Chapter 2

REVIEW OF LITERATURE

The literature pertaining to the study on ‘Health and Nutritional Status of Women and Preschool Children in Urban Slums of Kochi’ is reviewed under following heads:

2.1 Slums
   2.1.1 Definition
   2.1.2 Slum population
   2.1.3 Characteristics of slums

2.2 Health and nutritional status of women
   2.2.1 Nutritional status
   2.2.2 Health status

2.3 Health and nutritional status of preschool children
   2.3.1 Growth profile
   2.3.2 Nutritional status
   2.3.3 Clinical manifestations
   2.3.4 Morbidity Pattern

2.1 Slums

2.1.1 Definition

The Oxford dictionary defines slum as ‘a street, alley, court etc. situated in a crowded district of a town or city and inhabited by the people of low income class, or by the very poor; a number of these streets and courts forming a thickly populated neighborhood of a squalid and wretched character’. The Advanced Learners Dictionary of current English explains the ‘slums as court, street or alley of dirty crowded houses’.
The United Nations operationally defined slums as communities characterized by insecure residential status, poor structural quality of housing, overcrowding and inadequate access to safe water, sanitation and other infrastructure (United Nations Human Settlements Program, 2003).

UN-Habitat attempts a definition of a slum household as ‘a group of individuals living under the same roof that lack one or more of the following conditions: access to safe water, sanitation, secure tenure, durability of housing and sufficient living area’ (Rasna, 2003).

Whereas the Government of India has defined slum as areas where buildings are unfit for human habitation by reason of dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangements of streets, lack of ventilation, light or sanitation facilities, or any combination of these factors detrimental to safety, health or morals. These fundamental features with minor variations are retained in all the state’s legislations (Mohanty and Mohanty, 2005).

According to Khan et al. (2008), slums are the spatial manifestations of urban poverty, social exclusion, and inappropriate government policies and often characterized by one or more of these shortcomings: deteriorated or poorly structured houses crowded together, insecurity of tenure, poor environmental management such as deficient access to safe drinking water and sanitation, stagnation of water and poor drainage with
open sewers, excessive amount of uncollected rubbish, severe overcrowding, flies and poor lighting.

A slum, as stated by Ganesh (2005), represents a habitat unit with defective physical, social, and economic living conditions. As per Census of India (2001), slum is a compact area of at least 300 populations or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lack of proper sanitary and drinking water facilities.

There are three main types of slums. One is the original slum which consists of unsuitable buildings; these sections are beyond recovery and need to be razed. Second type consists of slums created by the departure of middle and upper class families to other sections and subsequent deterioration of the area. The third and unpleasant type of slum is mainly a phenomenon of transition. Once the area around a main business district has become blighted, physical and social deterioration spreads rapidly (Bergel, 1990).

2.1.2. Slum population

The world’s population is shifting towards urban areas, with an estimated 49 percent living in urban areas in 2007 compared with 43 percent in 1990 (WHO, 2009). United Nation Population Division (2008) estimated that by 2030, less developed regions will account for nearly 80 percent of the world’s urban population. According to UN Habitat Report (2003), one
third of the world’s estimated 3 billion current urban residents dwell in slums, or places characterized by one or more of the shortcomings like insecurity of tenure, poor structural housing conditions, deficient access to safe drinking water and sanitation as well as severe overcrowding.

In developing countries, the level of urbanisation is expected to increase to 39.5 percent by the end of this century and to 56.9 percent by 2025. The number of people living in slums and shanty towns represent about one-third of the people living in cities in developing countries (Harpham and Stephens, 1991).

Many cities across the world have slums leading to overpopulation of urban neighbourhood (Ganesh, 2005). Globally, the slum population is set to grow at the rate of 27 million per year during the period 2000-2020 (United Nations Millenium Project, 2005).

Slums have come to form an integral part of the phenomenon of urbanisation in India too. During the second half of 2002, about 52 thousand slums were scattered in urban areas of the country, having as high as 8 million population, with almost 14 percent of urban households live in them (NSSO, 2002).

According to the NSSO (2002), an estimated 8.23 million households in urban areas of the country were living in slums and the total number of urban poor has increased by 13.9 percent (9.86 million) (Government of India, 2007).
UN-HABITAT (2002) reported that the population of slums in India was approximately 169 million in 2005 and it is projected to have 202 million by 2020. Similar trend was also reported by NFHS-3 (2006) by stating that the urban population is expected to increase to more than 550 million by 2030.

Currently, a sizable proportion of the population in most Indian cities lives in slum areas. The increasing slum population in Indian cities is seen an indication of worsening living conditions and increasing poverty in cities in India (IIPS, 2007).

An improved understanding of the multiple dimensions of urban poverty in India is relevant. India accounted for 10.4 percent of the world’s urban population in 2007 (United Nations Population Division, 2008).

The slum population has been reported from 26 states/union territories of India. As per Census of India (2001) almost 42.6 million people in our country live in slums; this contributes to 15 percent of the total urban population of the country and 22.6 percent of the urban population of states/union territories.

Delhi, The capital of India, has a million and a half people living in slums, out of a total of 14 million. Mumbai is worst with greater percentage living in slums (South Asia Analysis group, 2006).

According to Census of India (2001) about 11.2 million of total slum population of the country are in Maharashtra, while Greater Mumbai
Municipal Corporation alone have 6.5 million slum dwellers. Only 17.7 million slum population have been reported in the 27 cities, of which the cities with million plus population are Andhra Pradesh (5.2 million), Uttar Pradesh (4.4 million), and West Bengal (4.1 million), Delhi Municipal Corporation (1.9 million), Calcutta (1.5 million) and Chennai (0.8 million). Nine states were reported with no slums such as Himachal Pradesh, Nagaland, Mizoram, Arunachal Pradesh, Manipur, Dadra and Nagar Haveli, Daman and Diu and Lakshadweep (Census of India, 2001). A survey of nine slums in Howrah in the state of West Bengal revealed that almost two-thirds of the population living in the slums was above the poverty line (Sengupta, 1999).

