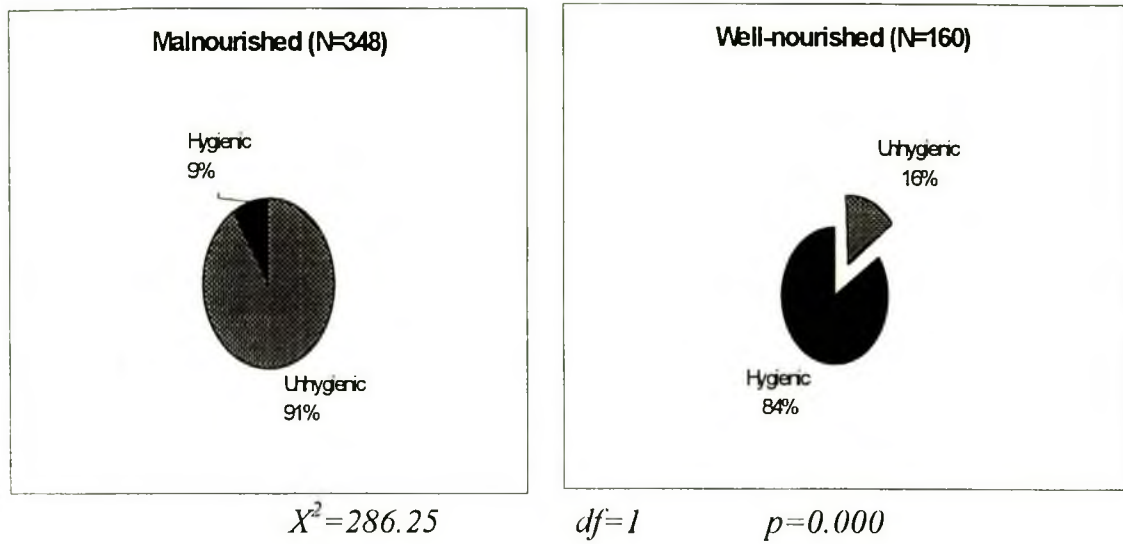
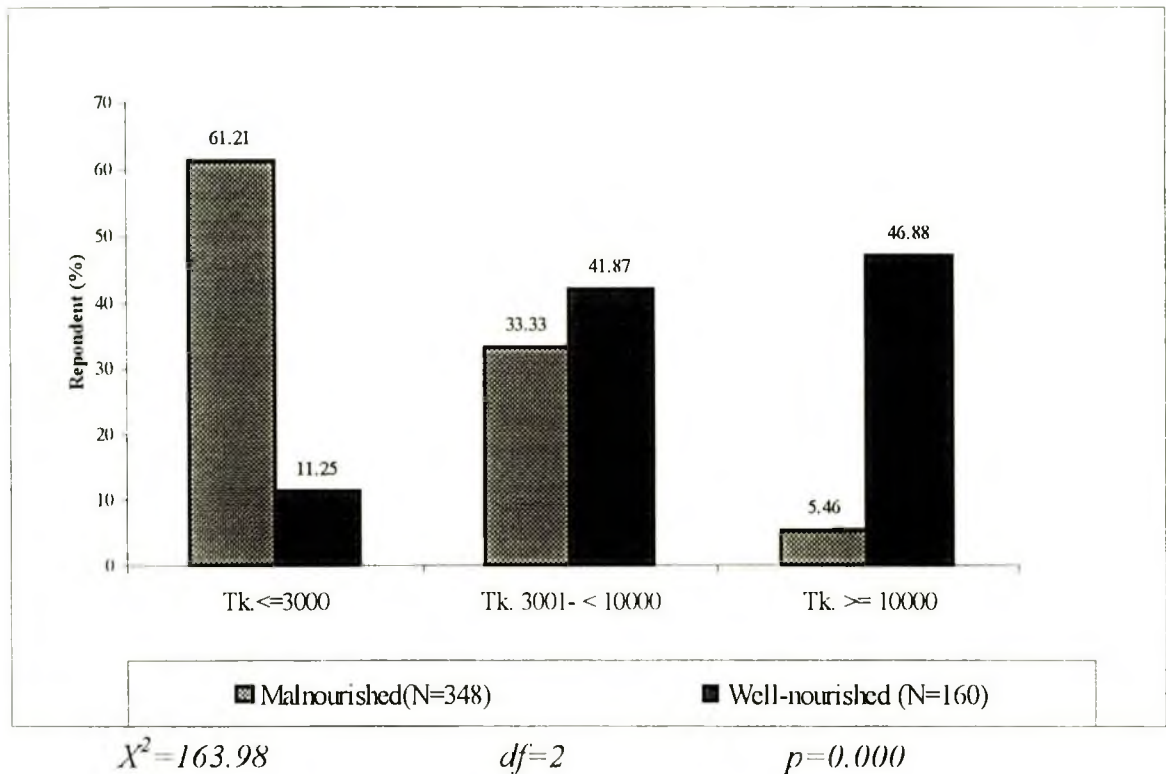


Figure-4 shows that most of the malnourished children (91%) used unhygienic toilet, only 9% had hygienic toilet facilities. In contrast most of the well nourished (84%) children had hygienic toilet. Thus unhygienic toilet facilities also contributes malnutrition ( $p=0.000$ ).

- (3) Contribution of income of the family, parent's education, parent's occupation and maternal age on the occurrence of malnutrition.

**Figure-5**  
**Nutritional status of children from the families of different economic condition**



It was found in our study that most of the malnourished children (61.21%) was from low-income family having monthly income  $\leq$  Tk. 3000.00. Only 33.33% had income of Tk. 3001-10000. Whereas 46.88% of the well-nourished children were from high income group family having  $>$  Tk. 10,000.00 per month. 41.87% had income of Tk. 3001-10,000. Thus chance of malnutrition in children is significantly more in lower income group whose monthly income is less than Tk. 3000 ( $p=0.000$ ) (Figure-5).

