Chapter II

Review of Literature
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2.3 Summary of the Chapter
2.0. Introduction

In this chapter, selected review of literature related to the present study is presented. Studies on knowledge, attitude and practice of rural and urban mothers on child nutrition, studies on general nutrition and studies on nutritional status of the children, which have been carried out in India and abroad, are presented. The related literatures available in the form of books, articles in journals, research/ seminar papers, workshop / conference reports, project studies and research works have been referred. These literatures help the researcher in formulating the objectives framing hypotheses, identifying the variables and research designs etc of the present study. Some of the literatures related to the present study are discussed in this chapter.

2.1. Foreign Studies

Several studies related to the present study have been carried out abroad. Those studies have been presented under the headings of studies on general nutrition, studies on child nutrition, KAP studies on child nutrition and studies on nutritional status of the child for the quick reference of the readers.

2.1.1. Studies on General Nutrition

Gopaldas, et-al., (1983) conducted a study on intra - familial distribution in Bangladesh which revealed the following facts. In the matter of food allocation within the family, children and mothers (pregnant and lactating) are discriminated. The community and family did not recognise the special needs of these groups. Hassan. N and Ahmed. K, (1985) studies in India on intra – familial distribution of food revealed a similar trend.

Nutritional survey statistics, as per Hulse and Pearson, (1983) are a constant reminder that the world food situation is serious, even precarious. By recent estimates, 500 million people live on the edge of starvation and over twice that number would
benefit from a more varied diet. The greatest majority of these people live in Asia, South East Asia and Africa. Clinical surveys and hospital records indicate that malnutrition wherever exists is more severe among infants, pre-school children and pregnant and lactating women, and it is most prevalent in depressed rural areas.

IPPF, (1984) reported that, in many countries of Asia, early marriage is a common practice. Young couples are urged to have child as soon as possible or to achieve pregnancy with in a year after marriage to confirm the husband’s manhood and the wife’s capability to produce a child. Early pregnancy creates a lot of physical, social and psychological risks. The younger the mother, the more serious are the physical consequences of pregnancy and childbirth. It leads to high rate of death among women aged between 15 and 19 years in the developing countries. Infant mortality is 2.4 times higher for babies born to the mothers below 15 years than for babies born to mothers in their early 20’s.

Joseph, A, (1985) reported that, women produce 70 per cent of the food grown in developing countries. And studies have shown that an increase in the women’s income raises the nutritional status of the family.

The study conducted at Philippines by Villa, et-al., (1985) revealed that urban areas have higher consumption amounts for most of the food groups than the rural areas except for cereals and cereal products, starchy roots and tubers as well as green leaf and yellow vegetables. The particular energy and protein intakes were found higher in all urban areas than its rural counterparts. This reflected on the advantage of a more varied and quantitative, food consumptions in the urban areas than in the rural areas. Rural areas, however, revealed the better quantity intake of carbohydrate compared with the urban areas.

An estimate of undernourished population in developing countries by FAO in the First World Food survey showed that undernutrition is heavily concentrated in countries with low income, high population growth and inadequate food supply. The rate of undernourished population was found to be growing, Hassan, (1985).
Many studies have shown correlation between fertility and women's education.

- With higher education, the mothers are able to increase their ability to have live births or lower infant and child mortality by adopting better nutrition and health care practices.

- Secondly, educated women are likely to delay their marriage, decrease their exposure to pregnancy and thereby avoiding births. The World Fertility Survey has shown that for women with seven or more years of education, their mean age at marriage is almost four years higher than that of women with no education. Education also affects women's demand for children.

Wagner, (1999) compared three instructional methods One to one, small group, small group plus telephone, and mailed lessons plus telephone used in the programme called the Expanded Food and Nutrition Education Program. In that study the mailed lessons led to gains in nutrition knowledge compared to a control group.

The inaugural address of agricultural scientist Swaminathan, M.S, (2001) at a conference on “The Right to Food: A Challenge for Peace and Development in the 21st Century” in Rome emphasised the adoption of a holistic action plan to achieve sustainable nutrition security at the level of each individual. He also noted that the infants (0-2 years) who are the most unreached at present need special efforts through their mothers. This is because 8 per cent of the brain development is complete before the age of two and the first four months in a child’s life is totally dependent on its mother for food and survival.

An article published by Vimala S Satish, (2001) in “The Hindu” states that the time spent by the parents with their child is more valuable to him or her than anything else they can give. And the time spent that is most important is learning all about living and the business of being an adult. Ten minutes of time spent is worth hundreds of
rupees spent on toys. Since childhood is very short the parents must allow children every possible opportunity to explore and experience life through simple pleasures of play.

2.1.2. Studies on Child Nutrition

A study on America and morbidity in rural pre-school children was carried out by Damodaran. M, Naidu. N.A and Sharma R.K.V, (1980). After determining the initial hemoglobin level, one group was given 20mg iron and 100 mg folic acid and the other served as control. Weekly morbidity data suggested an increase in the hemoglobin level, but no difference in attacks of diarrhoea and respiratory infections, which could be due to poor environment sanitation.

Shasrabudhe’s, (1987) study revealed that the maternal and childhood mortality rates have been steadily decreasing in most parts of the world. But in the developing countries the mortality rates remain high with very little being done to control the same. The most serious health problems of mother and children and the high rates of mortality and morbidity in the world as a whole, results from various inter-related conditions: malnutrition, infection and the consequences of ill-timed, closely spaced and too frequent pregnancies and the lack of health care and other services against a background of generally poor social and economic conditions.

Sizer and Whitney, (1988) reported that lack of essential minerals could cause malnutrition. Iron deficiency anemia is a major health problem in the United States and Canada and even more so in the rest of the World. Children deprived of iron show a lack of motivation and less ability to work and play. This deficiency occurs most frequently in infants, adolescent males and females during childbearing years.

Kofi Annan, (1988) Secretary General of United Nations said in his State of the World’s Children Report, “Over 200 million children under the age of five years are malnourished; malnutrition contributes to more than half of the nearly 12 million
under-five deaths each year in these countries; malnourished children often suffer the
loss of precious mental capacities; they fall ill more often; if they survive, they may
grow up with lasting mental or physical disabilities.”

A case study sponsored by WHO, (1992) for the International Conference on
Nutrition held at Rome reveals that female literacy is the first determinant of child.
Nutritional awareness and economic independence of the mother are absolutely
essential for promoting sound infant feeding practices.

Panda, (1993) conducted a study in Ludhiana to find out the health status of under-
five children in relation to selected socio-economic variables. Severe malnutrition was
equally high in both the sexes and most prevalent were directly related to poverty and
to polluted and stress-filled environment.

Liyanage. C and Brew, (1997) studied on nutritional improvement of traditional
foods, they analysed two traditionally used weaning foods in Sri-Lanka (rice gruel,
centellaastica gruel) were analysed to determine if they adequately provided the
recommended daily nutritional requirements of children. They found that both gruels
were deficient in many nutrients.

Suzanne Rostler, (2001) conducted a study on “Food Supply May Not Explain
Obesity in Poorer Kids”. Her study found that children from low-income US families
might be at increased risk of obesity. That is because low-income individuals may buy
only cheaper foods, which tend to be rich in calories and fat and low in nutrients.
Alternatively, going without food for any length of time could cause individuals to
overeat when food is available. Finally, the body might learn to burn calories more
slowly when there is not enough food.

Carol Bellamy, (2001) Executive Director of the UNICEF’s address on the launch of
the “State of the World's Children 2001” stated that “the future of any nation is
directly linked to the future of its children - and by investing in children and in the
families that sustain them, a nation is ultimately investing in its own development. He
has notified that there is insufficient recognition of how much the future of the world's
children is irretrievably bound up in the first three years of life. It includes the basic premise that caring for the child means supporting the crucial role of parents and families in ensuring the right of all children to grow up in a safe, stable and nurturing environment. This includes caring for the mother and caring about the conditions she faces at home and in society at large. In societies where women have no voice, limited access to resources, little or no legal protection and no respect, optimal child development is impossible. It also means supporting the role of men, who must be educated about these issues if we are to dispel the attitudes that create inequality and thus reduce women and children to second-class citizens”.

2.1.3. KAP Studies on Child Nutrition

Dewalt. K and Pleto. G, (1978) in an analysis of social status and beliefs in a Mexican community, attempted to understand patterns of intra-group diversity in household food intake. They found that the level of nutritional knowledge was not strongly correlated with adequate consumption. Important determinants of household consumption and nutritional adequacy were: material life-style, household composition (including the number of wage earners), ownership of animals and occupation of household head.

Ryback. D, (1980) studied about the child rearing practices in six cultures. A questionnaire exploring the child rearing aspects of psychological security, feeding and weaning, toilet training, and socialisation was administered to respondents from six cultures. A total of 1187 under graduates from Ethiopia, Republic of China, Thailand, Israel, India and the U.S. Subjects responded to the questionnaire on the basis of their general ideas about child rearing practices in their own culture and their own home experiences. On each item, significant differences were found across cultures. For example, Ethiopian mothers, followed by Indian mothers, were seen as most likely to suckle a crying infant. Israelis were thought to be most likely to feed a child on a schedule convenient to the mother and likely to wean by sudden withdrawal rather gradually in stages.
**Goelman and Pence, (1987)** in their research study on “Parental Influences on the Developing Child” revealed that children from mother dominated families who had early child care experiences did as well as if not better than children from nuclear families, whereas those children from mother headed families who did not enter child care early did the worst on social and cognitive measures. The lowest language test scores were associated with children who were from one-parent families.