The urban sector in Kerala comprises of five Municipal Corporations and 53 municipalities. About 25.97 percent of the population lives in urban areas. This is a little less than the national average. However, unlike other parts of the country urbanization in Kerala is not limited to the designated cities and towns. Barring a few panchayaths in the hilly tracts and a few isolated areas here and there, the entire state depicts the picture of an urban-rural continuum.

Census of India (2001) reported an urban population of 82,67,135 in the state of Kerala, which is 25.97 percent of the total population of 3,18,38,619 and is spread over 159 towns in the state. When the urban content of the total population increased from 18.74 in 1981 to 26.44 in
1991, it showed a declining trend during the decade 1991 - 2001, with an urban content of 25.97 in 2001. The percentage decennial growth of urban population in the state was 6.89 during 1981-91. But during 1991-2001 it is 7.64 percent. The number of census towns is reduced to 159 too. The change in jurisdiction in statutory urban areas mainly speaks for this (Government of Kerala, 2001).

The profile of Kochi shows that the total area of the district is 94.88 sq.km. There are a total of 71 wards. The total number of slums is 280. Among the total population of 6.77 lakhs, 1.27 lakhs reside in slums (Urban Poverty Alleviation Cell, 2009).

2.1.3. Characteristics of slums

The basic characteristics of slums are - dilapidated and infirm housing structures, poor ventilation, acute over-crowding, and faulty alignment of streets, inadequate lighting, and paucity of safe drinking water, water logging during rains, absence of toilet facilities and non-availability of basic physical and social services (Chandramouli, 2003).

According to UN Habitat Report (2003) slums are characterized by lack of basic services, substandard housing, illegal or inadequate building structures, overcrowding and high density, unhealthy living conditions and hazardous locations, poverty and social exclusion and minimum settlement size.
The living conditions in slums are usually unhygienic and contrary to all norms of planned urban growth and are an important factor in accelerating transmission of various air and water borne diseases (Census of India, 2001).

It is stated by Fry et al. (2002) insecurity characteristics of a slum such as poverty, substandard housing, overcrowding, inadequate water, sanitation and sewage disposal facilities and related environmental risks have a great impact on the survival and quality of life of the urban poor children, especially the age group below 3. Lack of water supply and sanitation facilities characterize urban squatter areas.

Similar trend was reported earlier by Anderson (1990). According to author, in slums the space is usually crowded with buildings and over crowded with people, and characterized by low standards of sanitation.

Slum is an area of delinquency, crime and vice. The slum is usually an area of high residential mobility, but a family occupied slum may have a low rate of residential mobility.

Overcrowding increases the risks of airborne infections and accidents. The lack of safe water and sanitation facilities increases the risk of intestinal infections and other communicable diseases. World Bank has estimated that over 30 percent of the global burden of disease is associated with poor sanitation, unsafe water, and poor housing (Nair and Radhakrishnan, 2004).
Socioeconomic condition

Demographic and socioeconomic factors are major determinants of health (WHO, 2009). Strong associations have been found between low socioeconomic position (SEP) and poor health (WHO, 1995). Urbanisation poses several socioeconomic problems for cities in India and one among them is the rise of slums. Slums and urbanisation are the two extreme phenomena, which may exist together or not (Kumar and Sinha, 2007). Slums are generally a manifestation of urban poverty and the inhabitants predominantly poor (UN Habitat Report, 2003).

Rapid urban growth in the context of structural adjustment, currency devaluation, and state retrenchment has been an inevitable recipe for the mass production of slums (Davis, 2006).

The slum dwellers belong to one of the poorest sections of the urban society (Kumar, 2006). More than one fifth of unemployed live in slums. It is likely that most of the slum dwellers belong to lowest social and economic strata (Prakash, 2001).

Anderson (1990) also reported that slums differ widely with respect to the social organization of their inhabitants. It is the area of lowest status and they are often referred to as slum dwellers. The economic status shows that slums are inhabited by lowest income group.

Whereas South Asia Analysis Group (2006) found that although very poor people live in slums, they are not the only ones dwelling there.
Fairly well to do people also reside there. They are either offsprings of the slum dwellers that found education and an occupation. They have prospered but are unable to find affordable housing, hence have continued to stay in the shantytowns.

Slum is a poverty area, inhabited by people with lowest income (Anderson, 1990). Similar conditions were observed by Prakash (2001) in Kochi with a considerable number of poor households. Higher proportion of the unemployed belong to the households with low monthly per capita income. It is found that 23 percent of the unemployed belong to the households having a monthly per capita income below ₹ 400/-. Almost 25 percent of them had income of ₹ 200- ₹ 1000 (labourers or self employed), 18 percent of them have income in the range of ₹ 1001- ₹ 1800 (casual or self employed) and regular salaried people have highest per capita income (Prakash, 2001). About 23.6 percent of the urban population is poor i.e., the expenditure on consumption goods is less than ₹ 454 per month (NSSO, 2002).

As far as female poverty is concerned, though the poverty and slums in India are at the same level as they were in beginning of the twentieth century in America (South Asia Analysis group, 2006), majority of the women who live in slums belong to lower socioeconomic classes and they have migrated to the city either with the hope of better means of livelihood or forced to migrate with their partners. Inadequate income,
poor housing conditions, overcrowded environment, poor sanitation, occupational hazards and stressful conditions are unfavorable to the health of women residing in the slums (Kumar and Sinha, 2007).