Figure-6

Father's education and nutritional status of children

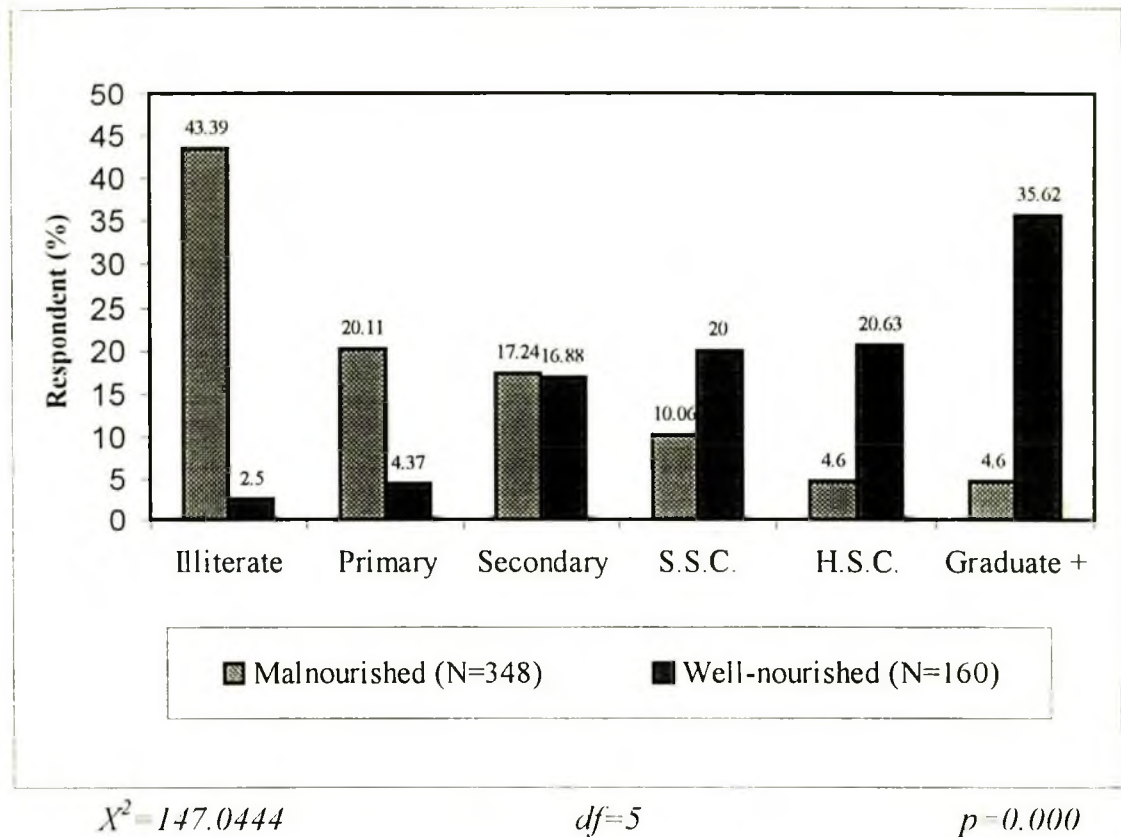
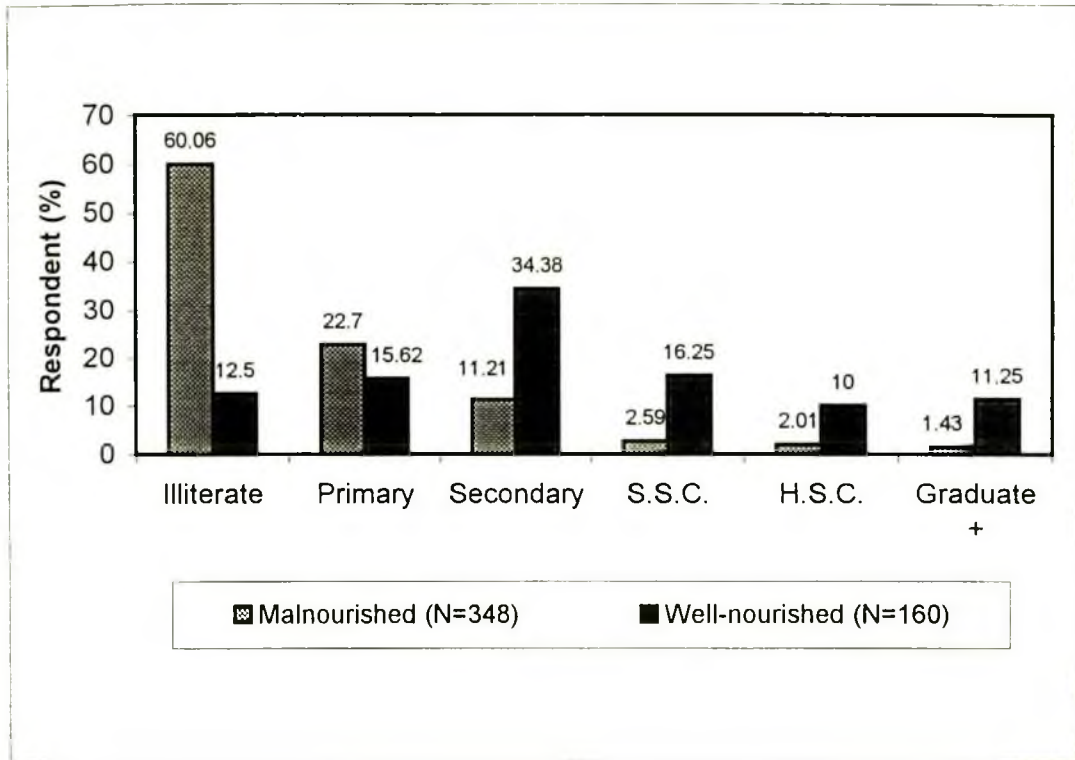


Figure-6 shows that fathers of malnourished children were mainly illiterate (43.39%) or had low education level (S.S.C 17.24%, H.S.C. 10.06%) Whereas fathers of well-nourished children were mostly educated (graduate+ 35.62%, H.S.C. 20.63%, S.S.C. 20.00%), only few (2.50%) illiterate. Education level of father has a positive impact on nutritional status of children ( $p=0.000$ ).



Figure-7

Mother's education and nutritional status of children



$$X^2 = 141.9944$$

$$df = 5$$

$$p = 0.000$$

Majority of the mothers (60.06%) of malnourished children were illiterate, only 6.03% were S.S.C. and above. In contrast 37.50% mothers of well nourished children were S.S.C. and above, only 12.50% illiterate, Mother's education level has a positive impact on nutritional status of children ( $p=0.000$ ) (Figure-7).

Table – 6

## Father's occupation and nutritional status of children

Occupation of Father	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Service	76	21.84	91	56.88	167	32.87
Business	49	14.08	44	27.50	93	18.31
Skill labor	70	20.11	19	11.87	89	17.52
Unskilled labor	153	43.97	6	3.75	159	31.30
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 112.5915$$

$$df = 3$$

$$p=0.000$$

Fathers of malnourished children were mainly unskilled labor (43.97%), few (21.84%) were service holder and 14.08% businessman. Whereas fathers of well-nourished children were mostly service holder (56.88%) and businessman (27.50%), very few (3.75%) were unskilled labor. Thus the more sophisticated is the occupation the more improved is the nutritional status of children ( $p=0.000$ ) (Table – 6).

**Table – 7**  
**Mother's occupation and nutritional status of children**

Mother's occupation	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
House wife	281	80.75	142	88.75	423	83.27
Skilled labor	37	10.63	10	6.25	47	9.25
Unskilled labor	30	8.62	8	5.00	38	7.48
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 5.0372$$

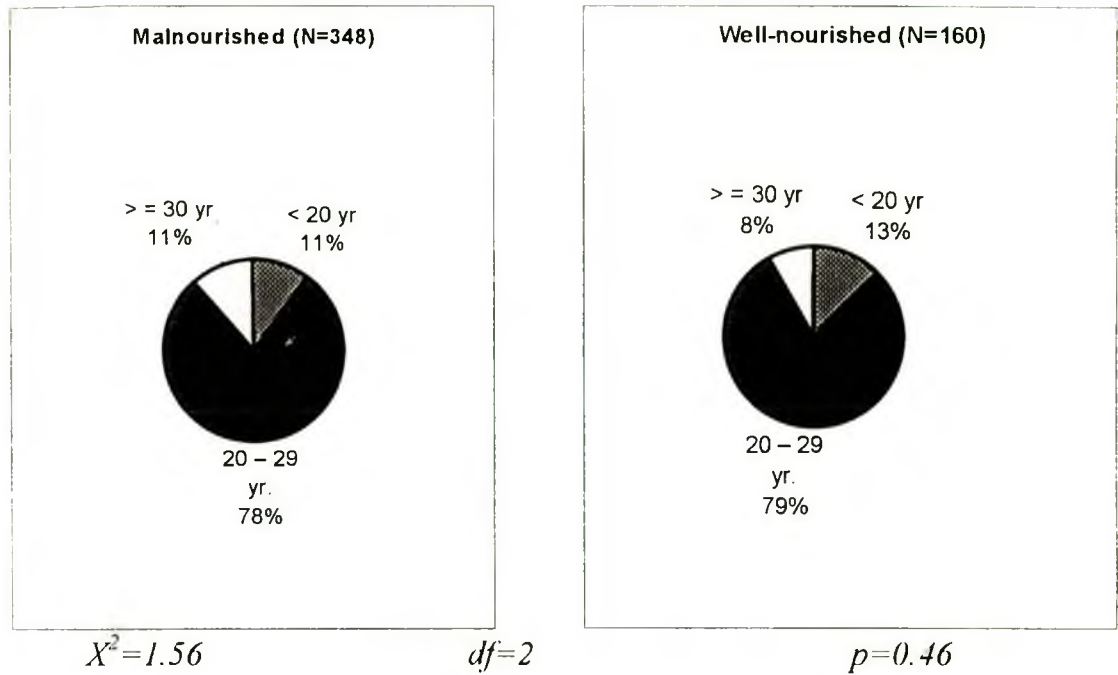
$$df = 2$$

$$p=0.08$$

Table – 7 shows that mothers of both malnourished (80.75%) and well-nourished (88.75%) children were mostly housewife and other occupation were also more or less similar.

Figure-8

Nutritional status of children and different age group of their mothers



Most of the mothers both of malnourished and well nourished children were in the age group of 20-29 yrs (mal-78% and wel-79%), Mothers < 20 yrs and > 30 yrs were few and not much different in two groups (Figure-8).