**Bartz and Levin, (1988)** while studying “The Parental Attitudes of Different Cultural Background Parents of America” revealed that African, American and Latino American parents favoured earlier autonomy of walking, weaning and toileting than did white parents. African, American parents were significantly less tolerant of wasting time than were Latino and white parents. African American parents reported providing more emotional support for their children and use more controlling behaviour than did the other two groups.

**Parker. M.K, (1995)** accessed the maternal preference for amylase- complementary food consistency in rural Guatemalen. In that study mothers who had a child between 6-14 months of age were interviewed by trained data collectors. Strong opinions regarding consistencies of complementary foods were identified, which varied according to the child’s age and health status. Mothers preferred thinner complementary foods for children less than 1 year old and thicker foods for those over 1 year. Thin complementary foods were preferred by 78 per cent when a child had a fever, however when a child had diarrhoea half the number of mothers preferred liquid foods as opposed to a third who preferred thick consistencies. It concludes that the information will help guide efforts to develop improved, complementary foods, particularly those for use during illness in under privileged populations of developing countries.

**Onoflok. N.O, (1998)** study on weaning foods in west Africa: nutritional problems and possible solutions - reported that, weaning practices and the problems of weaning combined with the low nutrition density and high bulk of the traditional weaning
foods, which is a thin cereal gruel with variety, have been implicated in the aetiology of protein-energy malnutrition in children. Multi-approach strategic are given in the formulation and development of weaning foods of a high nutritive value along with fermentation, germination and dry milling as processing improvements; nutrition education, access to safe water, good sanitation, economic empowerment of women, reducing in workload, and promotion of breast-feeding, are recommended solutions to the problems.

Simondon. K.B and Simondon. F, (1998) conducted a study on mothers who prolong breast-feeding of undernourished children in rural Senegal. To test whether breast-feeding beyond infancy is prolonged because a child is already undernourished, nutritional status prior to weaning was compared according to age at weaning. It is concluded that duration of breast-feeding is not determined by characteristics of the mothers only. Women prolong breast-feeding for undernourished children, probably because they are aware of the mortality risk following weaning.

An article published in WHO's (1998) Health Link Worldwide, emphasised that the child should be given more attention during eating, and the mothers should be aware of their children need for extra food during the recovery period so they regain lost weight. It also stressed that the mothers should be given nutritional education.

Lamp, (1999) study on “Use of Home Study to Improve Knowledge in Two Rural Countries of California”, reported that, Program delivery methods such as small-group and individualised methods, as well as using videotape and radio instruction, have been shown to be effective in changing behaviour, nutrition knowledge, and nutrition-related skills and attitudes.

Helga Piechulek, et-al., (1999) study on feeding practices and malnutrition in children in rural Bangladesh reported that, Malnutrition was significantly influenced by income, size of cropland, the education of both parents, and some infant-feeding
practices, but the mother’s education emerged as the primary predictor of the nutritional status of children.

**Faber. M and Benade. A.J.S, (1999)** study on nutritional status and dietary practice of 4-24 months old children from a rural South African community resulted that these under-two had a poor retinal and iron status. Nutrition education, intervention programmes and feeding schemes should address micro –nutrient deficiencies, with the focus on the quality of the diet, rather than quantity.

**Carol Bellamy, (2001)** Executive Director of the United Nations Children's Fund at Poy Mean Chey Health Center- speech on “We are witnessing in Cambodia the beginning of a new era in immunisation” stated that, “all should recognise and should do a better job and reach every child everywhere with the traditional six vaccines, regardless of geographic location, economic, gender or ethnic status. We are also working together to increase access to new and underused vaccines such as hepatitis B, and to address issues such as safe injection”.

### 2.1.4. Studies on Nutritional Status of Child

**Blankhart, (1981)** has conducted a nutritional survey in Sierra Leone and Zambia. Data on the ages and several anthropometrics measurements were collected from 1,351 children in Sierra Leone and 795 children in Zambia. The onset time of the accelerated increase of the arm circumference seems to be related to the nutritional status of the group of children concerned. In a rather well nourished group, an increase of 0.9 cm was seen in 12th month after birth. In a malnourished group, an increase of 0.6 cm was seen after the 30th month. Children of both sexes weighing below 90 per cent of these total local standards were graded as malnourished. The ranking of the villagers’ nutritional status according to the incidence of under weight correlates significantly with the ranking according to the incidence of low arm circumference.
Hertzig, M.E and Birch, H.G, (1982) conducted a study on malnutrition and growth and development in Cape Town, South Africa. They compared undernourished children with adequately nourished children of comparable background in the same area. The children with chronically undernourished group came from homes that were described as “destitute” and many of these children were illegitimate. The adequately nourished children were from housing project and were all legitimate. The investigation of both the undernourished children and the comparison group was done on intelligence, head circumference, height and weight. The first testing was done when the children ranged from 10 months of age. Initially it was found that the undernourished children were shorter in height and lighter in weight than the well-nourished children. In addition, the mean head circumference and the mean IQ of the undernourished group were significantly less than that of the comparison group. In a follow-up study some 11 years later, essentially undernourished children still had smaller head circumference and lower IQ and they were still shorter and lighter than better-nourished comparison group. Malnourished children were more vulnerable to all kinds of infection than well-nourished children. Some infections caused permanent defects in hearing, sight and motor functions.

Weisell and Francois, (1982) stated that anthropometrics data provide basic information used in assessing nutritional status determining protein and energy requirement.

Jelliffe, (1984) carried out a field survey in Busoga in a rural health center. 355 children were examined. Ages of the children were reliably known. Children were classified according to nutritional status into three groups as well nourished, mildly and more severely malnourished. For the first 4 to 5 months of life all anthropometrics measurements in well-nourished group are at or above U.S. standards. Thereafter, they fell below the mean, reached their relatively lowest levels during the second year of life and showed some recovery thereafter. Measurements of mildly malnourished group were average, but greatly malnourished groups were depressed far below those in the other groups. It was found that arm circumference distinguishes between well-nourished, mildly nourished and more severely
malnourished children. The arm circumference was found to be changed so little between age 1 and 4 years. So the author suggests that exact age is not essential for the assessment of protein calorie malnutrition.

**Abullah, (1989)** carried out a nutritional survey on pre-school children of Lebanon. Measurements of weight, length, head circumference and mid arm circumference were taken. Results showed, that there is a marked decrease in mean percentage values for all measurements about the age of 6th month compared to international standards. Good relation was found between weight and height, weight and arm circumference, weight and head circumference, and height and head circumference.

**Beghin, (1989)** conducted a nutrition survey on 366 pre-school children. Groups of 25 pre-school children with 2nd and 3rd degree of protein calorie malnutrition as assessed by Gomez classification were compared to a group of controls before and after four months of recuperation period. Comparison of the results between control and experimental before and after recuperation period, showed a highly significant improvement in all indices except skin fold thickness.

**Hofvander and Eksmyr, (1992)** conducted a nutritional survey on children of Ethiopian high land village. The changes in the upper arm of the 212 children were compared with the change in body weight for age during the two years of study. An obvious shift to increased arm circumference for age was seen from birth to first six months. The level reached after a further increase during the following six months was maintained throughout the study. Except for a slight decrease during the first year and slight increase during the second year, the body weight for age remained the same during the study. There was a positive correlation between change in upper arm muscle circumference for age and change in body weight.

A study made by **Michalle Murphy Zive, (1998)** assessed that the variables from the American children's domain (such as skin fold thickness & weight) had the strongest associations with energy intake. Children’s personal variables were the most highly corrected with energy intake. Positive correlations were noted between the children
total dietary intake and total skin fold thickness, weight and energy expenditure at home.

Gobotswang, K, (1998) conducted a study on determinants of the nutritional status of children in a rural African setting. The study results showed that children up to 10 months of age had a better nutritional status. Ethnicity played an important role and significant differences were seen in the nutritional status among those of the main ethnic groups (30 per cent of Basarwa children were underweight compared with 9 per cent from other ethnic groups). Other variables considered were the ownership of cattle, educational levels, the sex of the head of the households and the presence of a toilet.

2.1.5. Resume of Foreign Studies

Many studies have been carried out on nutritional topic in many countries like Bangladesh, Africa, America, Philippines, Canada, Zambia, Ethiopia, Sri Lanka and other developing countries. The Nutritional Institutions like WHO, UNICEF, IPPF, CINI and some other institutions have conducted many studies on child nutrition in Asia, South East Asia and Africa. KAP studies on child nutrition were conducted by the following authors Dewalt and Pleto (1978), Onofiok (1998), Lamp (1999), Helga Piechulek (1999), Faber (1999) etc. Nutritional Status related studies were conducted by Blankhart (1981), Weisell and Francois (1982), Hertzig and Birch (1982), Michalle Murphy Zive (1998), Gobotswang (1998) etc.

UNICEF and WHO made some recent studies in many countries give the current nutritional status of the children abroad. Nutrition Education related studies are also given more importance among the countries. These literatures help the researcher to get a clear picture of child nutrition.
2.2. Indian Studies

The related studies on general nutrition and child nutrition carried out in India are presented in this section under the headings; studies on general nutrition, studies on child nutrition, knowledge related studies on child nutrition, attitude related studies on child nutrition, practice related studies on child nutrition, studies on nutritional status of child and other related studies.