But a large proportion of the slum residents as stated by Neuwirth (2005) are rural migrants, displaced persons, illegal and legal immigrants, unemployed, and refugees. They are all not necessarily poor. However, most are employed in low-paying occupations, such as in domestic services, garment industry, solid waste recycling, security service, and daily labour (United Nations Human Settlements Programme, 2003).

Prakash (2001) also observed that incidence of unemployment was very high among females (69.1%) as against 17.9 percent among males in Kochi city, this is due to low rate of growth of employment and large supply of educated young labour force. Women were forced to take up low paid jobs due to illiteracy and lack of education (Kotwal et al., 2008).

Child labour, probably the only means of survival for many poor urban households, is often at the expense of the health of the children and their schooling, thus creating a vicious cycle of poverty, illiteracy and unemployment, trapping even the next generation into poverty. In Chandigarh, 20.3 percent of the total urban slum population is children in the zero to six years age group (Nair and Radhakrishnan, 2004).

Much higher proportion of household heads in slums than in non-slum areas have no education (Kamla et al., 2009). The study also reported
a major locational disparity in literacy which means slum population is educationally deprived. The level of female slum literacy has been observed around 55 percent for the all India level. Low gender disparity within slum and high slum- non slum female disparity in literacy has been noticed in Punjab, Kerala and Karnataka (Kumar et al., 2007).

Chandramouli (2003) noticed the literacy rates in Tamilnadu slum population, a comparatively better literacy rate among males (77%) than females (65%).

With regard to sex ratio, it is lower in slum areas than in non-slum areas, although the sex ratio in Kerala is 1029 and India, it is 933 (Census of India, 2001). The situation is worst in Mumbai, where the sex ratio among the urban poor is highly in favour of males (556 women per 1,000 males), indicating that Mumbai attracts a large number of poor single males. The age structure of slums showed that they have a younger age structure than non-slums; slums have a higher percentage of children and a lower percentage of the older population than non-slums (NFHS-3, 2006; Kamla et al., 2009).

Further majority of households in every city are nuclear households irrespective of slum or non slum residence or poor economic status (Kamla et al., 2009).

Unhealthy environment, unhygienic living conditions, structurally inadequate housing, lack of civic facilities, hazardous working conditions
and low level of socioeconomic conditions are the key features of slum pockets, which further lead to a substantial number of problems related to health, housing, unemployment and social life (Rout, 2009).

There is also an increased thrust in other development and poverty alleviation programmes. The main constraints are the diverse population groups, low literacy and income levels, and socio cultural beliefs and practices which adversely affect health and also the suboptimal utilization of health facilities (WHO, 2003).

Factors that contributed to both maternal and children’s use of basic services were race, maternal education, mental health and employment status. Among a minority, mother's with poor education utilized significantly fewer services for both themselves and their children despite poorer health status (Goldfeld et al., 2002).

**Housing condition**

Living conditions have a direct impact on public health (Chandramouli, 2003). UN-Habitat estimates that upto one-third of the world’s urban population is constantly threatened by forced evictions and insecurity of tenure (United Nations Human Settlements Program, 2003). The sense of uncertainty, lack of security and safety, unhygienic conditions made to categorize residents of slums as homeless people (Bhandari et al., 2008)
As per NFHS -3, in general slum areas have more crowded conditions than non-slum areas, and residential crowding is particularly high among poor households. Poor housing and living conditions in the cities of developing countries, particularly in slums, is a matter of great concern. Dilapidated and infirm housing and lack of such basic services as safe drinking water, improved toilet facilities, and clean cooking fuel expose slum residents to a variety of infections (Kamla et al., 2009).

Every structure- tent, shelter, etc. was considered as a house irrespective of the nature of its use. It might be used for residential or nonresidential purpose or both or even might be vacant (NSSO, 2004).

The availability of living space within the house is also a vital parameter for good health (Chandramouli, 2003). According to Kotwal et al. (2008) majority of the slum dwellers lived in small huts with improper ventilation and poor hygienic conditions. Floor remained swampy and toilet facilities were poor.

According to Chandramouli (2003) in Chennai 67 percent of the households in slums live in one room tenements, only 2 percent of the households in slums have more than three rooms. Housing stocks in slums shows that a very large percentage is kutchcha or semi pucca tenements. Only 20 percent of dwelling units in urban slum areas had a plinth area of more than 50 sq.m. The corresponding percentage in rural areas was 35 (NSSO, 2002). In urban India, there was a fall in kutchcha
constructions from 18 percent during 1989-93 to 12 percent during 1998-2002 and a rise in pucca constructions from 64% to 74% (NSSO, 2004).

As many 90 percent of the households have no access to individual latrines. According to NFHS-3 (2006) in Mumbai, Delhi, Kolkata and Chennai, not even 10 percent of poor households use improved toilet facilities. In Meerut, Indore, Nagpur, and Delhi, 35-47 percent of poor households have no toilet facility at all.

Slums do not have drainage systems and they are water logged in rainy season. Street lights are absent and the pathways are not paved. Sanitary conditions are in very low order, solid waste disposal systems are highly unsatisfactory and public health measures are inadequate (ICMR, 1991). The use of improved sanitation facilities is much worse in slum areas than in non-slum areas.

**Hygiene**

The major urban concern is the growing gap between the demand and supply of basic infrastructure services like safe drinking water, sanitation, sewerage, housing, energy, transport, communication, health and education (Dasgupta, 2006). Environmental factors are the major determinants of almost all noncommunicable diseases (Ghaffar et al., 2007).

Cramped accommodation has its natural impact on health and hygiene. The spread of diseases is facilitated by such living conditions
(Chandramouli, 2003). Almost 80 percent of diseases like cholera, diarrhoea, typhoid etc, in developing nations are water and sanitation related (World Bank Group, 2003). While NSSO (2002) reports state that high levels of overcrowding also make poor urban residents vulnerable to communicable diseases such as tuberculosis, acute respiratory infections and meningitis.