**B. Breast Feeding Practice:**

- (1) Influence of type of first food, time of first breast feeding, use of colostrum on nutritional status of children:

**Table – 8**

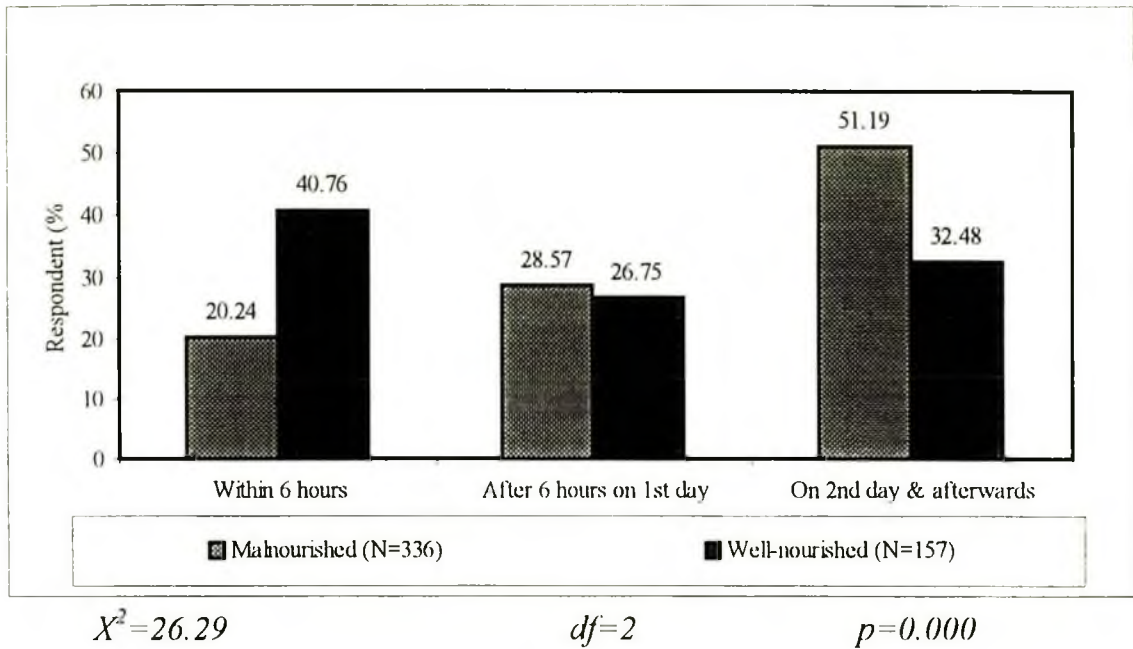
**Type of first food given to the children and their nutritional status.**

Type of food	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Plain water	126	36.21	18	11.25	144	28.35
Sweetened water	38	10.92	19	11.88	57	11.22
Honey	65	1.44	03	1.87	68	13.39
Breast milk	107	30.75	112	70.00	219	43.11
Others	12	3.45	08	5.00	20	3.94
Total	348	68.50	160	31.50	508	100.0

It was found that type of first food given to the child was mainly plain water, sweetened water, honey and breast milk. In malnourished group 36.21% was given plain water and 30.75% breast milk. Whereas in well-nourished (control) group 70.00% was breast milk and 11.25% plain water (Table-8).

Figure-9

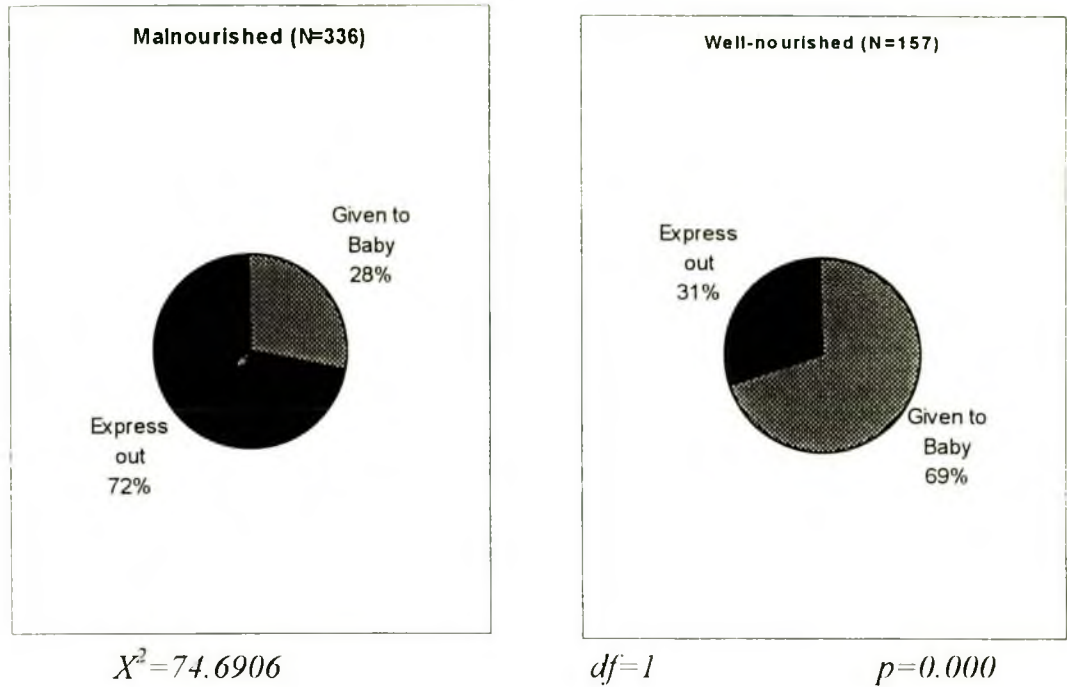
Time of giving first breast milk after birth and nutritional status of the children



Mothers who breast fed their children 20.24% gave within 6 hrs, 28.57% after 6 hrs on first day and 51.19% on 2<sup>nd</sup> day & afterwards in malnourished group. Whereas in well nourished group 40.76% mothers gave within 6 hrs, 26.75% after 6 hrs. and 32.48% on 2<sup>nd</sup> day & afterwards. There is a positive association of giving breast milk earlier in preventing malnutrition (p=0.000) (Figure-9).

Figure-10

Use of colostrum and nutritional status of children



Mothers of malnourished children gave colostrum to their baby in 28% cases and expressed out in 72% cases. In contrast mothers in control group gave colostrum in 69% cases and expressed out in 31% cases (Figure-10). Giving colostrum to the baby has a positive impact on nutritional status in young age ( $p=0.000$ ).

- (2) Status of breast feeding, duration of exclusive breast feeding influencing nutritional status.

**Table – 9**  
**Status of Breast feeding and nutritional status of children**

Status of Breast feeding	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Never Breast Feed	12	3.45	3	1.87	15	2.95
Stop Breast Feeding after sometime	260	74.71	132	82.50	392	77.17
Currently Breast Feeding	76	21.84	25	15.63	101	19.88
Total	348	68.50	160	31.50	508	100.00

$$\chi^2 = 3.9051$$

$$df = 2$$

$$p=0.12$$

It was observed that mothers of malnourished group never breast fed their children in 3.45% cases, stopped breast-feeding after some period in 74.71% and currently breast feeding in 21.84% cases. In well nourished group 1.87% never breast fed, 82.50% stopped breast feeding after some period and 15.63% currently breast feeding. There is no significant association between status of breast feeding and nutritional status (Table-9).



Table – 10

**Nutritional status of children having different duration of exclusive breast feeding**

Duration of exclusive breast feeding	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
< 4 months	116	34.52	45	28.66	161	32.66
Up to 4-6 months	93	27.68	66	42.04	159	32.25
More than 6 months	127	37.80	46	29.30	173	35.09
Total	336	68.15	157	31.85	493	100.00

$$X^2 = 10.1716$$

$$df = 2$$

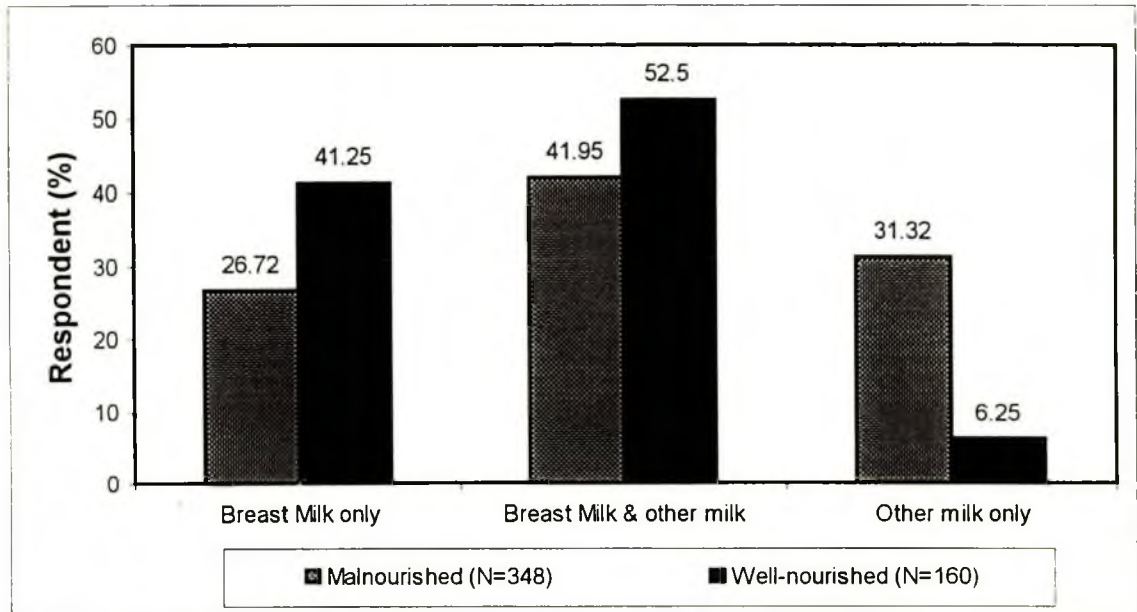
$$p < 0.01$$

Table – 10 shows different duration of exclusive breast-feeding. In malnourished group 34.52% mothers had exclusive breast-feeding for < 4 months, 27.68% for 4 to 5 months and 37.80% for more than 6 months. In well nourished (control) group 28.66% mothers breast fed exclusively for <4 months, 42.04% for 4-6 months and 29.30% for more than 6 months (Table-10). There is significant association between duration of exclusive breast feeding and nutritional status of young children ( $p < 0.01$ ).