2.2.1. Studies On General Nutrition

Government of India, (1981) and Rajaretnam, (1990) in their studies, concluded that late child bearing could be achieved by effecting late marriage of girls and observing longer intervals between births. Late marriage of girls not only delays the occurrence of the first and subsequent births but also contributes to a reduction in the ultimate family size.

According to the Population Report, (1984) delaying marriage and/or spacing between births, if the process is gradual, will produce a considerable impact on population growth; because late-born children are late to grow, late to marry and late to reproduce, and this late process will continue endlessly, generation after generation. Further, delaying the marriage of girls and spacing between births also mean ensuring better health for mother and children.

Begum. M.R, (1989) conducted a study among young mother on nutrition education. The study states that young mothers or adolescents must be educated about the basic principles of healthy nutrition. Studies on nutrition in our country have proved that even elderly women need education, as they are ones who mislead the youngsters. Various topics of nutrition can be selected for nutrition education. Selection of food and preparation of food, feed practices of various groups, special diets during pregnancy and lactation, infancy, pre-school age, supplementary feeding, weaning foods, low - cost recipes, food sanitation, food-borne infections, food adulterating,
nutrition and health, therapeutic diets, food fads and fallacies and deficiency diseases and their prevention are some common topics used for nutrition education.

**Indian Adult Education Association, (1990)** conducted a Kenya’s Community – based Health Care Programme added the following nutrition contents:

- Nutrition from birth to eight months, including breast feeding and weaning
- Ensuring a balanced diet; making a daily menu, budgeting, surveying the local market and buying food
- Healthy cooking (for a balanced diet and appropriate consistency)
- Preparation of food for infants (e.g. milk with beaten raw egg, mashed beans) and children
- Food for sick and or malnourished children and adults
- Preparation of local foods such as cabbage, cowpeas, beans, potatoes and maize
- Preparation of packed lunch for school children
- Vegetable gardening

**Ansari. N.A, (1990)** while explaining the non-formal education for women, emphasised that non-formal education programmes for women should not be basically different from those for men. Even on those issues, which are traditionally supposed to be of women’s concern, like family-life management, childcare and nutrition etc., men and women are equally involved with complementary roles.

**Jones. G, (1990)** stated that pregnancies involving a higher than normal medical risk to the mother or infant include:
- Pregnancies in the late years of reproductive period and those of women of high parity (i.e. having had several live births)
- Adolescent pregnancies and
- Closely-spaced pregnancies

The Government of India's (1991) plan of action for implementing the World Declaration on the Survival, Protection and Development of Children in the 1990s included the following specific actions for child survival protection and development:

- The convention on the rights of the child
- Child health
- Food nutrition
- Role of women, maternal health and family planning
- Basic education and literacy
- Role of the family
- Children in especially difficult circumstances
- Protection of children during armed conflicts
- Children and the environment
- Alleviation of poverty and revitalization of economic growth

NCERT, (1991) came out with some of the following important research findings on population and nutrition.

- The amount of food, which a two or three year old child needs, is almost one-half of what an adult man needs. Because of the bulk, a young child has to be fed small amounts frequently-sometimes in as many as five or six eating sessions if it has to have its needs met.

- With increasing degree of malnutrition, age at menarche, the first menstrual period was found to be progressively increasing from 13.7 years
in normal girls to 15.2 years in severely malnourished girls within a rural community.

- Among women in poor socio-economic group, whose diets are poor and who are malnourished, between 20 per cent and 30 per cent of pregnancies end in abortions and miscarriages. Among the well nourished these are negligible. Stillbirth and premature deliveries are also more frequently seen among malnourished women than among the well nourished. High pregnancy wastages, thus an outcome of poor nutritional status, resulting in lower fertility rates.

- The mean time-interval between two pregnancies among rural women who do not resort to any family planning method in India and it is little over 30 months. Shortening the duration and frequency of breast-feeding results in quicker restoration of fertility.

- Mothers from malnourished communities deliver babies with a mean birth weight of 2.7 kg, which is 0.6 kg lower than the mean birth weight of basics delivered by mothers of well-nourished groups (3.3 kg). Prematurity and stillbirths are much more common among malnourished mothers. Also, twice as many babies born to mothers from malnourished population have birth weights below 2.5 kg.

- Two out of every 100 children die between 1 and 5 year of age group. Some die because of severe deficiency diseases, while others die because of diseases supported by malnutrition-diarrhea, bronchopneumonia, measles, tuberculosis and viral infections.

- There is an inverse relationship between family size and nutrient intake.

- Over 60 per cent of children who suffer from severe protein-energy malnutrition (which results in a high fatality rare) come from large families and their birth orders are 4 or above. Less than 40 per cent of the first three born suffer from such severe malnutrition.
• If the number of children in family is restricted to a maximum of three, almost 60 per cent of malnutrition among young children and pregnant women can be eliminated without any other effort.

• Anywhere between 3 and 5 per cent of children below the age of five years living in rural India and in urban slums have the serious clinical form of protein-energy malnutrition, and if not promptly treated, will die. Over 70 per cent of children in this age group suffer from mild to moderate forms of the diseases.

• While it is true that death rates among females throughout childhood and the reproductive age of 15 to 45 years are higher than in male, the National Diet Survey and Nutrition Survey data, do not show that the dietary intakes and nutritional status of girls are less satisfactory than those of boys.

Focus on Population Education, (1992) described the Nav Chetna Project which is sponsored by Family Planning Foundation, in Lalitpur District of Uttar Pradesh State. It is an integrated health and development project. The major findings of the project are:

- Average family size is 5.2 while the number of fully immunised infants is nil.

- Only 3.1 per cent of villages have some medical facility and only 12 per cent of the populations have access to medical aid.

- The per capita expenditure on health per annum is Rs.13.35. The IMR for rural Lalitpur is 146 and under five child mortality is 244. The under five female mortality is 271.

- Only 36 villages out of a total 150 have got protected water supply through pipes.
According to Ali, (1992) an individual's nutrition is determined by a number of factors acting directly or indirectly. These include food availability; purchasing power of the people; distribution of income; food consumption pattern; inter-family food distribution; level of nutritional knowledge; levels of employment; illiteracy and ignorance. Besides, factors like susceptibility to diseases; particularly diseases of the digestive system and to infestations as a result of unsafe drinking water, poor sanitation and unhygienic living conditions are equally important determinants, contributing to what is called 'nutrition linkage'.

Benjamin and Zachariah, (1993) conducted a study of under three years in Ludhiana. Sex, birth order, number of siblings, educational level of the mother, and family income were the factors found to be associated with childhood malnutrition. It was observed that the highest proportion of malnourished children were in the age group of 12-13 months and the lowest in the under-six months age.

A Study on “Quality of Care in Reproductive and Child Health” conducted by Child In Need Institute (CINI), (2000) on women and men aged 20 years and above and the adolescent boys and girls with the objective of developing instruments for measuring standard indicators, developing training modules for service providers and providing standardised service, found the following:

✓ Lack of regular home visit/village based services by health care providers creates an access problem that requires immediate solution

✓ Sound interpersonal relations contribute to effective health counselling and building rapport with the patients

✓ Safety is an important dimension of quality, which denotes reducing risks of injury, infection, harmful side effects or other dangers related to service delivery

Lakshmi, (2001) stated that the service-minded doctor's nutrition services are important to impart self-interest among the ruralities. She also insisted that the link workers should play a major role in finding the perception of health in villages. She
also emphasised that maternal child health care was more important than the family planning programme.

2.2.2. Studies on Child Nutrition

Joshi, et-al., (1974) has conducted a study, which found that half of the samples preferred a spacing of three years between childbirths. Maternal and child health were the main reasons for preferring spacing.

Agarwal. V, Srivastava and Gupta.S, (1976) conducted a study on “Health Status of Children in an Urban Community of Delhi”. They studied the health status of 1000 children. The Indian children lagged 3-4 years behind the American children of same groups. Incidence of dental caries was 16.8 per cent in the higher income groups as opposed to 88.4 per cent in the low-income group. Tuberculosis was common in low-income groups areas. Likewise vitamin ‘A’ deficiency was observed in 20 per cent of former and 14 per cent of the latter groups. BCG, DPT and polio vaccination has been given to 54.7 per cent and in the high-income groups areas, while the per centage in the low income area was 16 per cent, 16.7 per cent respectively.

Devadas. R.P, et-al., (1982) conducted an education project designed to develop awareness about food, health and sanitary practices. The target group consisted of fifty women and 100 children from rural areas. The health and sanitary practices of women and children who participated were improved.

A conference on ‘The Malnutrition Challenge’, organised by UNICEF, (1995) brought out the horrifying fact that malnutrition rates in Kerala are comparable with that of sub-saharan Africa whereas the rates of Tami Nadu are actually higher than the countries of sub-saharan Africa. Poverty and malnutrition make a vicious cycle each leading to inadequate diet, poor sanitation, increasing the prevalence of infections, illiteracy that is responsible for lack of nutrition and health awareness and large family size. According to some startling facts that emerged at the UNICEF conference on ‘The malnutrition Challenge’, it seems that in 1990 alone the worldwide loss of social productivity caused by malnutrition amounted to almost 46 million years of
productive, disability free life. Vitamin and mineral deficiencies are estimated to cost some countries more than 5 per cent of GNP in lost lives, disability and productivity. By this calculation, Bangladesh and India forfeited a total of $18 billion in 1995.

