"A STUDY ON HEALTH AND NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN IN URBAN KOLAR"

By

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IN

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ABSTRACT

BACKGROUND

Health and Nutritional Status of Preschool Children in India is still a public health issue. Every year twelve million children in developing country die before they reach fifth birthday commonly due to Acute Respiratory Infections (ARI), diarrhea , malnutrition or a combination of these illness.

In India, 47% of under-five children are underweight and 16% are wasted. PEM is not only a health problem but also a social and economic problem. Children below five years, who are the most vulnerable to under-nutrition and its adverse effects, constitute a special risk group in any population. It also accounts for 5% of deaths among pre-school children. Infection aggravates under nutrition and if this vicious cycle continues it can result in death of the child. Poor nutritional status of preschool children observed in different studies across the country calls for a need to introspect for various factors affecting it to seek remedial measures.

OBJECTIVES OF STUDY : Study the nutritional status of preschool children and know the prevalence of Anemia, Vitamin-A deficiency, infectious morbidity pattern, malnutrition and its associated socio-demographic variables and development assessment of preschool children.

MATERIAL AND METHOD :

A Cross-sectional study of preschool children was done in Urban Kolar in the month of January-December 2013 among 250 children. Socio-demographic information and anthropometric measurements, physical examination, laboratory investigations were obtained by using standard techniques and methods. Mothers of children were interviewed using structured questionnaire to collect additional information birth details, socio-demographic etc. Development assessment of preschool children up to 2 years of age is done by TDSC.

RESULTS :

Prevalence of weight-for-age, height-for-age, height-for-weight is 33%, 52%, and 12% respectively.

Majority of of them belongs to upper lower modified Kuppuswamy's scale, are Hindu, Nuclear family, stays in semi-pucca house. Immunization status was incomplete and breastfeeding was initiated immediately after the birth.

Prevalence of weight-for-age, height-for-age, height-for-weight according to age group was more in 2-4, 2-3, 3-4 yrs respectively.

Infectious morbidity pattern shows that age group of 1-2 years had diarrhoea with slightly higher number of male than the female. Prevalence of anemia was found to be more in malnourished in terms of height-for-age as compared to weight-for-age and weight-for height.

Vitamin A deficiency was present in only around one-fifth of the children and its association with malnutrition status was highest in relation to height- for –age classification.

Development assessment results shows that 2.8% had developmental delay which comprises about 12.1% of the total studied population. Out of which 2.4 % were males and 3.2% were females.

CONCLUSION.

The number of percentage of PEM in preschool children are still present in large number as per the study. Health and nutritional status of preschool children still needs to be improvise, effective intervention, health education of parents needs to be further intervene with a comprehensive nutritional survey to obtain a large scale based precise information for better understanding of health and nutritional status of preschool children.Poor nutritional status in this children calls for government and NGO's to take immediate steps in uplifting the socioeconomic standard**.**

Development assessment of children up to 2 years can be done by TDSC. It is a simple scale which can be use effectively even by a anganwadi workers which will help in the initial screening and early detection of developmental delay.

Key words: PEM, Nutritional Status, Preschool children, TDSC, Vitamin A, Anemia.

ABBREVATIONS

ICDS	Integrated Child Developmental Service
PEM	Protien Energy Malnutrition
SPSS	Stastical Package for Social Science.
WHO	World Health Organisation.
ICMR	Integrated Mother and Child Development Services.
MDG	United Nations' Millennium Development Goals.
MGRS	Multicentre Growth Reference Study
TDSC	Trivandrum Developmental Screening Chart
DDST	Denver Developmental Screening Test .
NFHS-3	National Family Health Survey-3.
ARI	Acute Respiratory Infection
GDP	Gross Domestic Product
YRS	Years