Poor people live in slums which are overcrowded, often polluted and lack basic civic amenities like clean drinking water, sanitation and health facilities (Urban Poverty Report, 2009). Slums are deprived in terms of access to water and sanitation, major source of drinking water for 93 percent of slums is either tap or tube well (NSSO, 2002 and 2004). People line up at neighborhood standpipes, buy from vendors, or tap pipes illegally to obtain water (Fry et al., 2002).

Lack of drinking water, clean sanitary environment, adequate housing and garbage disposal pose a series of threats to the health of slum dwellers. Women and children spend their time in unhygienic environment (Pande, 2005). Most of the huts in slum area do not have sanitary facilities like bathroom and toilet (Kumar, 2006). Lack of clean water supply and sanitation are critical problems for slum dwellers in Ahmedabad, creating an unhygienic, faecally contaminated environment. The crowded and dangerous conditions of the slums, serious water supply problem and lack of proper sanitation, severe air pollution, and the effects
of the Asian economic crisis explain the poor health status of small children. Some settlements have community toilets that are generally unhygienic and unsatisfactory. Most frequently, people defecate in pits or in the open or in ditches, canals, or rivers (Fry et al., 2002).

Facility of septic tank latrine or similar is available in 66 percent of notified slum and 35 percent in non notified slums in India. Residents of around 76 percent of rural and 18 percent of urban dwellings did not have access to any latrine facility (NSSO, 2004). Another major factor is the presence of open garbage which has an adverse affect on the health and the living conditions of the residents. The disposal of garbage on a regular basis will improve the quality of life of people living in the slums (Bhandari et al., 2008). The sewerage in Kochi city covers only 2.5 sq.km in the heart of the city i.e., only 5 percent of the Kochi corporation area (City Development Plan, 2006).

2.2. Health and nutritional status of women

2.2.1. Nutritional status

Nutrition is a cornerstone that effects and defines the health of all people, rich and poor. It paves the way for us to grow, develop, work, play, resist infections and aspire to realization of our fullest potential as individuals and societies (ICMR, 2005). Better nutrition means stronger immune systems, less illness and better health for people of all ages (WHO, 2008).
Women's health and nutritional status is inextricably bound with social, cultural, and economic factors that influence all aspects of their lives, and it has consequences not only for the women themselves but also for the well-being of their children, the functioning of households and the distribution of resources (World Bank Group, 1996).

Conversely, malnutrition makes people all the more vulnerable to disease and premature death (ICMR, 2005). It is a major contributor to the total global disease burden (WHO, 2008). Inadequate food is not the only cause of malnutrition in public health terms. There are other factors which have direct bearing on the nutritional profile which include purchasing power, educational level, health care etc (Deshpande et al., 2001). Poverty may be considered as a central cause of undernutrition (WHO, 2008). Women of low socioeconomic group had poor growth status. Seventy five percent of the women suffer from protein energy malnutrition (Kotwal et al., 2008). Poor nutritional intake of women is often correlated with poor economic status (Sidramshettar, 2004).

Nutritional status was also found to be positively related with education (NFHS-3, 2006) of respondent, education of husband, household standard of living. A better occupational pattern of respondent’s husbands, also resulted in a better nutritional status of the women (Rout, 2009).
According to UN-Habitat (2002), among adults, both under and over nutrition are present in many countries in the developing world, where underweight is especially common among women in south central Asia. Women are generally vulnerable to undernutrition especially during pregnancy and lactation when the food and nutrient requirements are more (Rao et al., 2010).

The NFHS-3 (2006) data on women’s nutritional status revealed that 33 percent of them had less body mass index, while obesity was low (14.8%), with urban women (28.9%) more affected than their rural counterparts (8.6%). State wise studies showed that in Kerala, the percent with less BMI was 12.5 and low BMI was more in rural but on the contrary obesity was more among urban dwellers. Women residing in slum areas according to Kumar and Sinha, (2007) are thinner in comparison to the women residing in non-slum areas in all the eight metro cities of India. It can also be seen that the large percentage of slum population is thin in comparison to non-slum population of India.

Chronic energy deficiency (44.1%) was observed among adults of Raika, a city of Jodhpur (ICMR Annual Report, 2004). Interrelationship between undernutrition and ill health has been well established. Low dietary intake and continued heavy physical activity lead to negative energy balance resulting in chronic under nutrition among women (NIPCCD, 2007).
The prevalence of micronutrient deficiency is widely prevalent among Indian population, especially vulnerable segments. The important micronutrient deficiencies are iron, vitamin A and iodine (Laxmaiah and Brahman, 2007). The intake of micronutrients such as iron, vitamin A, riboflavin and folic acid were far below the recommended levels in all the age groups (NNMB, 2002).

Nutritional anaemia due to iron and folate deficiency is a major global public health problem. South Asia ranks among the regions, which have the highest prevalence of anaemia in the world and India perhaps has the highest prevalence of anaemia among the South Asian countries (Agarwal et al., 2005).

As stated by NIPCCD (2007) poverty and lack of purchasing power have been identified as two major factors responsible for low dietary intake.

Prevalence of anaemia was lower among educated women and women from higher income families (Agarwal et al., 2005). High magnitude of anaemia might contribute in the maternal death, as in India 19 percent of maternal death was due to maternal anaemia. Anaemia in pregnancy has its root in adolescent period (Ray et al., 2000).

In Kerala, 58 percent of pregnant and 60 percent of lactating women are anaemic (Agarwal et al., 2005). Also reported by Sharma et al. (2009) in Delhi high prevalence of anaemia was during pregnancy.
Low dietary intake and poor iron and folic acid intake are major factors responsible for high prevalence of anaemia in India (Agarwal et al., 2005; Shetty, 2005). NNMB (2002) found that there was a deficit of 84 percent in the consumption of green leafy vegetable among adult women, the intake of other foods was also lower than the suggested levels.