**National Family Health Survey, (1998-99)** indicated that only 40.9 per cent of mothers in urban areas and 58.8 per cent rural areas breast-feed their infants exclusively for 0-33 months. Studies have revealed that critical period for child is 0-2 years as malnutrition sets in during this period. While breast-feeding alone is sufficient for child up to 5-6 months, a rapidly growing and increasingly active infant has increased nutritional needs which can only be met by supplementing breast-feeding with foods like cereals, pulses, fruits and vegetables. Unfortunately, the NFHS survey reveals that either complementary food are not adequate in quantity and quality, resulting in onset of malnutrition at six months. Only 41.9 per cent in urban areas and 30.9 per cent in rural areas children between 6-9 months of age receive complementary foods along with breast milk, which again varies from 17.3 per cent in Uttar Pradesh to 87.3 per cent in Sikkim.

**Shyamala Mani Iyer, (1999)** in her study on “Childhood Malnutrition Impediment to Development,” quoted various reports on Nutrition which are given as follows: Chronic Energy Deficiency (CED) among adults, Protein Energy Malnutrition (PEM) among children and micro nutrient deficiencies continue to afflict a large percentage of the population. Severe malnutrition among pre-school children has come down from 15 per cent in 1975-79 to 7.1 per cent in 1995-96, but nearly 50 per cent of children still continue to be malnourished. Nutritional anaemia is widely prevalent, particularly in high-risk groups like pregnant women (40-88 per cent), children below six years (60-70 per cent) and adolescent girls (more than 50 per cent). The consequences of malnutrition include depletion of human intelligence, diminished resistance to infection, robbing of mental and physical potential and diminished features. There is a good nutrition for every child as embodied in the UN Convention on Right, of the Child in 1989, which interlocks, Right to Food, Right to Health and Right to Care. It is the right of the women to be protected and the right of a child to
have adequate care. The driving force for bringing out a sea-change in the situation is to raise the status of women, their education, their health and their empowerment.

**The Hindu, dated 4th October (2001)** article on “spinach could offer new hope for the blind”, explained that replacing the defective photoreceptors with a spinach protein could solve the problem when neural wiring from the eye to brain is intact but lacks photo-receptor activity. It also emphasised that the young children are to be supplied with this nutrient to prevent eye problem.

### 2.2.3. Studies on Knowledge of Nutrition

**Hays. M and Emmons. L, (1973)** studied the influence of nutrition knowledge of mothers and their children’s diet, showed that mothers and children considered certain foods important more often because of general reasons, customs and habits than for valid nutritional reasons. The nutritional practices of mothers, as revealed by the foods they served their children, were better than their knowledge on nutrition. Some nutritional practices were subjected to modification without gain in knowledge and positive change in attitudes.

**Vijayaduragamba and Geervani, (1974)** made an attempt to assess the dietary pattern and nutritional status of pre-school children in relation to their mother’s awareness of nutritional knowledge living in urban slums of Hyderabad. Most of the mothers were unaware of the right type of feeding practices of infancy and pre-school age and are generally led by customs and beliefs. Eighty eight per cent of mothers belong to the poor category of nutritional awareness.

**Rao, (1975)** found that the educated people in rural area had more knowledge about vaccination than the uneducated people.

**Sims. S.L, (1976)** reported that family size was negatively related to nutritional knowledge. Families with small size had better nutritional knowledge than families
with large size. He also stated that direct relationship exists between nutritional knowledge and occupation. Higher occupational groups had better knowledge of nutrition than the lower occupational groups.

**Hooja.V, et-al., (1976)** studied the Immunisation status in an urban community. The study reveals that BCG was the least (35.4) accepted vaccine. Over all the immunisation status of children was very poor. Better economic and educational status of the mother led to increased acceptance of all immunisation. Also children born at hospitals had a higher immunisation rate than those born at homes.

**Santhakumari. Y, (1976)** made a study on differential knowledge and practices on three selected aspects of personal health among rural and urban high school children in Andhra Pradesh. The findings of the study revealed that both rural and urban high school children had a higher knowledge and practices in the aspect of hygiene than in the other two aspects of sanitation and nutrition. Hence, she suggested that there was a need to have health education programmes to develop comprehensive knowledge and practice with regard to personal health and nutrition among high school children.

**Sharma. D.B, Laholi. V.C and Gupta, (1977)** studied “The Immunisation Status of Infants and Pre-schoolers belonging to Urban and Rural Areas of Jammu”. A sample of 1200 urban and 1000 rural mothers were interviewed about immunisation of their youngest child below 5 years of age. 82 per cent of urban and 73 per cent of rural had received primary small pox vaccination. Reasons for non-vaccination were ignorance and traditional beliefs. The coverage of BCG, Triple antigen and polio was 14 per cent, 15 per cent and 20 per cent in urban children and 5 per cent, 5 per cent and 18 per cent in rural children respectively. The immunisation status for different vaccines was related to sex, socio economic status, maternal education, birth order and family structure.

**Arora. Y.L and Sharma. G.D, (1977)** observed that women attending the Dufferin Hospital of Lucknow had very good knowledge of child health services. Contrary to this study, **Awasthi, et.al., (1980)** found that a majority (95 per cent) of patients
attending the hospital did not have any knowledge about their diseases. The study also revealed that educated patients knew more about their diseases. The study also revealed that educated patients knew more about their diseases in comparison with their illiterate counterparts.

The **National Institute of Health and Family Welfare, (1978)** found that 83 per cent of members of the community knew the name of Community Health Worker (CHW) selected to work in their village.

**Shah. P.M, (1978)** has conducted a study among non-formal education and its impact on community. The critical study was towards propagating the population education concepts like family planning personal, community health, elementary food and nutrition. Proper spacing of children ensures better health for both mother and children. Parents need to be educated about these concepts by the arrival of a first baby. The overall impact of the health education of both personal and community sections was on positive side, regarding the knowledge aspect.

**Devadas. R.P, (1979)** studied the impact of a nutrition and childcare programme on fifty mothers in terms mothers over a period of five months. The impact was measured in terms of nutrition knowledge and dietary practices of mothers. The nutrition knowledge scores of the participating mothers were significantly higher than the scores of the control group of mothers and promising changes were not observed in dietary practices compared to that of knowledge.

**Madhavi. J (1979) and Hemalatha Rani, (1981)** found that villagers had very little knowledge of health and hygiene. People in villages used open fields for defecation and adopted no personal hygienic habits. The children were usually given bath twice or thrice a week and most of them use herbal medicines and magical treatment for getting their diseases cured. Only few villagers availed the medical services.

**Gupta, (1981)** reported that the awareness about the personal hygiene, balanced diet and eating was significantly higher in the students of lower age groups as compared to
the students of higher age groups. Lower age groups had better knowledge of nutrition than upper age groups. It was found statistically significant at 0.01 levels.

Naidu. J.S, (1981) found that among the rural people in Andhra Pradesh, only 30.66 per cent and of the experimental and control group respectively had the knowledge of locally available nutritious foods. Forty one per cent and 36 per cent of the control and experimental groups respectively had knowledge about the essential foods to be consumed daily.

Singh. M.B and Kaur. S, (1981) studied the mother-child interaction in rural and urban areas. They administered a questionnaire on mother-child interaction and techniques in social and personal situations to 25 urban and 25 rural Indian mothers having at least one child between the age of 2 and 5 years. The results showed that rural mothers interacted more with girls than with boys. They felt that girls needed more instruction and discipline than boys. On the other hand, the urban mother's interaction was related to each mother 's educational level. Mother child interaction was greater when mothers had more education. Both urban and rural mothers used tactics such as attention, diversion, discouragement, scolding and spanking to discipline their children.

Neerajamma. T, (1982) conducted a study on the health consciousness among illiterate adults on 13 communicable diseases. The results of the study revealed that more than fifty per cent of illiterate men did not have adequate knowledge on malaria, typhoid, tuberculosis, encephalitis, tetanus, poliomyelitis and whooping cough, whereas illiterate women possessed some knowledge of tetanus, since it was women who brought up children and as such they were exposed to the knowledge of different diseases, their prevention and cure. In the process of child rearing they seemed to know more of the health aspects of certain diseases than men.

Usha Devi, (1983) conducted a study to assess the nutritional knowledge of organisers of NAEP in Andhra Pradesh. She found that out of the 111 items included in the knowledge test of nutrition, 75 items were known to 50 to 100 per cent of the
organisers. Area-wise, food and its importance was not known to 100 per cent; food storage methods to 100 per cent; food groups to 89 per cent; nutritional status to 88 per cent; nutritional deficiency diseases to 80 per cent; diet for infants to 50 per cent; diet for pre-school children to 38 per cent; and diet for pregnant and lactating mothers to 30 per cent.

Gopalan, (1985) found that restriction of family size would bring about improvement in health and nutrition in poor families, because much of the failure of child health and nutrition programmes may be traced to the general failure to support and strengthen the women in playing her pivotal role in the health and well being of the family.

Sudha Rani. K, (1987) found that the age of the organiser has influence on the total nutritional knowledge, that is organisers aged 23 years and below has more knowledge than those aged above 23 years. She also found that income has no influence on the knowledge of nutrition and the instructor belonging to forward castes have more knowledge on nutrition than those belonging to non – forward castes do.