- (3) Type of milk given up to 6 months of age, causes of giving other milk than breast milk, type of other milk and its concentration in relation to the nutritional status of children.

Figure-11

Type of milk fed to the children up to 6 months and their nutritional status



$$X^2=57.7396$$

$$df=2$$

$$p=0.000$$

Figure-11 shows different types of milk given to the children up to 6 months of their age. Among mothers of malnourished children 26.72% gave breast milk only, 41.95% breast milk & other milk combined, 31.32% other milk only. Whereas 41.25% of well nourished children were given breast milk only, 52.50% breast milk & other milk combined and 6.25% other milk only. Feeding of breast milk shows positive association with nutritional status of children which is statistically significant ( $p=0.000$ ).

**Table – 11**  
**Causes of giving milk other than breast milk and nutritional status of children**

Causes	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
No secretion of breast milk	26	9.89	7	8.75	33	9.62
Breast milk not sufficient	193	73.38	52	65.00	245	71.43
Child does not like breast milk	13	4.94	7	8.75	20	5.83
Mother's illness	18	6.84	4	5.0	22	6.41
To keep habit with	9	3.42	9	11.25	18	5.25
It causes good health	4	1.52	1	1.25	5	1.46
Total	263	76.68	80	23.32	343	100.00

Most of the mothers in both groups stated that breast milk was not sufficient for baby that's why they gave other milk (mal-73.38%, well-65.00%) to their children. Other reasons were: no secretion of breast milk, child does not like it, to keep habit with, mother's illness, and it causes good health to child. But no reason is significantly different in two groups (Table- 11).

Figure-12

## Type of other milk given to children and their nutritional status

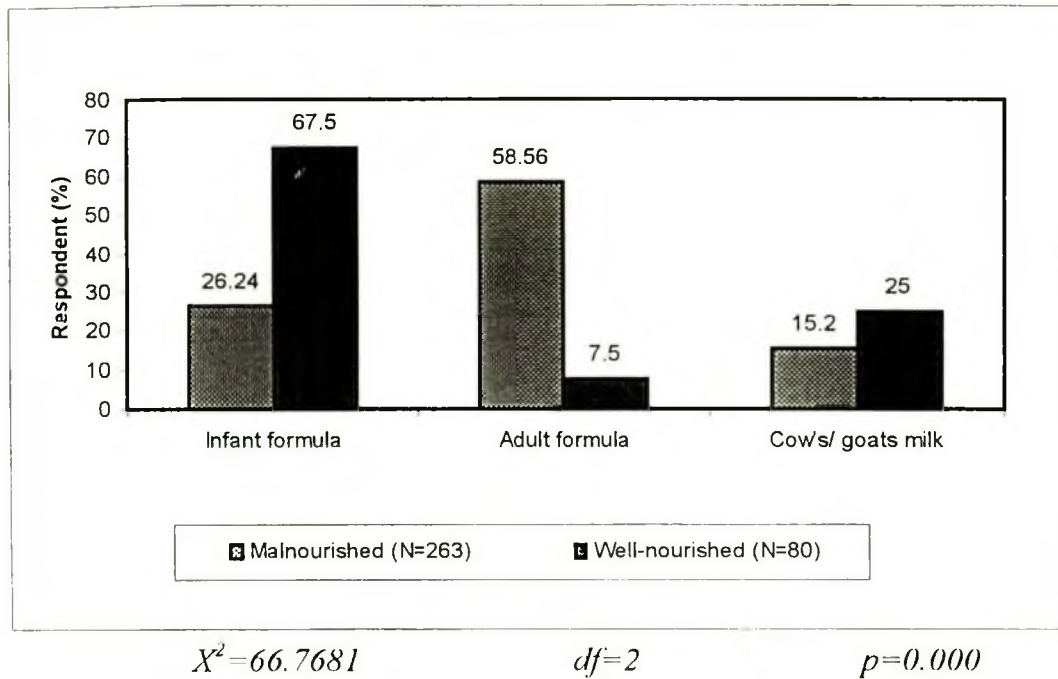
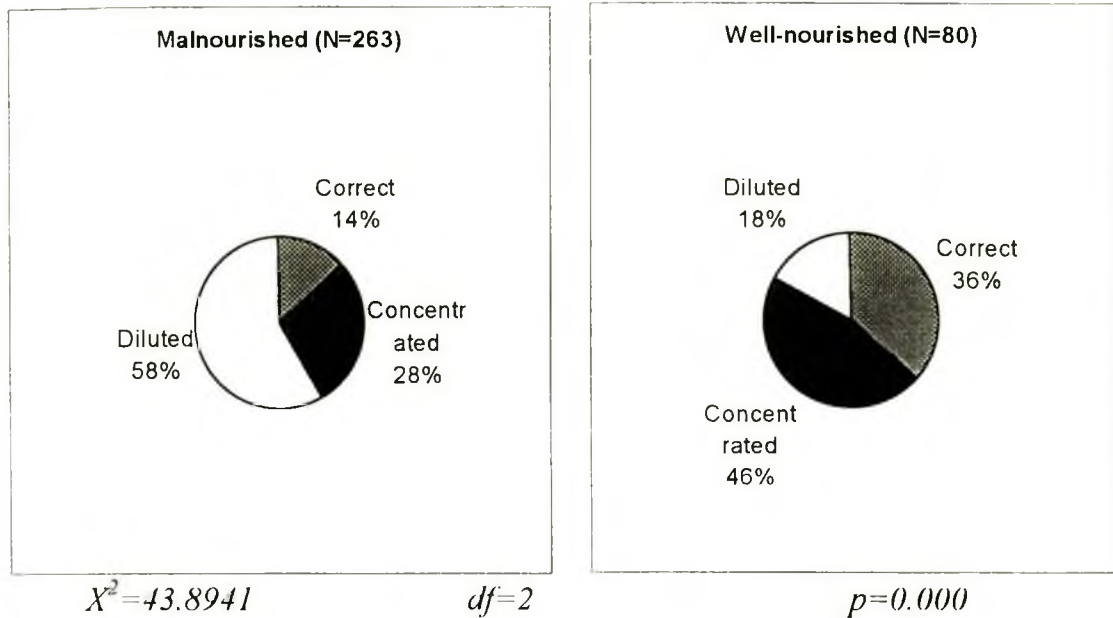


Figure-12 shows type of other milk given to the children. Mother of malnourished children gave mostly adult formula (58.56%) followed by infant formula (26.24%) and cow's / goat's milk (15.20%). Whereas mothers of well-nourished children gave mostly infant formula (67.50%) followed by cow's/ goat's milk (25.00%) & adult formula (7.50%). This difference is significant (P=0.000) in two groups.

Figure-13

Concentration of milk given to the children and their nutritional status

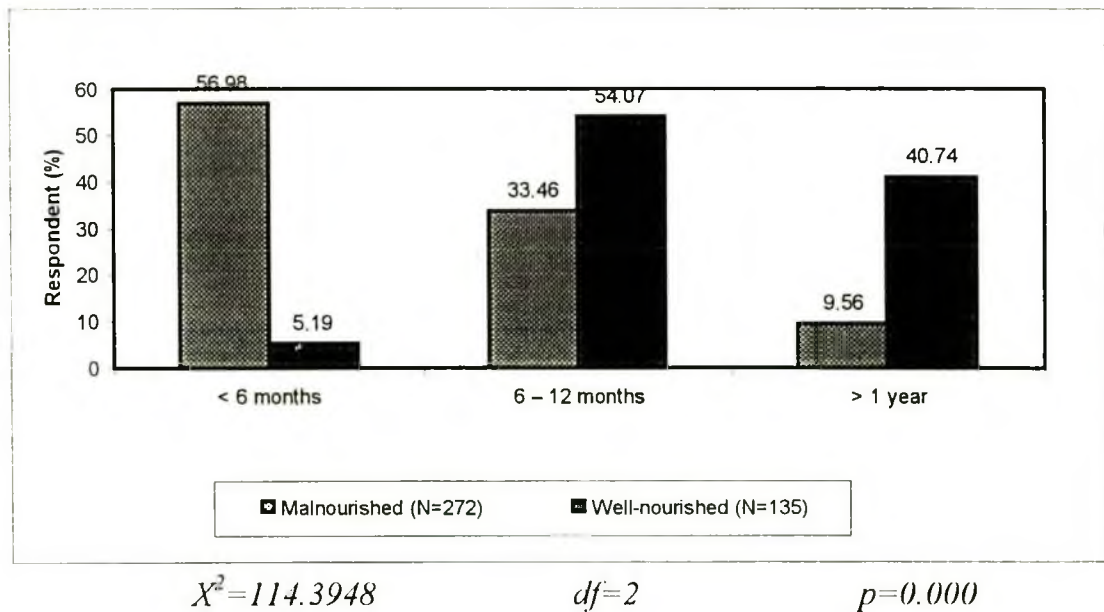


Most of the mothers (58%) of malnourished children opined that they gave diluted milk to their children, 28% gave concentrated and 14% gave in correct dilution. Whereas mothers in well nourished group gave concentrated milk 46%, correct dilution 36% and diluted 18%. There was a positive association of giving diluted milk with occurrence of malnutrition which is statistically significant (p=0.000) (Figure-13).