Iodine Deficiency Disorders are known to be a significant public health problem in 118 countries (AIIMS, 2002). In India about 200 million are at risk of IDD- not even a single State/Union Territory is free from the problem of IDD. Globally 68 percent households in countries with iodine deficiency disorders now consume iodized salt. The percentage of population in India consuming salt with less than 15 ppm of iodine was 81.5, 84.2, 56.3, 82.8 and 83.3 in the states of Andhra Pradesh, Karnataka, Kerala, Pondicherry and Tamilnadu respectively (AIIMS, 2002).

The prevalence of goiter was relatively higher (4.9%) among tribal women compared to their rural counterparts (Rao et al., 2010). But living on the sea coast does not guarantee iodine sufficiency and significant pockets of iodine deficiency have been reported from Goa, Mumbai, Kerala, and Andaman and Nicobar Islands (AIIMS, 2002). Vitamin D deficiency is prevalent in India, and its deficiency during pregnancy has important implications for the newborn and infant (Sachan et al., 2005).

The adverse effects of micronutrient deficiencies are profound and include poor health, premature death, blindness, stunted growth, mental
retardation, learning disabilities and low work capacity (Laxmaiah and Brahman, 2007).

2.2.2. Health status

World Health Organization defines health as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. The main constraints are the diverse population groups, low literacy and income levels, and socio cultural beliefs and practices which adversely affect health (WHO, 2003).

Although the socioeconomic condition is a major determinant of health for both the sexes, the lives of females of all ages, in all countries are being seriously affected by a series of factors- epidemiological, demographic, social, cultural, economic and environmental (WHO, 2009; World Health Statistics, 2009).

This is despite the biological and behavioural advantages the women have over men, to have a longer life (WHO, 2009). As given by WHO (2007) females generally live longer than males – on average by six to eight years. This difference is partly due to an inherent biological advantage for the female. In 2007, female life expectancy at birth was 70 years.

As estimated by United Nations Population Division (2008) most of the world’s women live in low or middle-income countries, almost half of them in the South-East Asia and Western Pacific regions. Only 15% of the world’s 3.3 billion females live in high-income countries.
Women in high income countries at every age, live longer and have less ill-health and premature mortality than women in low income countries (WHO, 2009). The levels of maternal mortality in both high-income and low-income countries may be up to three times higher among disadvantaged ethnic groups than among other women (Australia’s Health, 2008; United Nations Population Fund, 2007).

Urban poverty is yet another situation which poses problems of housing and shelter, water, sanitation, health, education, social security and livelihood along with special needs of vulnerable groups like women, children and aged people (United Nations Development Programme, 2009).

WHO (2009) reported that lack of education, income and employment limit the ability of girls and women to protect their health.

As far as Kerala is concerned, the women despite a low economic status, had higher literacy, better housing, better access to mass media and health care (Shetty, 2005).

However increasing education, especially female literacy proved to have a major impact on the use of available health care facilities and also on their health status (WHO, 2009).

The use of skilled delivery care according to Hazarika (2010) was found to be significantly associated with age, level of education, economic status, parity, and prior antenatal visits.
Rao et al. (2010) opined that the health of the women is also linked to their status in the society.

The consequences of women’s unfavorable status, in India, include discrimination in the allocation of household resources, such as food and inaccess to health care and education as well as marriage at young age (Kotwal et al., 2008). Women and girls are in disadvantageous position with regard to allocation of food in comparison with men and boys. This could be due to strong cultural and social practices, prejudices prevalent in this section that relegate women to consume food after males of household (Sharan et al., 2001).

The highest burden of morbidity and mortality according to WHO (2009) is concentrated among the women over 60 years of age. In low, middle and high-income countries, cardiovascular disease and stroke are major killers and causes of chronic health problems. Almost half of the deaths among adult women globally are caused by non communicable diseases – particularly cardiovascular diseases, cancers and chronic respiratory diseases.

As reported by WHO (2010) various risk factors jointly account for 37 percent of global deaths in women aged 30 years and over. These risk factors account for 63 percent of deaths from cardiovascular disease and diabetes and over three-quarters of deaths from ischemic heart disease. Overweight and obesity are risk factors for a number of chronic non-
communicable diseases, such as diabetes, hypertension, asthma, cardiovascular disease, some cancers, gall bladder disease and osteoarthritis – all of which are on the rise in developing countries, particularly among the middle-class and urban populations (Gopalan, 1998; Popkin 1994).

Body mass index and hip circumference are associated with cardiovascular outcome, independent of traditional risk factors. However, waist circumference appears to be a better predictor for cardiovascular risk than other parameters (Wang and Hoy, 2004). Similarly waist-hip ratio is also a dominant risk factor for predicting Coronary Heart Disease (Ahmad et al., 2007). NNMB (2006) reported that in Kerala state, obesity among women was 26 percent, central obesity was 20 percent, truncal obesity was 91.8 percent and the prevalence of hypertension was 46.6 percent among women and 50.9 percent among men.

High blood pressure is yet another leading risk for adult women everywhere and is responsible for 18 percent of deaths in women over 20 years of age. High blood pressure, high blood glucose levels, physical inactivity and high serum cholesterol cause similar proportions of deaths across all income levels (WHO, 2010). The overall prevalence of hypertension was found to be very high, 25 percent and 24 percent among adult men and non pregnant and non lactating women respectively (Laxmaiah and Brahman, 2007).
In 2004, cancers killed just fewer than one million women aged 20 to 59 years, with 80 percent of these deaths occurring in low and middle-income countries, where women consistently have a lower cancer survival rate because of limited access to screening, late diagnosis, and inadequate access to effective treatment (Kamangar et al., 2005; Parkin et al., 2002).