Kulkarni, (1988) pointed out that parents belonging to a higher level of educational and socio-economic status also need parent education. In fact, the need to provide knowledge on parenting is applicable to all classes of parents who behave like responsible parent-hood.

Reddy. P.A, (1990) in his study on adult education programmes in India, explained how various agencies of mass media are playing significant roles in educating and providing knowledge to the masses. Of these, the press, the radio, the motion pictures and the television occupy prime positions. An instructor of adult education is bound to be exposed to one mass media agency or the other. The exposure to mass media provides him with additional information or knowledge about various current trends, practices and so on, which may, in turn, influence his instruction effectively.

Reddy. B.N and Rani. K.S, (1990) conducted a study among 134 instructors (animators) of Chittor District in Andhra Pradesh, and the study revealed that the
knowledge about nutrition items are not known to more than 70 per cent of the instructors. Married instructors have more knowledge of nutrition than the unmarried ones.

The UN Development Programmes Human Development Report, (1990) indicated that higher female literacy is associated with lower infant mortality rate (IMR), better family nutrition, reduced fertility and lower population growth rates.

Saradamoni. K, (1991) while explaining about Kottayam town literacy experiment in Kerala stated that the expansion of literacy, particularly among women, directly results in fertility declines as well as mortality declines. She further pointed out that mortality and childcare are directly linked with each other and childcare is a major responsibility and cause of concern for women. In India, it is mainly a private affair and the class differences are reflected in this as in most other aspects of life. Further, she stated that many studies of the mid-seventies had pointed out that much of pregnancy loss and pre-natal mortality resulted from premature births and malnutrition. Frequent pregnancies resulting in protein malnutrition and nutritional anemia caused a large proportion of maternal deaths. The situation had not improved during the last fifteen years.

Mohanthy. J, (1991) described in his study that greater success is evident on childcare and immunisation of children due to the impact of literacy. More over, literacy centers serve as effective forum for better dissemination of ideas and information about different children’s and mother’s welfare programmes and practices like breast-feeding, oral rehydration, family control etc. Further, he explained that literate mothers can contribute more to the promotion of general awareness and health of their children than their illiterate counterparts. It was found that infant mortality rate dropped down due to the effect of literacy growth.

The Hindu, dated September 10th (1995) reported that the recent studies have shown that malnutrition is widespread in the country with 40 per cent of our children suffering as a result of inadequate diets. Though it is generally believed that only
children from lower income families are malnourished, a report from the National Institute of Nutrition reveals that in 50 per cent of households that have enough food, nearly half of the under-five children do not eat enough of the right things. The poor spread of complementary feeding, or the practice of giving semi-solids to infants after the baby is four to six months old, is the main culprit. Clearly, then, it is not just the poor availability of food that is the main impediment; the lack of awareness on correct feeding practices as well as inadequate institutional support mechanisms and equally important obstacles on the road to nutrition.

According to Ashalatha Boaz’s, (1995) study on the determinants of rural women’s perception towards mother-child health programmes revealed that, the communication variables, on the whole, exposure to communication channels such as television, radio, dramas/street plays, newspapers, movies has resulted in higher perception of MCH issues. She also noted that interpersonal communication variables, namely urban contact and change agent, have had a direct and positive association with perception.

Ratna kumari. C.H, (1996) conducted a study on “Early Childhood Care and Education with special reference to Awareness and Practice among Mothers and Teachers” and it revealed that, all the mothers are found to have better awareness and low practices concerning health, nutrition and education. The gap between awareness and practices in all the three areas is wider and the gap is very much remarkable for health. It is evident that competitively in the average levels of awareness all the mothers are ahead in health awareness. In low level of practices all the mothers are ahead in nutrition practices compared to others.

Sreedevi. V, (1997) found that age has significance on knowledge and attitude towards nutrition whereas it has not influenced significantly the practices of nutrition. Higher the age of the instructor the more the possession of knowledge and favourable attitudes toward nutrition. With regard to practices, there is no significant change in
the practices; there is no significant change in the practices of nutrition among instructors of different age groups.

**Veeramani. K, (1997)** conducted a study on determinants of infant mortality in rural areas of Tiruchirappalli district, and revealed that the infant mortality in rural areas is the result of a combination of factors which include the mother receiving poor nutrition, her lack of access to proper medical care, knowledge about antenatal care and institutional delivery. The infant deaths occur in families, which are economically and socially backward.

The **NFHS, (1998-99)** survey revealed that there is a definite relationship between immunisation, infant mortality rate and female literacy. For instance, in Kerala where the female literacy rate is 87.86 per cent (2001 census), the percentage of children (12-23 months) who received all vaccinations was 79.7 per cent and infant mortality rate 16.3 per cent, while in Bihar the female literacy rate was 33.57 per cent (2001 census), the immunisation coverage 11.0 per cent and infant mortality rate 72.9 per cent. A literate mother is more empowered and is able to decide about her fertility, the family size and child caring practices. But contrary to this Tamil Nadu where the female literacy rate is 64.55 per cent (2001 census), which is less when compared with Kerala, have the percentage of children (12-23 months) who received all vaccinations as 88.8 per cent. This shows the successful implementation of the immunisation programmes by the government.

**Mukta Agrawal and Ritu Bhargava, (2000)** conducted a study on dietary consumption pattern of gaduliya lohars (people of Rajasthan) with special emphasis on pre-school children. The study was carried out on 100 children in the age group of 2-6 years. The study revealed that the nutritional status of the children was poor because of injudicious choice of food. It is also indicated that the prevalence of rigid and unhealthy dietary practices, illiteracy and poor socio-economic status lack the primary causes of malnutrition and presence of several deficiency and infectious disease in the pre-school children.
Education is one of the fields in which the neglect of women is strongly evident. As per census, (2001) only 64.55 per cent females in Tamilnadu are educated as against 82.33 per cent males. Girls constitute only 30-35 per cent of the total students at every level. India has to pay a higher cost for such neglect of females.

2.2.4. Studies on Attitude towards Nutrition

Muthayya. B.C, (1972) also reported that higher the socio-economic status the more favourable the attitudes in the areas of agriculture, health, nutrition and child rearing.

Arora. D.D and Kwal. K.K, (1973) reported that different religious groups had different attitudes, taboos and beliefs with respect to certain foods. Rice, Curds, Banana and Orange were considered to induce cold by over 90 per cent of the Hindu and Jain mothers. Two – thirds of Muslims, Christians and Sikh mothers reported that meat and egg were supposed to be 'hot' foods among Jains. Over one and half of the Muslim mothers and a lesser proportion of mothers in other religions believed that consumption of sugar resulted in worm infestation.

A survey on “The Attitudes of Mothers toward Infant feeding” was carried out by Khammeem. M.P, Chuapath. K.P and Begum. K, (1979). The study was conducted in five hospitals and clinics of Mysore city. 500 mothers were interviewed, and information regarding colestrum feeding, termination of breast-feeding, and introduction of supplementary feeding was collected with the help of an interview schedule. The results revealed that colestrum, an ideal food for infants, was discarded by 77.6 per cent of the subjects because of misbelieves. Subjects from high-income group terminated breast-feeding much earlier as compared to the low-income groups. Supplementary foods were introduced at 10-12 months or later in all income groups. The survey data warranted the need for a nutrition education programme for mother about proper infant feed practices.
Perkins, et-al., (1980) studied the relationship between the teachers’ and students’ attitudes related to nutrition at the school level. Positive significant relationship was found between the nutritional attitudes of teachers and students. These attitudes also lead to nutrition behaviour in both the cases.

Singh. S.D and Pothen. K, (1982) studied the slum children of India and the major findings of the study are:

- Increasing awareness among mothers regarding merits of breast-feeding.

- Preparation of mothers for successful lactation by providing appropriate prenatal advice on breast-feeding, adequate maternal nutrition, during pregnancy and lactation.

- Restricting substitution of breast milk only when absolutely necessary. While advising on artificial feeding prepared emphasis should be on its essential prerequisites which include proper feeding equipments facilities and importance of boiling good source of water and adequate washing facilities.

- Rejection of colostrums is an erroneous belief and it needs correction. Breast-feeding is a desirable habit for too long a period without supplementation.

- Periodic demonstration of beneficial effects of providing rich, cheap and weaning foods on the health of children in community will result not only in the improvement of nutritional status of the children but will also tend to correct the wrong beliefs nurtured by these mothers with regard to feeding their infants.

- restriction of total feeds to children suffering form fever and diarrhoea adds to existing cause of malnutrition. It needs correction.

Sharma. D.B and Gairola. L, (1990) stated that the early years of a child’s life are closely associated in nutritional importance with the mother. Growth is very rapid, particularly during the first year, and dietary adaptations are needed frequently. In the first few months of life, adjustments in homeostasis are also made, which relate especially to digestion and excretion, and to hormone section. Breast-feeding is considered especially important at this time.

Ravichandran .R, (1995) studied on “Impact of Integration of Population Education Concepts with Adult Education Programme at Selected Villages in Tiruchirappalli District of Tamil Nadu” found that there are significant relationships between the mass media exposure (radio listening, television viewing, newspaper reading, cinema viewing) of the women adult learner and their knowledge and attitude on selected population education concepts such as responsible parenthood, delayed marriage, mother and child care, small family norms and nutrition.

Sreedevi. V, (1997) found that educational status of the adult instructor has significant influence on knowledge, attitudes and practices of nutrition. Higher the education better was the knowledge, attitudes and practices among instructors.