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INTRODUCTION

Malnutrition among under-five children is a chronic problem in developing countries. According to WHO, there are about 10.8 million child deaths a year globally. This number is attributed to iron, vitamin A, and zinc deficiencies. Iron deficiency affects 2 billion people, which is responsible for one- fifth of early neonatal mortality, and kills 80,000 people/day.[1, 2] Micronutrient deficiencies damages one-third of world population, resulting in 2 billion people living below their physical and mental potential.[3] In South Asian region, nearly 5 million children are dying every year, and up to 3 million of these deaths are directly or indirectly associated with malnutrition.[4]

In recognition of the burden of malnutrition among under-five children, four of the eight United Nations' Millennium Development Goals (MDG'S) are specifically directed towards improving child health outcomes in developing countries. In particular, a reduction in the mortality of children is a key MDG, and a reduction in malnourishment among children is an important indicator of progress towards that goal.[5]

WHO (2010) states that nutrition is an input to and foundation for health and development.[6] The development of any nation depends on the health and well-being of its child population. Therefore, ensuring their healthy growth and development ought to be a prime concern of all societies. The first few years of life is a dynamic phase and is characterized by rapid growth and development. When children do not get the right start, they never catch up or reach their full potential.[7]

Child malnutrition compromises physical and mental development and weakens immune response, increasing susceptibility to infection. The optimal growth and development of infants and young children are fundamental for their future.

Stunting (low height-for-age) is one of the most important public health problems in developing countries, including India. Stunting reflects the poor liners growth accumulated during the prenatal and postnatal periods because of poor nutrition and health. It is related to mental capacity, school performance and working capacity in the adult period. The consequences of stunting in early life include increased susceptibility to infectious diseases, attenuated cognitive ability and increased behavioral problems during childhood.

Nutritional status is a sensitive indicator of child's health. And there are several tools for development screening for children. The world health organization undertook the WHO Multicentre Growth Reference Study (MGRS) to generate new curves for assessing the growth and development of children the world over. The MGRS collected primary growth data and related information from healthy breastfed infants and young children from diverse ethnic backgrounds and cultural settings (Brazil, Ghana, India, Norway, Oman and USA). The growth standards provide a technically robust tool that represents the best description of physiological growth for children under five years of age.[8]

The standards depict normal early childhood growth under optimal environmental conditions and can be used to assess children everywhere, regardless of ethnicity, socioeconomic status and type of feeding.[5]

Further, Trivandrum Developmental Screening Chart (TDSC), which is one of the simple development screening test used for identifying developmental delay among children. The range for each test items was taken from the norms given in the

Bayley Scales of Infant Development (Baroda norms).TDSC was validated against the Denver Developmental Screening Test (DDST) in a two stage study in India. The chart is recommended as a mass screening test for detection of developmental delay in children under 2 years of age. Since the norm for TSDC is taken from BSID, the universally accepted developmental scale, it can be used in other states also.[9]

Every year some 12 million children in developing countries die before they reach their fifth birthday. Seven in ten of these deaths are due to acute respiratory infections (mostly pneumonia), diarrhoea, measles, malaria or malnutrition or a combination of these conditions.[10] India has the second largest child population in the world. Numbering over 2.2 billion worldwide and 263.9 million in India (Census, 2011)[11] they represent boundless potential.

But with 158.8 million children in the age-group of 0-6 constituting 13.1 percent of the total population, [11] the story is not very different. According to the information collected by National Family Health Survey-3 (NFHS-3) on the prevalence and treatment of three health problems in children are acute respiratory infection (ARI), fever, and diarrhoea.