The most common cancer in women under age 60 globally is cancer of the breast, followed by cancers of the cervix, lung and stomach. Breast cancer is the leading cause of death among women between the ages of 20 and 59 years with high-income (WHO, 2009; Ghaffar et al., 2007).

Residence in urban slums deserves further consideration as the living environment itself poses a variety of risk factors, over and above the general ones already risking the health and well-being of women (Moni et al., 2006).

Asthma, heart disease, arthritis, depression and diabetes – are common in these women and those living in rural areas (World Health Survey, 2009). Breathing air tainted by the burning of solid fuels is estimated to be responsible for 6,41,000 of the 1.3 million deaths worldwide due to chronic obstructive pulmonary disorder (COPD) among women each year (WHO, 2008).

Compared with the slum population, the prevalence rate of illness has worked out to be much lower for the people living in the resettlement colonies of Delhi and Chennai (Sundar and Sharma, 2002). Hazarika (2010)
also found a significant difference in the reproductive health outcomes of women in slum and non-slum areas.

Sexually transmitted infections increase the risk of adverse pregnancy outcomes, including stillbirths, low birth-weight infants, neonatal deaths and congenital syphilis. In addition, women bear much of the stigma associated with these infections (Glasier et al., 2006).

According to Siddharth (2005) almost one out of every five women in India did not receive any antenatal care. More than half the pregnant urban poor women do not receive three antenatal checkups. A similar number of women in reproductive age group are anaemic. But as per the report of NFHS-3 (2006) the utilisation of antenatal care is almost universal in Kerala, Tamil Nadu, and Goa. The well-being of the mother is closely associated with the well-being of children and family.

2.3 Health and nutritional status of preschool children

2.3.1 Nutritional Status

Nutritional status is a sensitive indicator of child’s health. WHO (2010) states that nutrition is an input to and foundation for health and development. Interaction of infection and malnutrition is well-documented. Better nutrition means stronger immune systems, less illness and better health. Malnutrition is a major contributor to the total global disease burden. More than one third of child deaths worldwide are attributed to undernutrition. Poverty is a central cause of undernutrition.
As reported by Gragnolati et al. (2005) the prevalence of child undernutrition in India is among the highest in the world, nearly double that of Sub-Saharan Africa, with dire consequences for morbidity, mortality, productivity and economic growth.

According to NNMB (2002), undernutrition in India is considerably higher than the average African country and also slightly above the South Asian average.

WHO (2000) also stated that undernutrition among children is one of the greatest public health problems in developing countries. About 70 percent of the world’s stunted children aged less than 5 years live in Asia. Undernutrition is the factor closely associated with child mortality rates also.

Like-wise preschool children are an important nutritionally vulnerable segment of the population; they are the future citizens of the country. Therefore, prevention, early detection, prompt and effective treatment of undernutrition in preschool children had received priority attention. Undernutrition is associated with impaired immune function and consequent increased susceptibility to infections; and infections aggravate undernutrition (Ramachandran and Gopalan, 2009).

The WHO (2006) defines malnutrition as ‘the cellular imbalance between the supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions.’
Malnutrition among children retards physical and cognitive growth, severe malnutrition affects brain growth and development. It influences mental capabilities through damages to the nervous system during the period when the brain is growing. It is also affects future capabilities by reducing the energy that children have available for learning through interacting with their environment, for example their motor development is impeded (Rode, 2009). It not affected by food intake alone; it is also influenced by access to health services, quality of care for the child and pregnant mother as well as good hygiene practices (UNICEF, 2009) and by dietary deficiency in children of urban slums (Mishra et al., 2001).

Childhood undernutrition remains a major health problem in India especially in slums (Bisai et al., 2009; Kapoor et al., 2005; Ghosh and Shah, 2004). Very high rates of underweight, stunting and wasting were observed among the slum children (Bisai et al., 2009). Exclusive breastfeeding beyond six months resulted in a higher percentage of malnourished children in both urban and rural areas (Mishra and Mishra, 2007).

Socioeconomic status of family affects the nutritional status (Harishankar et al., 2004) especially of girls (UNICEF, 2009). Children of poor socioeconomic status had moderate and severe malnourishment (Elankumaran, 2003).
IIPS (2007) also found that over half of the children from low income group are undernourished (Ramachandran, 2007; IIPS, 2007). This could be related to poor feeding and caring practices. But the fact that over a third of preschool children from households with high standard of living are undernourished suggests that factors other than poverty and poor access to services play an important role as determinants of undernutrition in preschool children (Ramachandran, 2007).

The vulnerability of girl children to malnutrition than boys was also pointed out in the studies of Bhalani and Kotecha (2002). The authors reported that 62.9 percent children were found to be malnourished of which moderate to severe malnutrition among girls was 28.4 percent as against 16.9 percent in boys. Another study by Uppal et al. (2005) revealed that 25.5 percent preschool children were suffering from protein energy malnutrition.

Nutritional status of the children started worsening in the second year of their life. The reports by United Nations (2007) confirm that the prevalence of moderate and severe forms of malnutrition is high in children aged 13 to 36 months. Faulty infant feeding practices are the root cause of the appallingly high prevalence of malnutrition, apart from extreme poverty in some segments of our population (Malhothra, 2001).

Almost 47 percent of mothers initiated semi solid foods only by six months. This was an important reason for inadequate intake of nutrients
by the children. No mother reported that the child was being fed with homemade weaning food (Aneja et al., 2000). Delayed initiation of breast feeding, deprivation from colostrums and improper weaning are significant risk factors for undernutrition among under five children (Kumar, 2006). Studies in urban slums of Delhi showed 44 percent of mothers continue the traditional practices of discarding the colostrums and not feeding it to the child (Aneja et al., 2000).