CINI, (1999) conducted a study on nutritional profiles at district level in West Bengal among pre-school children and their mothers in 6800 households with the objectives of finding the dietary patterns and signs of nutritional deficiency disorders and studying the knowledge, attitude and practice of mothers on breast - feeding, child rearing and socio-cultural aspects of food consumption found that, the nutrition status of under 6 children have improved and the intake of nutrients is below the recommended dietary intake level for all groups of population. It also revealed that breast-feeding within 48 hours has gone up in recent years and exclusive breast-feeding is not commonly practiced.
2.2.5. Studies on Practice of Nutrition

Rao, (1971) reported that families with three or less children were observed to have better intake of calories and protein than families with four or more children. The difference in calorie intake per adult unit between families with three or less children and those with four or more children was nearly 300. The difference in protein intake was of the order of 10 grams daily.

Arora. D.D and Kwal. K.K, (1973) found that Christians and Hindus introduce solid foods at the earliest rather than Muslims

Kumar. A, Qurishi. S and Mathur. Y.C, (1976) studied the morbidity in pre-school children of rural Hyderabad in relation to family size and birth intervals. A total of 1081 children under five were examined for evidences of nutritional deficiency signs and infective conditions. It was observed that on an average about 40 per cent of children belonging to smaller families were manifesting the signs of either protein calorie malnutrition or vitamin deficiency while the corresponding figure for the large sized family was significantly higher in large families. A definite inverse relationship was observed between the inter pregnancy period and prevalence of malnutrition.

Das and Pivato, (1976) studied the problem of malnutrition among pre-school in India and Srilanka in relation to cognitive competence. Using short stature as an index of malnutrition among children from low-income families, they observed that short children, compared with the taller children displayed poorer performance on many of the cognitive tests. Further analysis, however, revealed that the effects of malnutrition were excitably blended with the effects of socio-cultural disadvantage.

The Haniti Fertility Survey, (1977) reported that the mean duration of breastfeeding tended to increase with the age of mother. A greater proportion of younger
women had never breast-fed. Nearly 40 per cent of women under 25 years did not breast feed as compared to less than 20 per cent of women aged 35 years and above.

**Datta Banik. N.D, (1977)** reported that the higher socio-economic classes started supplementary food at about 6 months of age whereas most of the mothers from the lower socio-economic classes started supplementary feeding after one year of age. But Gupta et al., (1979) found that there was no relationship between income and weaning.

**Mary Sujatha, (1978)** conducted a study among rural mothers on nutritional practices and the study found that positive correlation at 1 per cent level of significance existed between knowledge and nutritional practices of rural mothers. From the study, it is evident that knowledge, attitudes, socio-cultural beliefs and socio-economic status influence the nutritional practices of the mothers.

**Kumar. R, Karla.K and Dayal. R.S, (1978)** conducted a survey on the immunisation status and breast-feeding practices of infant in Agra. Out of 4410 cases 86.3 per cent urban and 95.9 per cent rural infants were immunized. There was a greater awareness among higher groups for immunisation. Urban and rural mothers were equally enthusiastic about 16.4 per cent of all 12 months old babies were comparatively off the breast. The rate of breast fed infants was 48.9 percentage in low socio-economic groups and 32.8 per cent in higher economic groups.

**Vasanthakumari. K, (1979)** conducted a study on the relationship between nutritional knowledge and practices of rural mothers to that of the dietary quality and nutritional status of their children. Significant relationship was found between the knowledge and practices of mothers in the control group. There was no significant relationship existed between the two in the experimental groups.

**Sobhavathi, (1980)** reported that the harijans of charala village in Chitoor district of Andhra Pradesh were not very particular about their personal health and the children
were not bathed regularly. She further noticed that most children of the village suffered from fever, cold, cough and digestive disturbances.

Ferry, (1981) reported that the length of breast-feeding among the wives of farm workers was very much longer than the mean for the whole country. Very short duration of breast-feeding was found among wives of white-collar workers.

Devadas. R.P, et-al., (1982) evaluated and reported the impact of a nutrition education programme which lasted for a six months period. The target group was 130 members of women’s clubs in selected villages. The women were directed towards economically and nutritionally beneficial activities. This intervention programme improved the mother’s nutritional practices.

Mason. K.O, (1984) told that in some societies, feeding priority is given to senior males and boys in the household and then women and girls consume the leftovers which results in nutritional deficiency among girls, old women and pregnant.

Billimoria. R.N, (1984) referred that from birth, a girl is considered inferior to her brother who is provided with better food, clothing, education and recreation. The girl is generally not given higher education and is married off at an early age despite her willingness. In spite of free education to all irrespective of sex, withdrawing girls from the early age, the burden of housework is gifted on the girls who are withdrawn from school thereby depriving of her education which would expose her to the larger world outside her home.

Bhangoo, et-al., (1988) have selected 500 rural women in the age group 15-35 in Ludhiana district as a sample for this study. The study revealed that a majority of unmarried women preferred reading books on food and nutrition, health and hygiene.

Sadik. N, (1989) found that with regard to excess female child mortality, the reasons behind this are fairly well established namely, lower calorie intake for female than for male children and lesser utilisation of health services for girls. Girls also start working at an earlier age than their brothers and toils harder and longer. It was also
found that women of childbearing age in the developing world do not consume the recommended minimum of 2,250 calories a day.

Marriage policies and programmes were described by Rajaretnam, (1990) encouraged the postponement of marriage especially of girl and spacing between births through temporary methods of family planning, prolonged breast-feeding and practice of induced abortion (as followed by law) in India will amount to large scale reduction of the high population growth rate besides contributing to the health of mother and children.

Gopalan. C, (1991) studied on nutritive value of Indian foods and suggested that early introduction of supplements before six months of age is not associated with any beneficial effect on infant growth. It is possible that introduction of supplements results in reduction in suckling stimulus and therefore reduction in milk output resulting in shorter duration of lactation and shorter duration of lactatinal amenorrhoea and inter pregnancy interval. Though Indian babies are given supplementary food, either they are introduced very late or given adult form of diet. The age of introduction of supplementation is 3-5 months in the urban elite and middle-income group. The supplementation is delayed in urban poor by 7-9 months and rural poor by 9-11 months.

Srikantia, (1992) while pointing out the reasons for infant mortality due to the malnutrition – he reported that malnutrition is coupled with delayed weaning and insufficient feeding, many of them become malnourished, develop severe infections and die during the second half of infancy. Not all the blame for infant mortality can be attached to malnutrition. Other poverty-related causes, such as insufficient obstetric care, poor environmental sanitation, over-crowding, unsafe drinking water and lack of timely medical care also contribute to high mortality.
Malnutrition is one of the factors affecting women’s health, the UNESCO, (1992) described health-oriented discriminatory practices against girls such as poor nutritional status and lack of health care/medical attention.

Chitrarpu. R, (1993) revealed a common (mis)practice among many Indian mothers is not to feed the baby colostrums – the first milk that is secreted for about three days. This is discarded and the baby is given glucose water. Colostrum is rich protein, especially antibodies that help fight microbes, and vitamin A.

Vijayalakshmi. G, (1996) conducted a study on nutritional practice of children and found that weaning practice of children were significantly influenced by mother’s attitude, socio-economic status, work status, their contact with health personnel and number of living children.


Sreedevi. V, (1997) found that family size of the adult instructor had significant influence on knowledge, attitudes and practices of nutrition. Family size of the instructor was negatively related to nutritional knowledge, attitudes and practices. Instructors belonging to small families had better nutritional knowledge, favourable attitudes and better practices than instructor of larger families did.

Kailash Choubey, (1998) from his study reported that the dietary habits of tribal people of Madhya Pradesh are very much influenced by local production & availability of food items. Religious customs and their beliefs also affect it. Faulty dietary habits, selection of foodstuffs, poverty, ignorance, and tradition are some of the other factors, which are likely to affect their nutritional status.

practices were categorized as (i) Human milk (breast - feeding + home diet (with or without biscuit), (ii) Cow or other animal milk + home diet (with or without biscuit), (iii) Human milk + cow or other animal milk + home diet (with or without biscuit). Common illnesses recorded were gastrointestinal disorders and respiratory problems. Both types of illness were found in (i) and (iii) 72 per cent of infants suffered from the illnesses.

Shiva Prakash, et-al., (2000) conducted a study on Morbidity and Mortality Profile of under 6 years Children in ICDS and Non ICDS Tribal Area of Uttar Pradesh revealed that there were three deficiency diseases Anaemia, Dental caries, Night blindness most prevalent in both groups. The overall prevalence of deficiency disease was higher in Non ICDS as compared to ICDS group. The major causes of infant mortality in ICDS areas have been tetanus neonatorum and respiratory tract infections while in Non ICDS areas causes were diarrhoea, fever, and tetanus. It was concluded that the health status of children in ICDS group has not been considerably better than those of Non ICDS group. ICDS scheme has not produced a considerable impact on the morbidity and mortality status of the children. The suggestions emerged from the study is that need is not only to educate mother and children but also to ensure that education is practiced.