- (4) Nutritional status of children in relation to the age of continuation of breast feeding, reasons and persons suggesting for stopping breast feeding:

**Figure-14**

**Age of continuation of breast-feeding and nutritional status of children**



Majority (56.98%) of the mothers of malnourished children stopped breast feeding before the age of 6 months, 33.46% continued for 6-12 months and only 9.56% continued beyond 1 year. In contrast 54.07% of the mothers of well nourished children continued breast feeding for 6-12 months and 40.74% beyond 1 year, only 5.19% stopped before 6 months. Continuation of breast-feeding for longer duration has a positive association with the nutritional status of children which is statistically significant ( $p=0.000$ ) (Figure-14).

Table – 12

## Reasons for stopping breast feeding and nutritional status of children

Reasons for stopping breast feeding	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
New pregnancy	8	2.94	4	2.96	12	2.95
Mother's illness	18	6.62	3	2.22	21	5.16
Child's illness	27	9.93	8	5.93	35	8.60
Refusal by child	68	25.00	23	17.04	91	22.35
Scanty breast milk	139	51.10	75	55.56	214	52.60
Working mother	12	4.41	22	16.29	34	8.35
Total	272	66.83	135	33.17	407	100.00

Table – 12 shows some of the reasons for stopping breast feeding which were more or less equal in both groups. Majority in both groups (51.10% and 55.56%) stated scanty breast milk secretion as the main reason. Others were refusal by child, mother working, child's illness, mother's illness, new pregnancy etc. in both groups.

Table – 13

**Persons suggesting for stopping breast feeding and nutritional status of children**

Persons suggesting	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Self	132	48.53	85	62.96	217	53.32
Husband	05	1.84	02	1.48	07	1.72
Elderly relatives	127	46.69	45	33.33	172	42.26
Others (Doctor, Nurses)	08	2.94	03	2.22	11	2.70
Total	272	66.83	135	33.17	407	100.00

More mothers of well-nourished group (62.96%) than malnourished group (48.53%) themselves stopped breast feeding. Whereas more mothers (46.69%) of malnourished group than mothers (33.33%) of well nourished group stopped breast-feeding on suggestion of elderly relatives. Others' suggestion like husband, doctor, nurses were more or less equal in both groups (Table-13).

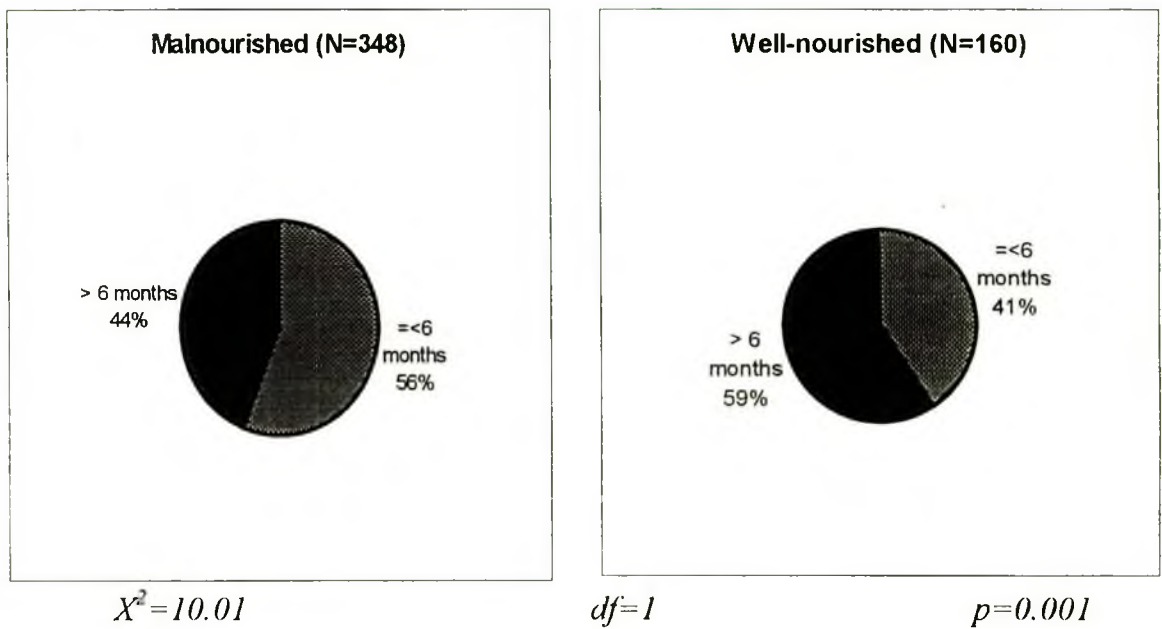


C. Weaning Practices:

(1) Age of giving weaning food and procedure of cooking in relation to nutritional status:

Figure-15

Age of giving weaning food and nutritional status of children



It was found that majority (56%) of the mothers of malnourished children gave weaning food within 6 months, 44% after 6 months. Whereas 59% mothers of well nourished children gave weaning food after completion of 6 months, 41% before that. Early weaning has a negative impact on nutritional status of children which is significant ( $p=0.001$ ) (Figure-15).

**Table – 14**  
**Procedures of cooking weaning food and nutritional status**  
**of children**

Procedure of cooking weaning food	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Separately	117	33.62	60	37.50	177	34.84
In family pot	231	66.38	100	62.50	331	65.16
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 0.73$$

$$df = 1$$

$$p = 0.394$$

Procedure of cooking weaning food – separately or in family pot was more or less similar in both groups. 33.62% of malnourished group cooked separately in contrast to 37.50% of well nourished group. Whereas 66.38 % of malnourished cooked in family pot contrast to 62.50% of well nourished (Table-14).

- (2) Age of starting cereal, meat, vegetables and fruits as weaning food in relation to nutritional status.

Table – 15

## Age of starting cereal as weaning food and nutritional status of children

Age of starting cereal	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
≤ 6 month	301	86.49	12	7.50	313	61.61
7 – 12 month	32	9.20	137	85.62	169	33.27
> 12 month	15	4.31	11	6.88	26	5.12
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 304.87$$

$$df = 2$$

$$p = 0.000$$

Most of the mothers (86.49%) of malnourished children started cereal as weaning food on or before 6 months, 9.20% on 7-12 months & 4.31% after 12 months. Whereas most mothers (85.62%) of well nourished group started cereal between 7-12 months, only 7.50% before 6 months & 6.88% after 1 year. Earlier starting with cereal has a significant effect on occurrence of malnutrition ( $p=0.000$ ) (Table-15).