2.3.2 Growth Profile

Child growth is the most widely used indicator of nutritional status (World Health Statistics, 2009). In 2000 it was estimated that 182 million preschool children or 33 percent of children under five in developing countries are stunted. (United Nations, 2007).

A recent national survey reported that India has more than 47 million stunted children, nearly about one third of the global total. Around 30 percent of Indian children are born with low birth weight, birth weight less than 2500 g (IIPS, 2007).

According to World Health Statistics (2009) the proportions of underweight, stunting and wasting among children have been reported to be 47 percent, 45 percent and 16 percent respectively at national level.

Deshmukh et al. (2007) observed that the prevalence of underweight as assessed by WHO standards was significantly lower when compared with assessment based on NCHS reference.
The prevalence of underweight and severe underweight for children (0-6 years) as per WHO standards was 47.4 percent and 16.9 percent respectively and according to NCHS the overall prevalence of underweight and severe underweight children (0-6 years) was 53 percent and 15 percent respectively.

The national surveys also have shown that in India nearly half the preschool children are under-weight or stunted and less than a fifth are wasted (NNMB, 2006; NFHS, 2008). Stunting (height for age) was 62.2 percent in preschoolers with the prevalence of severe stunting 40.3 percent, which needs immediate attention (Madhu et al., 2008). NNMB (2006) stated stunting was more among girls. Boys were significantly heavier than girls and overall prevalence of underweight was very high in boys and girls and prevalence of stunting wasting were medium (Bose et al., 2007).

Mitra et al. (2006) conducted a study among children (3-12) years, 90 percent children in the age group of 4 to 6 years were underweight, and 80 percent were affected by wasting. Infection was more consistently associated with BMI for age and wasting as compared to weight for age and height for age (Ramachandran and Gopalan, 2009).

2.3.3. Clinical manifestations

Uppal et al. (2005) describes that in assessing health and nutritional status of a community, clinical examination has always been and remains an important practical method. Clinical surveys are important to
distinguish between physical state, health and nutrition. Medical history and physical examination are the clinical methods used to detect signs and symptoms (Gibson, 2005).

Sivakumar et al. (2006) reported that semi-urban school children showed evidence for the existence of multiple sub-clinical micronutrient deficiencies, IDA among children is much higher than among adult women, and may be partly attributable to the high prevalence of hookworm among children (NNMB, 2002). Majority (92.4%) of scheduled caste preschool children had different grades of anaemia (Uppal et al., 2005).

United Nations (2007) reported that iron deficiency anaemia affects more than 3.5 billion people in the developing world. Iron deficiency impairs the cognitive development of children, causes productivity loss and educational loss, and increases morbidity and mortality rates. Demographic changes, rates of urbanization and changes in dietary patterns are contributing to the changing trends in this chronic disease in India (Prakash, 2002).

In western countries the intake of haem iron from meat and meat products accounts for bulk of the dietary iron. On the contrary, haem iron consumption is minimal in India with majority of Indians obtaining non-haem iron from cereals, pulses, vegetables and fruits. Thus the Indian dietary is plagued by low iron content and poor absorption (NNMB, 2006).
According to the NFHS-3 (2006), 69.5 percent children in the age group 6 to 59 months are suffering from anaemia of which 63 percent are in the urban areas and 71.5 percent in the rural areas. Educational status of the mother, occupation of the father, birth order and nutritional status of the child were significantly associated with anaemia (Sinha et al., 2008). NNMB (2006) states that dietary intake of iron from Indian dietaries has always been low. The poor dietary intake and low bioavailability of iron mostly from vegetable based diet are the major factors responsible for high prevalence of anaemia.

Mishra et al., (2001) observed that 75 percent of pre-school children were malnourished with 20 percent suffering from severe degree of malnutrition. Similarly protein energy malnutrition also seems to be high (7.5%) which were significant in girls. It also revealed gross deficiency in dietary intake of preschool children of urban slums. Consumption of calories, iron and calcium was below 50 percent of Recommended Dietary Allowance (RDA). Malnutrition seemed to be universal in the study. As per Madhu et al. (2008), marasmus was observed in females (0.1%), the signs like discoloration and sparseness of hair was observed.

According to Vaid and Vaid (2005) children attending anganwadi centres had soft and normal face and skin as compared to other children. Almost 47 percent of ICDS children and 40 percent of non ICDS children had pink tongue. About 73 percent of ICDS and 47 percent of non ICDS
children had normal eye sight, while 60 percent of both ICDS and non ICDS children had white spots on nails.

Vitamin A deficiency, which causes blindness and increases morbidity and mortality among pre-schoolers, also remains a public-health problem (UNICEF, 2009; United Nations, 2007). Sampathkumar and Abel (1993) reported that in Asia alone, over 250,000 children are found to go blind every year due to vitamin A deficiency. The prevalence of vitamin A deficiency (VAD) in India is one of the highest in the world, especially among preschool children. Indian preschool children continue to consume less than 50 percent of the recommended dietary intake of vitamin A (Chary, 2000).

The prevalence of sub clinical VAD ranges from 31 percent to 57 percent among preschool children and a further 1 percent to 2 percent of children suffer from clinical VAD (UNICEF, 2008; NNMB, 2006). Uppal et al. (2005) observed that vitamin A deficiency is present in 62.8 percent, it was more (35.7%) among low socioeconomic group. UNICEF (2001) and NNMB (2006) also observed this high prevalence, estimated to precipitate the deaths of more than 0.3 million children annually in India.