2.2.6. Studies on Nutritional Status of the Child

Chandra. P and Venkataswamy. G, (1978) studied on the health and nutritional status of pre - school children in rural Tamil Nadu. A health and nutrition survey of 843 pre - school children showed that the mean heights, weights and chest circumference were far below the Indian standard. Nutritional anthropometrics showed that 21.7 per cent were in III degree, 47.6 per cent in II degree, and 24.9 per cent were in grade I degree malnutrition and 5 per cent were normal. On clinical examination 3 per cent had kwashiorkor or marasmus or marasmic kwashiorkor, 34 per cent xerophthalmia, 50-58 per cent had nutritionally relevant disorders like diarrhoea, respiratory infection, worm infestation, superlative otitis media and
pyodema. Immunisation for triple antigen, BCG and polio was 17.2 per cent, 4.8 per cent, 35.7 per cent and 93 per cent respectively.

A study on morbidity patterns among children below 5 years in an urban sindhi community was conducted by Sen. V, Sharma. R and Purohit. B.K, (1979). The sample comprised of 350 children under 5 years of age, 62.9 per cent had one or more behavioral disorders e.g., pica, thump sucking, phobia enuresis, teeth grinding, nail biting, and breath holding. Children suffering from diarrhoea (65.7%) worms (42%) measles (34%), whooping cough (18.3%) dysentery (3.1%) and chicken pox (0.3%) acute pneumonic (7.6%) were observed.

Shanmugam, et-al., (1979) studied the maternal deprivation and growth failure of the 50 mentally deprived children taken from orphanages, pediatric wards and during home visits. Mother’s employment had a reverse effect on growth and most of the children were suffering from anemia, diarrhoea, cough and cold, skin infection and loss of appetite. The psychological disorders present were thumb sucking, irritability, depression, apathy, speech defect, enuresis and pica. In all anthropometrics measurement the difference between the study and control groups was significant.

Bhargava, (1980) conducted a study on morbidity and mortality pattern from birth to six years infants of varying birth weights. The study illustrates for follow up of matched groups of low and normal birth weight infants. The cause of illness was investigated in 347 children with birth weight less than 2000 grams and 219 children with weight of 2001 to 2005 grams and 219 children weigh more than 2500 grams. The first and second category infants suffer from diseases during pre-school years, but not after 5 years of age. Increase in age leads to decrease in morbidity rates in all groups. Respiratory illness and diarrhoea was the primary cause of morbidity and mortality.

A survey by Dutta. J.K and Chanda. S.K, (1980) revealed that a number of infectious diseases like diphtheria, measles, cholera, whooping cough, chicken pox, mumps, poliomyelitis, tuberculosis and tetanus are still common in India. Poor environmental sanitation, unsafe water supply, low standard of personal hygiene, lack
of health education, are the main causes of their spread. Vaccines are available against almost all of them but the utilisation of the facility is poor.

A longitudinal study of morbidity on children up to 5 years in an urban community was done by Sharma. V, Sharma. R and Purohit. B.K, (1980). The sample comprised of 350 children on Jaipur. The main disorders discovered that are affecting pre-schoolers were upper respiratory infections, diarrhoea, dysentery, boils, worm infection, measles, acute bronchitis, injuries, fever and whooping cough. On an average 3.3 episodes per child was observed in one year of the study. The mean duration was 50.2 days. The episodes and duration were adversely affected by socio-economic status, number of sibling and housing conditions.

Gupta. K.B and Walia. B.N.S, (1980) conducted a longitudinal study of morbidity in children in a rural area of Punjab. The study consisted of weekly observations for one year on 120 children in two villages of Roper district. The mean episodes of illness per child per year was 51.5 per cent. This number was significantly higher in the 0-5 year age group as compared to those aged more than 5 years. The main causes of morbidity in descending were skin infections (23.2 per cent) respiratory infections (22.1%) diarrhoeal diseases (21.7%) fevers of miscellaneous origin (14.1%) eye infections (8.1%) and ear discharge (7.4%). 50 per cent children showed pallor and out of them 25 per cent gave history of passage of round worms and pica as predominant features.

A study on mortality in children – An analysis of 1690 deaths was done by Lokeswar. S.H and Pai. P.M, (1980). Among 1690 deaths in 4 years, pediatric deaths were 9 per cent with a higher deaths rate in females. Maximum mortality (56.15%) was in children under 1 year of age. The major cause of mortality being gastroenteritis (14.9%) bronchi pneumonia (25.5%) septicemia (12.46%) malnutrition (10.47%) encephalitis (7.24%) tuberculosis (6.8%) prematurity (5.29%) and tetanus (4.82%).

Luwang. N.C, Sing. S.B and Devi. N, (1980) studied the morbidity pattern amongst pre-school children of a hill tribal community of Manipur. Seventy three per cent of
the children had one or other ailments on the day of examinations. Diarrhoea,
dysentery helminthes infection, respiratory infection, skin diseases and fever were the
leading cause of morbidity. Gastro intestinal and respiratory infection accounted for
79.35 per cent of morbidities. The prevalence of morbidity was more or less equal to
male and female children.

A study on influence of environmental factors on under five morbidity was conducted
were interviewed and morbidities in their 893 children were analysed with respect to
physical environmental factors. 273 children belonged to urban area, 284 to urban
slum and 336 to rural areas. The incidence of morbidity is higher in urban slums and
rural areas as compared to urban areas. Main causes were fever, diarrhoea, vomiting,
measles, chicken pox, whopping cough and malnutrition. Prolonged breast-feeding,
delayed weaning, low educational status of the mothers were the causative factors. No
treatment was given in maximum cases in the rural areas and treatment in other areas
comprised mainly of home remedies. Further, the morbidity incidence was
significantly higher in those children who lived in Kacha mixed houses having
inadequate ventilation, who consumed water from open wells and had the habit of
open field defecation as compared to those living in pucca with adequate ventilation,
utilised tap water and were using service latrines.

tribals of Orissa. The cross sectional anthropometrics study of tribal Orissa on 1010
pre - school children of low socio - economic status showed higher measurements in
boys than the girls up to 72 months. The 50th per centile of height, weight, head and
chest circumferences values were comparable with 3rd per centile of Harward
standards. Heights and weights showed slightly higher values when compared with
ICMR study. All the measurements when compared with the studies of pre - school
children of other parts of India, there was depression of growth rate from 7 months to
24 months.
Gupta. S.B, et-al., (1982) conducted a study on health status of children below 6 years of age in a rural area covered by ICDS scheme in comparison to adjoining areas not covered by the scheme. Children aged under 6 years, with similar characteristics and environmental conditions numbering 400 from ICDS and 357 from non-ICDS block were studied. The mean values of weight, height, arm and chest circumferences were found higher in those from ICDS block. Prevalence of protein energy malnutrition was significantly higher in non-ICDS than the children in the ICDS block. Comparatively more children of non-ICDS block were found sick at the time of survey, though diarrhoea, dysentery, respiratory and skin infections were commonly prevalent in both the groups. Better utilisation of services was observed in ICDS block but there was no significant difference in the prevailing mortality in the two blocks studied.

According to Bhansali. K.M, et-al., (1982) physical growth can be for those aspects of maturation, which can be reduced to a measurement of size, weight, height and arm and chest circumference.

Bhutalia. U, (1985) reported that the workday is in the order of 15 to 16 hours particularly in rural areas. This allows the women little time to think of health care and general well-being. If she is undernourished, her children remain undernourished and ill health becomes chronic.

Higher risk of female deaths from infancy to the end of reproductive age, partly due to discrimination against female in health care and nutrition Raina, (1985).

According to Gopalan. C, (1985) the key to child health lies in much greater emphasis than has been evident hitherto, on allround improvement of the competence of the mother-her physical condition, economic state, health and nutrition, and education. Such attention to the mother must start not after she has become a mother not even when she is about to become one, but when she herself is a child.

According to Future, (1985) in poor community the women often working longer and harder often eat last and least. In her own childhood the future mother usually has less
to eat than her brothers with the result that her growth is impaired and her own children may be born-and may grow up under weight. Sex bias results in greater prevalence of under nourishment among girls than among boys. There is evidence of serious comparative neglect of the female child especially in times of distress.

Protein Energy Malnutrition (PEM) is the most widespread form of malnutrition among pre-school children in India. The National Nutrition Monitoring Bureau (NNMB) Survey, (1988-90) on children in rural areas, have shown that only about 10 per cent of the children are normal with respect to their nutritional status (i.e. having for age above 90 per cent of NCHS standards), 43.8 per cent of them exhibit mild or moderate malnutrition while 8.7 per cent are severely malnourished. Taking mean-2 SD of NCHS standard as cut-off level, the NNMB report of repeat survey (1988-90) indicates that 68.6 per cent of pre-schoolers are under-weight (weight for age basis), 65.1 per cent are stunted (height for age basis) and 19.9 per cent are wasted (weight for height basis). It is estimated that approximately 56 per cent pre-school children suffer from iron deficiency. NNMB survey, (1988-90) have shown an average intake of 10.2 mg/day 1-3 year olds and 15.3 mg/day for 4-6 year olds which is below the average RDA of 12 mg/day respectively. The low intake thus leads to deficiencies, which become more acute due to poor absorption from a predominately cereal-based diet coupled with hookworm infestations, malaria, repeated infections and recurrent diarrhoeal bouts.