**Figure-16**  
**Age of starting meat as weaning food and nutritional status**  
**of children**

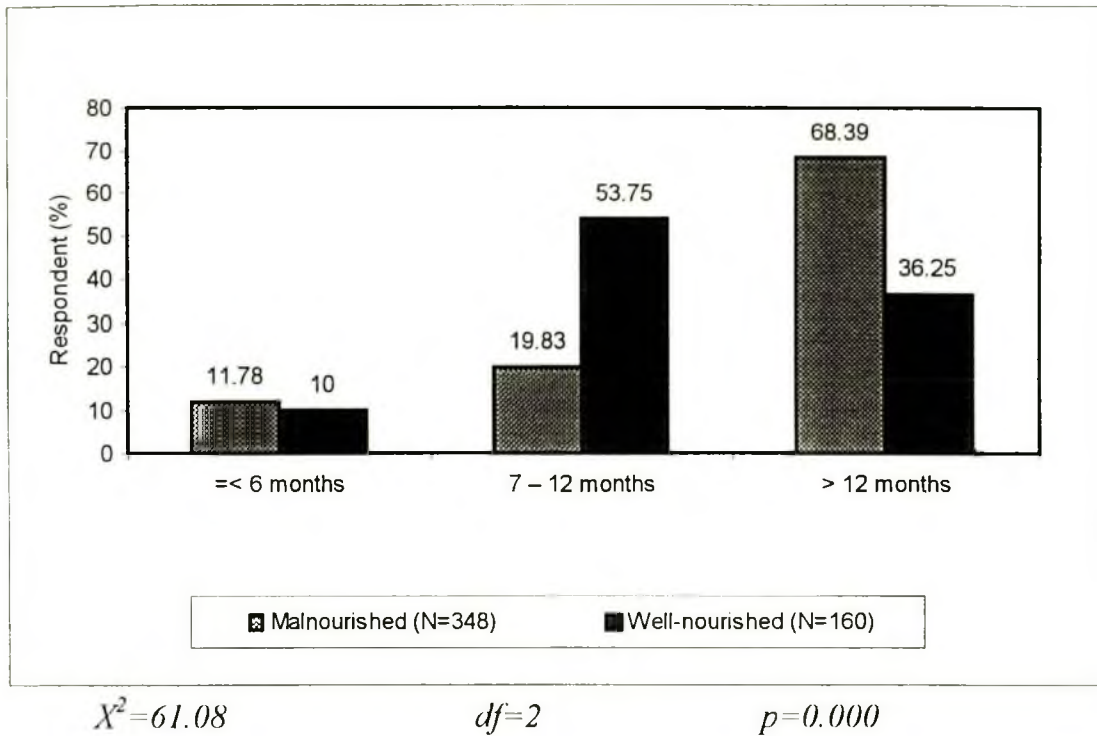


Figure-16 shows that most mothers (68.39%) of malnourished children started meat as weaning food after 1 year, only 19.83% starting within 7-12 months and 11.78% before 6 months. Whereas in the well nourished group, most mothers (53.75%) started giving meat to their children within 7-12 months, 36.25% after 1 year and only 10.00% before 6 months. Thus late introduction of meat as weaning has significant association with occurrence of malnutrition ( $p=0.000$ ).

Table – 16

## Age of starting vegetables as weaning food and nutritional status of children

	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
≤ 6 months	58	16.67	29	18.13	87	17.13
7 – 12 months	203	58.33	105	65.62	308	60.63
> 12 months	87	25.0	26	16.25	113	22.24
Total	348	68.50	160	31.50	508	100.00

$\chi^2 = 4.87$

$df = 2$

$p = 0.087$

In both the groups, majority of the mothers (mal-58.33%, Wel-65.62%) gave vegetables on 7-12 months of age. Only 16.67% of malnourished and 18.13% of well nourished was given vegetables within 6 months, 25.00% and 16.25% respectively after 1 year (Table-16).

Table – 17

**Age of starting fruit as weaning food and nutritional status  
of children**

Age of starting fruit	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
≤ 6 months	04	1.15	05	3.13	09	1.77
7 – 12 months	210	60.34	104	65.00	314	61.81
> 12 months	134	38.51	51	31.87	185	36.42
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 3.26$$

$$df = 2$$

$$p = 0.19$$

About 2/3rds (60.34% of malnourished and 65.00% of well nourished children) were given fruits within 7-12 months and about 1/3 rd after the age of 1 year in both groups. Fruits given within 6 months was very negligible (Figure-17).

**D. Other associated factor influencing nutritional status:**

- (1) Influence of vaccination (EPI) status and illness in last month on nutritional status:

**Table – 18****Status of Vaccination and nutritional status of children**

Vaccination	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
Complete	84	24.14	110	68.75	194	38.19
Incomplete	264	75.86	50	31.25	314	61.81
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 92.41$$

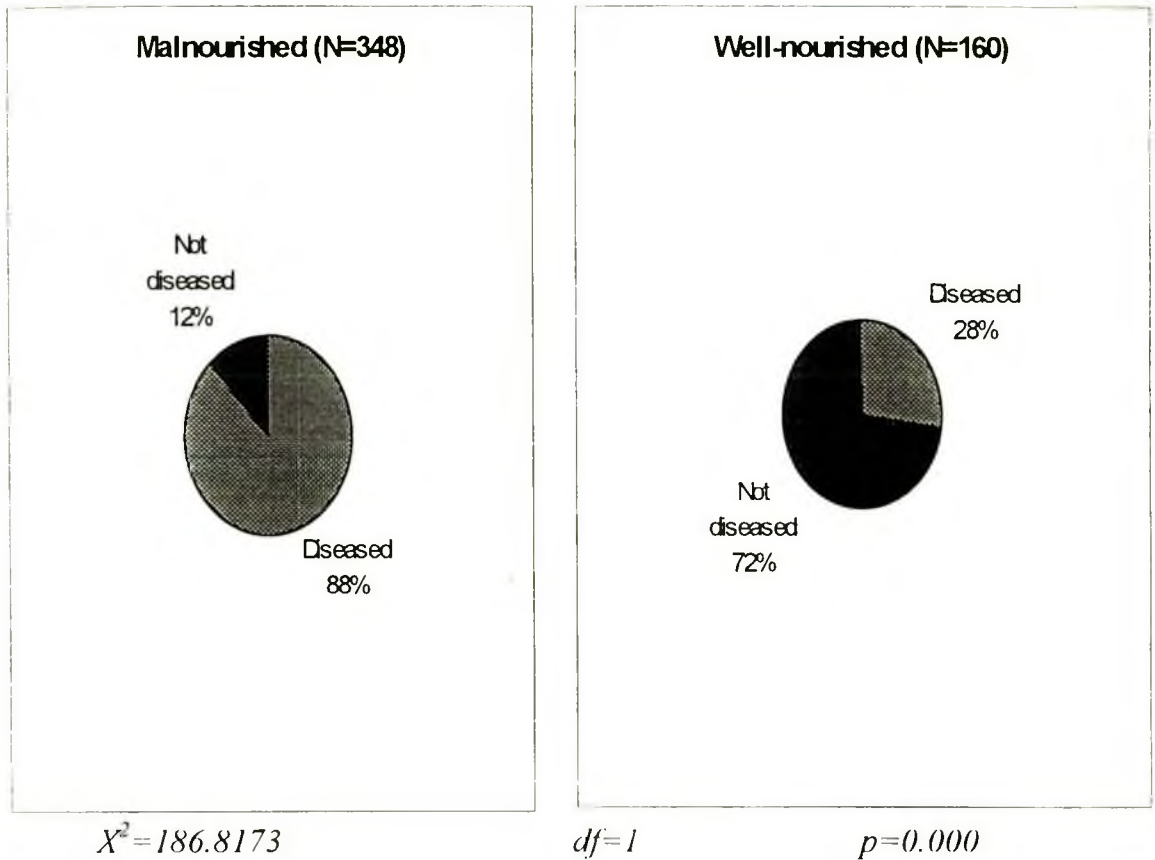
$$df = 1$$

$$p=0.000$$

Most of the malnourished children (75.86%) had incomplete vaccination, only 24.14% completed full course. Whereas most of the well nourished children (68.75%) had completed vaccination, 31.25% having incomplete. Status of vaccination has positive association with nutritional status of children, in other words chance of malnutrition is more if the children's vaccination is incomplete (p=0.000) (Table-18).

Figure-17

Disease status of children in last one month and their nutritional status



Among the malnourished children, most (88%) had some or other illness in the last month, only 12% remaining disease free. Whereas 72% of the well-nourished children had not any disease in last month, 28% were affected by disease. Illness in short past has a positive impact on the occurrence of malnutrition in young children ( $p=0.000$ ) (Figure-17).



2) Relationship between mother's diet during lactation and the nutritional status of children

**Table – 19.**  
**Amount of food taken by mother during lactation and nutritional status of children**

Amount of diet	Malnourished		Well-nourished		Total	
	No.	%	No.	%	No.	%
More than normal period	164	47.13	123	76.88	287	56.50
Same as normal period	122	35.06	29	18.12	151	29.72
Less than normal period	62	17.81	8	5.00	70	13.78
Total	348	68.50	160	31.50	508	100.00

$$X^2 = 40.8158$$

$$df = 2$$

$$p = 0.000$$

Lactating mothers need extra-food for nursing their children. In our study most of the mothers (76.88%) of well-nourished group received more food during lactation than normal period, 18.12% same as and 5.00% received less than normal period. In malnourished group 47.13% received more food than normal period, 35.06% same as and 17.81% less than normal period (Table – 19). This shows positive association between taking more food by mothers during lactation and better nutritional status of children ( $p=0.000$ ).