As per NNMB (2006) reports, bitot spots was not observed in Kerala but the prevalence of sub clinical deficiency (vitamin A levels <20 g/dl) was significantly high among children of Muslim (69.3%) and Christian
(68.8%) community. Prevalence of sub-clinical VAD among 1-5 year children is very high (NNMB, 2006).

Vitamin B deficiency was found to be less (7.4%) when compared with other deficiencies. About 67.8 percent suffered from vitamin C deficiency, the frequency is more in boys than in girls. Almost 68.1 percent of children suffered from vitamin D deficiency (Uppal et al., 2005).

Thus malnutrition constitutes an important underlying cause of high infant mortality and under five mortality in our country (Malhothra, 2003). Undernutrition is associated with impaired immune function and consequent increased susceptibility to infections; infections aggravate undernutrition; if this vicious cycle continues it can result in death of the child.

2.3.4 Morbidity Pattern

According to WHO (2003), a child’s world centers around its home, school and the local community. These should be healthy places where children can thrive and remain protected from diseases. But in reality, these places are often so unhealthy that they underlie the majority of deaths and a huge burden of diseases among children in the developing world. More than 5 million children from 0-14 years old, die every year from diseases linked to the environments in which they live, learn and play: their home, school and community. Dror et al. (2009) observed that children under five and women are vulnerable. Children in developing
countries are ten times more likely to die before the age of five than children in developed countries (WHO, 2009).

WHO (2009) observed that under five children die from conditions that are largely preventable and treatable. The main causes of these deaths are prematurity and low birth weight (11.0%), neonatal infections (11.0%), diarrhoeal diseases (17.0%), and post-neonatal acute respiratory infections, mainly pneumonia (18.0%).

Prolonged living in slum areas leads to chronic diseases endangering the community. Infant and child mortality reflects a country’s socioeconomic development (Ramji, 2001). Grantham et al. (2007) estimated that 200 million children under five years of age fail to reach their full potential because of poor health.

More than three million deaths each year are caused by a combination of malaria, diarrhoea and protein-energy malnutrition (WHO, 2008). According to UNICEF (2009) India ranks 49th place in under five mortality. The female child mortality is one and a half times the male child mortality rates in both urban and rural areas (Ramji, 2001). As stated by WHO(2009), in addition to malnutrition (undernutrition), other leading risk factors for child mortality and ill-health include unsafe water, poor sanitation and hygiene, suboptimal breastfeeding, and indoor smoke from solid fuels. Harmful domestic environment also contributes to the
vulnerability of under five children, who represents 10 percent of world’s population (Chaudhari et al., 2009).

Acute respiratory infection (ARI) is one of the leading causes of childhood morbidity and mortality throughout the world. NFHS-3 (2006) reported that in India, respiratory infections affect children from all strata, irrespective of their socioeconomic background. Kamla et al. (2009) noticed the difference in the prevalence of ARI among slum and non-slum children. Diarrhoea is one of the single most common cause of death among children under five years of age worldwide, following acute respiratory infection. As per the observation of Fry et al. (2002) unventilated dwellings and severely polluted air are also the reasons for respiratory infections. Deaths from acute diarrhoea are most often caused by dehydration due to loss of water and electrolytes. (NFHS-3, 2006). Fewtrell et al. (2005) found that diarrhoeal morbidity is more where water and living conditions remain poor.

In slums children grow up without hygiene, medical care, exclusive breastfeeding or a balanced diet (Rode, 2009). Infant mortality rates are twice as high in slums as the national rural average. Slum children in under five category suffer more and die more often from diarrhea and acute respiratory infection than rural children (Fry et al., 2002). In addition to this the vaccination coverage is also reported to be low (Sharma et al., 2009).
Diseases of the respiratory system appear to be very high among slum dwellers. Illiteracy was found to play an important role in morbidity status (Marimuthu et al., 2009). Ramji (2001) opined that maternal educational status was related to childhood mortality. Infant mortality was less in Kerala (16.3%), where female literacy is the highest in India. Fever was more prevalent in slum children than in non slum areas, but majority of children were given health care facility (Kamla et al., 2009).

Chaudhari et al. (2009) in their study found that two third of slum children had cough, while only half of middle income group children suffered from cough. As per NFHS-3 reports, 20 to 30 percent of preschool children are suffering from morbidity due to infections (NFHS-3, 2008). This risk was observed to be high among children with low BMI and wasting (Ramachandran and Gopalan, 2009). The authors also stated that one third of preschool children in India suffer from morbidity due to infections. Morbidity due to infection is lowest in the first three months when infants were solely breastfed. They found that even early introduction of milk substitutes and too late or inadequate complementary food was associated with increased risk of infection.

The health status of any state can be measured in terms of birth rate, death rate, infant mortality rate, expectation of life at birth etc. Kerala is far ahead of other states in the country and ranks first in attaining low birth rate, death rate, total fertility rate, infant mortality rate and in attaining high
expectation of life especially of females (Government of Kerala, 2001). But the morbidity rate in Kerala is much more than any other states in India. Morbidity correlates with density of population and Kerala having the highest density thus has high morbidity too (Government of Kerala, 2001).

In Kerala high morbidity is an emerging health issue that matters for human development (Human Development Report, 2005; and City Development Plan, 2006). Many factors contributing to the well being of the child of which, economic status of the families and education of mothers are most prominent (Mishra and Mishra, 2007). Over two thirds of under-five child deaths are due to diseases that are preventable and treatable through simple, affordable interventions. So strengthening health systems to provide such interventions to all children will save many young lives (WHO, 2009).

In this context, the findings of Goldfeld et al. (2002) acquire special significance. According to author, despite poor health status, many mothers with poor education utilized significantly fewer health services for both themselves and for their children.

So suboptimal use of health facilities due to a variety of reasons like population diversity, low income, low literacy, socio-cultural beliefs and practices should also need to be attended for optimum results.