Gupta. S.P and Bhargava. A, (1991) stated that the most affected group in the population is children and women of childbearing age and the majority of infant deaths are attributed to factors that are manageable or preventable in nature. Malnutrition is a major underlying cause of the death and mortality double for each lower category of nutritional status. The rate of decline in infant mortality is attributed to improvement in socio-economic conditions, control of communicable diseases, better nutrition, obstetric care, immunisation against vaccine-preventable diseases and better health awareness among people. The majority of infant deaths are attributed to factors that are manageable or preventable in nature. Besides these direct causes, the factors like cultural, social and economic contribute to high infant deaths. Those
factors include: lower age of mother, order of birth, less interval between two births, large family size, high fertility, unhealthy child rearing practices, low family income, non-availability of ante-natal and natal services, delivery by untrained nurses and poor environmental conditions. Most of these causes could be eliminated by improving the delivery of the comprehensive health-care package of Mother and Child Health (MCH) services, with emphasis on timely screening of high risk groups and a strong referral back up. There is a close relationship between education and mother childcare. A number of research studies clearly indicate that where the literacy rate is high, there the fertility and mortality rate is very low.

The malnourished populations are generally to have higher fertility rates than well-nourished population. This high fertility rate, it has been suggested, sets up a vicious circle. Contrary to this belief, malnutrition, if anything has the opposite effect, it limits fertility. The child mortality index in India over 12 is compared to less than 0.2 per cent in developed countries, (Srikantia, 1992). This means that 12 out of every 100 children born, expectance, the age structure of the population, the child turn over rate and acceptance of small family norm.

Wisdom, (1992) in a study conducted on medical research found that nearly one third of the infants have low birth weight (less than 2.5kg) due to poor maternal stature and malnutrition.

According to UNESCO, (1992) many factors influence infant mortality, of which the following are considered as most important:

- High fertility (mothers have to produce more children in order to ensure the survival ratio among infants)
- Cultural practices (where males are given priority in nourishment amidst scare food resources within the family)
- Education of the mother
- Birth order
- The type of feeding of the infant
- Birth weight of the baby and
- Maternal health care

Mother and child health and welfare involves mainly the improvement of their health needs through immunisation, nutrition, better sanitation, breast-feeding and prevention of common ailments and decision-making, e.g. how many children a couple should have, how many years before the birth of each child, whether they have enough resources to meet the changing needs of each member, etc.,

According to the National Family Health Survey, (1992-93) chronic and acute undernutrition is high in India. More than half (53%) of all children under age four are underweight and a similar proportion (52%) is stunted. Moreover, 21-29 per cent of children are severely undernourished according to the weight-for-age and height-for-age measures. One in every six children is excessively thin (wasted). They concluded that undernutrition varies substantially by the age of the child, being lowest in the first six months of life when the majority of children are fully breastfed. Variation by the child's sex, length of previous birth interval, and other demographic characteristics is very modest. Variation in nutritional status by mother's are illiterate, children whose mothers are illiterate, are twice as likely to be underweight or stunted as children whose mothers have completed at least high school.

Kathuria. A.K, (1994) observed that over the years, the major nutritional problems amongst pre - schoolers have been protein-energy malnutrition, vitamin ‘A’ deficiency, iron deficiency, anemia and iodine deficiency disorders. Though these continue to be major areas of concern even today, a positive trend in the incidence and severity of these emerging, possible due to the intervention measures.

Anjali Pattanaik, (1994) study on nutrition, education and child development of 6 years to 9 years children of Bhuvaneswar the capital of Orissa revealed that Urban children were of better health status than their rural and slum counterparts, and rural children had better physical development than slum children. Also in case of different age groups, the results showed that each advancing age had better growth and development. Boys were ahead of girls. With regard to Height, Weight, Mid-upper
arm circumference, Head circumference, Skin fold thickness, Deficiency diseases and Haemoglobin level the urban children were better than rural children and rural children were better than slum children.

Aarthi. P, (1998) studied on Pre-school Children of Coimbatore and revealed that out of 100 children selected from four zones 80 per cent suffered from nutritional disorders such as poor musculature, deficient subcutaneous fat, mild to marked anaemia, bleeding gums, bitot spots and caries. When questioned, mothers expressed that their children frequently suffered from cold and cough and occasionally from fever. Further, the prevalence of anaemia was identified by analysing blood haemoglobin levels. The prevalence of anaemia was around 40 to 48 per cent among the children belonging to different zones except the north zone where the prevalence was recorded as high as 80 per cent. With regard to height, weight and mid-arm circumference of pre-school children were measured. The anemic pre-school children were shorter and lighter than the con-anaemic children. However both the group mean height and weight were lower than the NCHS standard.

Deshpande. R.V, (1999) conducted a study on determinants of child mortality a district level analysis of major Indian states, resulted as follows:

**Percentage of Child Mortality below 100/1000 live births**

Tamil Nadu: 7 per cent
Kerala: 83 per cent
Madhya Pradesh: Nil

**Percentage of Child Mortality above 146+/1000 live births**

Tamil Nadu: 20.3 per cent
Kerala: Nil
Madhya Pradesh: 97.8 per cent

He also stated that the main effects on child mortality – female literacy and female age at marriage together be considered to reflect the status of women.
CINI, (2000) research project on child morbidity, nutritional status and health seeking behaviour in 3 districts of West Bengal with the objective of estimating the prevalence of common childhood morbidity in 6 months. – 6 years age group and assessing the immunisation and nutrition status found that, the average episode of illness was 0.7 in the reference period of 15 days and each episode on an average lasted for 4 days. Disease of the respiratory system, skin and subcutaneous tissues were also found to be most common. One half of the children were found to have mild and severe malnutrition.

2.2.7. Other Related Studies
These studies are referred to gain in-depth ideas on knowledge, attitude and practice aspects.

Parthasarathy. K, (1987) who conducted a study on persuasive communication technique and its effect on adult learning at selected villages of Chingleput district found that the adult learners were effectively persuaded by the messages delivered through radio, television and animateur in terms of changing their knowledge and attitude in the areas of population explosion, health and hygiene, environmental sanitation, social forestry, nutrition, leprosy, mobilisation of leadership and formation of association.

Chitra. M, (1992) studied the perception and attitude of learners at selected functional literacy centres in Tamilnadu with regard to development messages delivered through distance education technology of audio forums. Her study reveals that audio forum acts as an informal medium, motivate the learners to promote awareness in gaining knowledge.

Renganathan. R, (1994) conducted a study on adoption of new agricultural technology components among farmers at selected villages in Tiruchirappalli district. He found that there is a statistically significant and positive relationship between the respondent’s exposure to mass media like radio, television and newspapers and magazines and the level of adoption on their part of the new technology components.
Matheswaran. V.P, (1995) studied the attitude of distance learners towards Open University system with special reference to Indira Gandhi Open University. He found from his study that the attitude of the target population could be modified, reinforced, analysed and apprehended.

Balasaravanan. T, (1996) studied the attitude and achievement of women neo-literates of post-literacy programmes under NLM in Pudukkottai district. He found from his study that the younger age groups show much interest in pursuing the post-literacy programmes. Their attitude towards post-literacy materials is favourable and their performance in reading and writing skills is commendable when compared to the elder age groups.

Thandavakumari. K, (1997) studied the health and sanitation practices of rural women in Musiri block of Tiruchirappalli district. She found from her study that the educational background places a vital role to cultivate awareness on health and sanitation; she also found that illiteracy affects the implementation of the sanitary practices women in the study area.

Karuppaiyan. S, (1998) conducted a study on retention of literacy among the neo-literate of Total Literacy Campaign in Pudukkotai district. His study reveals that the exposure to multi media like the radio, television, cinema, dailies, and magazines has a positive association with retention of literacy of the respondents. Multi media stimulate level of motivation and create a positive and favourable attitude in the respondents. They provide knowledge, which is simple and easily digestible. They also create in respondents an interest to acquire more information and also the capacity to retain such information.

A study on biogas plants with reference to knowledge, attitude and practice among the beneficiaries in Tiruchirappalli district by Lakshimikandan. B, (1999), reveals that there is a significant relationship between selected socio-economic variables and knowledge, attitude and practice of beneficiaries about biogas plant.
2.2.8. Resume of Indian Studies

Several studies have been carried out in India related to nutrition. Studies on general nutrition, child nutrition and KAP studies on child nutrition were studied by many authors. The following authors, Hays and Emmons (1973), Vijayaduragamba and Geervani (1974), Sharma (1977), Naidu (1981), Reddy (1990), Sudha Rani (1987), Ashalatha Boaz (1995), Sreedevi (1997), Mukta Agrawal and Ritu Bhargava (2000) etc. carried out studies on knowledge of child nutrition. Knowledge of child nutrition among mothers, adult learners and the other workers engaged in child nutrition programmes were studied either in rural or urban area. But studies comparing the KAP of child nutrition among rural and urban community is negligible. Attitude on child nutrition related studies were carried out by Perkins (1980), Singh and Pothen (1982), Kusuma (1987), Sharma and Gairola (1990), Ravichandran (1995), Sreedevi (1997) etc. Limited studies were carried out on attitude when compared to knowledge and practice. Practice related studies were conducted by Ryback (1980), Ferry (1981), Shrivastava (1998), Srikantia (1992), Vijayalakshmi (1996), Kailash Choubey (1998), Shiva Prakash (2000) etc. Studies related to child nutrition were carried out by various nutritional institutions and their reports were also presented in this chapter. These studies help the researcher to get a clear picture of the previous status of child and mother’s knowledge, attitude and practice on child nutrition in India.

2.3. Summary of the Chapter

The present chapter has attempted a review of literature relating to general nutrition, child nutrition, knowledge, attitude and practice studies on child nutrition and other KAP related studies. These literatures helped the researcher to gain in depth knowledge on the present study area.