# **CHAPTER FIVE**

## DISCUSSION

It was found that male children were mostly well nourished and female children were malnourished. This may be due to the fact that in our society more care is taken to the male children than female and more nutritious food is given to the male children. This finding is similar with other findings.<sup>9</sup>

In our country hospital/clinic delivery is negligible, In our study 43.75% children of the well nourished group were delivered in hospital compared to 14.08% of the malnourished group. Well nourished children might be from higher socio-economic class and educated family. For this reason Hospital delivery might be more in this group. Moreover mothers of the children delivered in hospital might get nutrition education from the hospital/clinic staff and thus start breast-feeding practice.<sup>105</sup>

First birth order children were found to be more well nourished than the second or subsequent birth order. Mothers probably give more attention to the first child

in both child rearing & child feeding. Families having less members are financially solvent to spend for child rearing & feeding. Piechulek H et al<sup>9</sup> found the same result in their study. But Andrew HPR<sup>26</sup> found high birth order children were breast-fed for longer duration than low birth order children and of better nutritional status. Urban non-slum children were found to be more well nourished than urban slum children. Malnourished children lived mainly in Kuccha house and well nourished in building & tin shade. Urban slum with Kuccha house are most unhygienic and poor socio-economic people live there. Their children are mostly malnourished due to several factors.<sup>66,106</sup>

Children having unsafe drinking water and unhygienic toilet facilities are likely to suffer from enteric diseases i.e. typhoid, diarrhoea, worm infestation and subsequently leading to malnutrition.<sup>107</sup>

Univariate analysis showed that children from the family having monthly income of < Tk 3000.00 had more chance of malnutrition. This finding is supported by Piechulek H et al.<sup>9</sup>

Maternal education was proved important in a number of assessments related to child survival, feeding practices and child nutrition.<sup>108-112</sup> Maternal education in our study showed important effect on better feeding and thus better nutritional status of the children. Father's education is indirectly related to the nutritional status of children through better job and high income of the family contributing to better living condition and better nutritional status of children.<sup>33,66</sup>

Bangladeshi mothers have the less opportunity for the job and therefore, they are the primary caretaker of their children<sup>9</sup> which is found in our study that most mothers are housewife. Age of the mothers did not effect in occurrence of malnutrition which contradicts with other study<sup>26</sup>, showing that children born to older mothers had longer duration of breast feeding and better nutritional status , but it supports the other.<sup>65</sup>

There was an old tradition in our country to give honey to the newborn as first food and saying that if honey is not given after birth he/she would not speak sweet in adulthood. In our study this tradition is overcome by most of the

mothers. In malnourished group 36.21% were given plain water and 30.75% breast milk but in well nourished group 70% were given breast milk as the first food. Probably this could be possible by health education of mothers who usually attend the clinic for any health problem or for EPI. Also that pure honey is not available in the urban area. Other developing countries could not overcome this tradition in most cases.<sup>15,66,83</sup>

As breast feeding is of paramount importance for the health of the newborns and infants, the correct timing of the initiation of breast-feeding in order to gain the benefits of colostrum is essential for an improved quality of life. Ideally, the newborn should be put to the mother's breast immediately after delivery to make best use of the benefits of colostrum. Our result shows positive impact on nutritional status by giving breast milk early and giving colostrum to the newborn. Most of the mothers do not know that breast-feeding can be done as early as 6 hours of delivery. Majority of the mothers were ignorant regarding ideal time of initiating breast-feeding.<sup>113</sup> Children of those who initiated breast feeding later and expressed out colostrum suffered from malnutrition more.

It seems that most newborns in developing countries do not enjoy such benefits.<sup>2,9,28,83,114,115</sup> Colostrum was avoided for fear of digestive distress thinking it 'bad for child' and with a corresponding delay in the initiation of breast feeding.

Only 3.45% of the malnourished and 1.87% of the well nourished children were never breast-fed. Remaining 96.55% and 98.13% respectively practiced breast feeding. Universal prevalence of this breast feeding practice in Bangladesh irrespective of their education or socio-economic status were previously confirmed by others.<sup>76,91,116</sup>

For proper nutrition of the baby WHO recommends exclusive breast-feeding for 4-6 months.<sup>42</sup> In our study 42.04% of the well-nourished and 27.68% of the malnourished were breast-fed exclusively for 4-6 months. More malnourished than well nourished children were breast-fed exclusively for less than 4 months or more than 6 months. Premature weaning might introduce infection causing ill health and also late weaning leads to reduced calorie intake and thus

malnutrition. This finding is supported by other studies.<sup>9,15,66</sup> Exclusive breast feeding is essential for the proper growth and development of the young infants<sup>27</sup> and complementary foods should not be introduced before 6 months.<sup>46</sup> Exclusive breast-feeding up to 6 months of age was given to 26.72% of malnourished children and 41.25% of well nourished children thus supporting the UNICEF recommendation.<sup>43</sup> Remaining children were given other milks alone or in combination with breast milk. "Breast milk was not sufficient" was the commonest answer given by the mothers of both groups for giving other milk. Of the other milks malnourished children were given adult formula in higher dilution thus supplying low calorie leading to nutritional deficiency.<sup>9,15,66</sup>

Breast-feeding is specially important in developing countries not only because of the prevailing microbial ecology but also as the alternatives to maternal milk, whether fresh animal milk or commercial formula, are expensive and may become over-diluted, which may lead to inadequate calorie intake. Furthermore, the feeding bottles, are often contaminated because of ignorance, poverty and poor hygiene, including lack of potable water.<sup>67</sup>



It was found that majority (56.98%) of the mothers of malnourished children stopped breast feeding before 6 months of age. Whereas majority (54.07%) of the mothers of well nourished children continued breast feeding for 6-12 months. Mean duration of continuous breast-feeding along with other foods was 5.27 months for malnourished and 12.12 months for well nourished group. Early stoppage of breast feeding leads to early weaning by diluted milk or cereal like rice gruel, thereby supplying low calorie to the children and ultimately malnutrition. Mothers of well nourished children were more educated and were of higher socio-economic group. Several other findings<sup>9,66</sup> found that mothers from low socio-economic condition and illiterate mothers breast-fed for longer duration than their counterpart. Fears have been expressed that duration of breast-feeding is getting shorter in certain segments of population<sup>87</sup> and rates as low as 19% have been reported by Brown KH & Sharmas.<sup>46</sup> High continued breast-feeding rates beyond 6 months is noted by Bahl et al<sup>64</sup> and Walia et al.<sup>117</sup> The importance of prolonged breast feeding and danger of stopping it may be understood if one considers the average pattern of growth for Tanzanian children.<sup>65</sup>

Children maintain a good growth for the first six months of age. After this period the growth starts to decline and becomes low and irregular. In the second year of age up to 40% of the total calorie intake is supplied by the mother's milk. Therefore stopping breast milk, if not compensated for by other extra food, will inevitably result in a dramatic drop of body weight. Reason for stopping breast feeding as stated by the mothers was mainly "scanty breast milk secretion". Once supplementary foods are given, the demand for breast feeding tends to reduce, lessening the production of breast milk due to reduced stimulation of the nipple.<sup>79</sup>

Other reasons were refusal by child, child's illness, mother's illness, new pregnancy etc. Most of the mothers themselves decided to stop breast-feeding.

In our study, majority (56%) of the children of malnourished group was given weaning food before 6 months of age whereas majority (59%) of well nourished children was given weaning after 6 months of age. Feeding patterns during the first year of life influence subsequent growth, development and morbidity. Breast-fed babies exhibit a velocity of growth substantially faster during the initial 3 months, but after 3 months growth slacks off.<sup>98</sup> During the later half of

infancy, growth is greatly influenced by the proper initiation with adequate amounts of qualitative foods. Mean age of starting weaning in our study was found 3.70 months and 4.45 months in malnourished and well-nourished children respectively. With an increase in education level and income of the family, the supplementation is advanced. Higher level of education, financial solvency and availability of time by the mothers were the strong determinants in making decision in child rearing. The cumulative effect of income and education is reflected in the feeding pattern of well-nourished group. A survey conducted among 200 rural families in Bangladesh<sup>118</sup> could not determine any relationship between duration of breast-feeding and nutritional status measured by weight for height ratio. No relationship could be determined between either the age of introduction of the first solid or the duration of weaning and nutritional status. A cross sectional study in urban slum<sup>119</sup> showed that there were no specific weaning practices in the slum population, where 88% of the children were malnourished. It may be too early or too late. Most of them shared family food. Average energy intake was grossly inadequate.

Most of the malnourished children were given cereal (86.49%) before completion of 6 months and meat (86.39%) after 1 year as weaning food. Whereas most of the well nourished children were given cereal (85.62%) and meat (53.75%) as weaning food between 7-12 months. Children who were weaned in appropriate period (7-12 months) with appropriate food (carbohydrate & protein) gained proper weight. Who were weaned early with cereal-based food fell into malnutrition. Other studies<sup>120,121</sup> showed that in low socio-economic condition, the age of introduction of weaning food is late and inappropriate due to several constraints such as lack of purchasing power, nutritional knowledge and awareness about hygienic habits. The most frequent reason for supplementing diet before 6 months is mother's perception of inadequate breast milk secretion.

A community survey on infant feeding practices in south Orissa<sup>122</sup> reported that almost all mothers initiated breast-feeding and continued for a prolonged period but the supplementary feeding was very much limited i.e. weaning was delayed and food was of poor quality. Around 73% of these children were under-

nourished. In most of these cases prelacteal feed was initiated due to over anxiety to feed the baby immediately after birth and it was a common practice in that area. Nation wide practice in Saudi Arabia showed that the mean age of starting weaning is 5.3 months.<sup>78</sup>

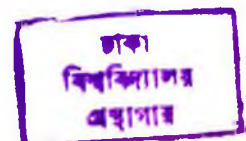
Fruits and vegetables in both the groups were given mostly between 7-12 months. Lick of orange and banana were given as starting of weaning and vegetables were given in a mixed food called Khichuri.

Immunization is given against six infectious diseases in our country. It protects the child from the specific disease when full course is completed. Incomplete immunization does not give full protection. Immunization was usually complete (68.75%) in well nourished group whereas incomplete (75.86%) in malnourished group. Less protection causes disease and leads to malnutrition as is evidenced by disease status of the children in previous month in our study.

As per current recommended nutrient intakes (RNIs), women who are breast-feeding should increase their energy and nutrient intakes to levels above those of

non-pregnant and non-lactating women.<sup>123</sup> In our study, 76.88% of the well nourished group and 47.13% of the malnourished group took more food than normal period. Only 35% of malnourished consumed same amount of food as normal period and very few took less than normal. Poverty and superstition might work in these women in taking less food. It has been suggested that women are able to maintain lactation on lower intakes than recommended.<sup>56</sup>

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# CHAPTER SIX

## **CONCLUSION**

Breast milk is the nature's and mothers' gift to the young children. Every mother has the scope to breast feed her baby. But she must be prepared herself physically and mentally beforehand. She should know that it is the only food for her young child up to a limited period and the best if continued up to two years of age.

Since weaning practice relates to the knowledge of the mother, it is her awareness that is most important. The success of infant feeding depends upon the mother's understanding of the infant's needs and her ability to wean the child and adjust the infant to a suitably modified adult diet. Nutrition education must stress that lack of regular supplementation in adequate amount would act as a nutritional constraint and may undo the advantage of supplementation.



## RECOMMENDATIONS

1. Socio-economic condition of the family should be improved and parent's education level must be increased to understand various aspects of infant nutrition.
2. Mothers should take more food during lactation to meet up the extra need.
3. Breast milk must be given to the new born as early as possible after birth and it must be the first food.
4. Powdered milk when given to the baby must be in the correct dilution.
5. Weaning should be started in proper time (i.e. after 6 months) and in required quantity given in adequate intervals.
6. Immunization must be completed for all infants within one year.
7. National campaign for proper weaning should be initiated and implemented.

# CHAPTER SEVEN

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# ANNEXURE

## QUESTIONNAIRE

### Impact of Breast-Feeding Behaviour and Weaning Practices on Nutritional Status among Children attending an Urban Clinic

ID NO. ....

Date: .....

#### NUTRITIONAL STATUS

- |                      |  |
|----------------------|--|
| (a) Weight -----kg   | (d) Wt/Age ----- % of standard                     |
| (b) Height ----- cm  | (e) Degree of nutritional status                   |
| (c) Age ----- months | 0=normal, 1=1st degree,                            |
|                      | 2=2 <sup>nd</sup> degree, 3=3 <sup>rd</sup> degree |

#### A. Socio-economic Factor

1. *Name of the child:* .....
2. *Sex of the child:*  
1=male, 2=female
3. *Birth order of the child:*
4. *Place of birth of the child:*  
1=home, 2=govt. hospt/clinic, 3=private hospt/clinic, 4=others  
(specify).....

5. *Educational level of father:*  
0=illiterate, 1=primary level, 2=secondary level, 3=SSC,  
4=HSC, 5=graduate & postgraduate, 6=others  
(specify).....
6. *Occupation of father:*  
1=service, 2=retired, 3=business, 4=farmer, 5=skilled labour,  
6=unskilled labour, 7=unemployed, 8=other (specify) .....
7. *Age of the mother(in years):*
8. *Educational level of the mother:*  
0=illiterate, 1=primary level, 2=secondary level, 3=SSC,  
4=HSC, 5=graduate & postgraduate, 6=others  
(specify) .....
9. *Occupation of the mother:*  
1=service, 2=retired, 3=housewife, 4=skilled labour,  
5=unskilled labour, 6=others (specify) .....
10. *Area of residence:*  
1=urban slum, 2=urban non-slum, 3=rural, 4=others  
(specify) .....
11. *Housing type:*  
1=building, 2=tin shade, 3=kuccha, 4=other  
(specify) .....
12. *Monthly family income (in Taka):* .....
13. *Source of drinking water:*  
1=safe drinking water, 2= unsafe drinking water
14. *Toilet facilities available:*  
1=hygienic, 2= unhygienic

**B. Feeding Practices**

- 15. *Do you now breast-feed your child?*  
0=no, 1=yes
- 16. *Did you ever breast-feed this child?*  
0=never, 1=yes
- 17. *At what age of the child did you stop breast-feeding (month)?*
- 18. *For how long since birth did you give only breast milk with no other food (month)?*
- 19. *For how long since birth did you continue breast-feeding along with other food item (month)?*
- 20. *If you have already stopped breast-feeding:*
  - a) *State reason for stopping breast feed.*  
1=having new pregnancy, 2=illnesses of mother, 3=illnesses of child, 4=refusal by the child, 5=child old enough, 6=not enough milk in breast, 7=present work does not permit, 8=others (specify) .....
  - b) *Who suggested for stopping breast-feeding?*  
1=self, 2=husband, 3=elderly relative, 4=doctor/nurse, 5=others (specify).....
- 21. *When did you first feed your baby after birth?*  
1=within 1/2 hrs, 2=within 6 hrs, 3=on 1<sup>st</sup> day after 6 hrs, 4=on 2<sup>nd</sup> day, 5=on 3<sup>rd</sup> day, 6=after 3<sup>rd</sup> day
- 22. *What was the first food given to the child after birth?*  
1=plain water, 2=sweetened water, 3=honey, 4=breast milk, 5=other milk, 6=others (specify) .....
- 23. *It first feed was other than breast milk then who suggested for the prelacteal feed?*  
1=self, 2=elderly relatives, 3=doctor/nurse, 4=others (specify).....

24. *When did you first give breast milk to the child?*  
 0=never, 1=within 1/2 hr, 2=within 6 hrs, 3=on 1<sup>st</sup> day after 6 hrs, 4=on 2<sup>nd</sup> day, 5=on 3<sup>rd</sup> day, 6=after 3<sup>rd</sup> day
25. *What did you do with first milk (colostrum)?*  
 1=given to the child, 2=expressed out & discarded
26. *If discarded, explain why? .....*
27. *Did you give any other milk to the child in addition to or instead of breast milk within 6 months of age?*  
 0=no other milk, 1=yes, other milk in addition to breast milk, 2=yes, other milk instead of breast milk.
28. *If yes, state reason for giving other milk:*  
 0=no secretion of breast milk, 1=breast milk is not sufficient, 2=child does not like B.M., 3=mother's illness, 4=to keep habit with bottle, 5=it causes good health, 6=convinced by advertisement, 7=others (specify).....
29. *Which milk did you give to the child?*  
 1=infant formula, 2=adult formula, 3=cow's/goat's milk, 4=others (specify).....
30. *What was the concentration of the milk served?*  
 1=correct, 2=diluted, 3=concentrated

**C. Weaning Practices**

31. *At what age of the child did you give weaning food (month)?*
32. *What food items were served?*

Food items	<= 6 months	7-12 months	> 12 months
Cereal & bread			
Milk & milk product			
Meat, fish, egg legume			
Vegetable			
Fruits			

33. *How did you cook the weaning food?*  
1=cooked separately, 2=from family pot, 3=others  
(specify) .....

**D. Other Factors Influencing Nutrition**

34. *Did the child suffer from any decease within last one month?*  
0=no, 1=yes

35. *If yes, what type of problem did he/she suffer from*  
1=diarrhoea, 2=respiratory infection, 3=EPI disease, 4=others  
(specify).....

36. *Has the child been given all the vaccines?*  
0=none, 1=partial, 2=complete

37. *Compared to non-pregnant state what was the amount of food taken by you during breast-feeding?*  
0=breast-feeding not done, 1=same as non-pregnant state,  
2=slightly higher, 3=slightly lower.