Six percent of children under age five years showed symptoms of ARI, fifteen percent of children under age five years had a fever and nine percent had diarrhoea in the two weeks preceding the survey.[12] A child in the urban area suffers from five-nine episodes of respiratory infection annually in the first five years of life, each episode lasting for a mean duration of 7-9 days whereas in rural area the annual incident per child is about one three episodes.[12]

It is well recognised that preschool children are a nutritionally vulnerable segment of population in developing countries, also very susceptible to morbidity due to infections. Under nutrition is associated with impaired immune function and

consequent increased susceptibility to infections aggravate under nutrition; if this vicious cycle continues it can result in death of the child. Interactions between nutrient intake, nutritional status and morbidity in preschool children are complex.[13]

In the past 20 years all over India, severe child malnutrition had declined substantially while mild and moderate malnutrition remain widespread. Data from national surveys have shown that almost half of children under five years of age of which 48 percent are stunted and 43 percent are underweight. The proportion of children who are severely undernourished is also notable: 24 percent are severely stunted and 16 percent are severely underweight. Wasting is quite a serious problem in India, affecting 20 percent of children under five years of age. Overall, girls and boys are about equally likely to be undernourished.

Under nutrition is substantially higher in rural areas than in urban areas. Even in urban areas, however, 40 percent of children are stunted and 33 percent are underweight. Inadequate nutrition is a problem throughout India.[14]

As per the NNMB Report, only one third of the preschool children were meeting the protein calorie adequacy. This clearly indicates the under nutrition as a major problem among the preschool children in India.[14] Also protein energy malnutrition (PEM) is not only a health problem but also a social and economic problem. The adverse effects of PEM are growth failure, breakdown of immunity, increased susceptibility to infections, prolongation of recovery period, impairment of mental capacity and motor skills, decreased alertness and physical capacity. PEM accounts for 5% of deaths among pre-school children.[15] Infection aggravates under nutrition and if this vicious cycle continues it can result in death of the child.[16]

The nutrition scenario in Karnataka is also a cause for concern compared to other southern states. For example, the IMR in Karnataka according to NFHS III is 43

as compared to 30.4 and 15.3 in Tamil Nadu and Kerala respectively. The under-five mortality rate in Karnataka is also much higher than Tamil Nadu and Kerala. The percentage of under-three age stunted children in the state according to NFHS III is not only higher than the national percentage but also much higher than the other three Southern States of Andhra Pradesh, Kerala and Tamil Nadu.

Similarly 70.4% of the State's children fewer than six years are anemic which is a matter of great concern demanding urgent action.[17] These reports also reveals that rural preschool children have more difficulty in coming out of 'under nutrition trap' when they enter into the stages of adolescent and adulthood in contrast to the urban children. Several previous studies concluded prevalence of large disparities in district wise analysis of child nutritional status in Karnataka.

Anganwadi centre is a part of ICDS (Integrated Child Development Services) initiated in 1975. This centres target the most vulnerable groups of population. One of the main beneficiaries is children between 1 to 6 years of age. Services rendered by Anganwadi centres includes non-formal pre-school education, nutrition, immunization, regular checkup and referral services.[18]

In this context, the present study focus its attention on health and nutritional status of pre-school children in urban Kolar district. Lastly, India is economically passing through a phase of sustained growth rates in recent years. Public expenditure on health has increased from less than 1% of Gross Domestic Product (GDP) in 2006-2007 to an estimated 1.4% of Gross Domestic Product (GDP) by the end eleventh five year plan. The main goal of the present health care is to prevent diseases, promote and maintain the health.[19]

Similar studies are not available in Kolar; by considering all of these, the present study aims to study the health and nutritional status of pre-school children in urban Kolar.

OBJECTIVES

1. To assess the nutritional status of Pre-school children namely,
    a) Prevalence of Protein Energy Malnutrition.
    b) Prevalence of Anemia and Vitamin-A Deficiency.

2. To study the occurrence of infectious morbidity in Pre-school children.

3. To assess the Development of preschool children up to 2 years of age by Trivandrum Developmental Screening Scale (TDSC).

REVIEW OF LITERATURE

Adequate nutrition is an important requirement for children because it affects their growth and development. Furthermore, a child's nutritional status can have an effect on their response to illness. Because of this, researchers are interested in the relationship of nutrient intake in childhood to the development of later chronic disease. A nutritional assessment should be conducted on children so that their nutrition status, in turn, their health status can be identified.

A thorough search of the literature on the nutritional status of preschool-aged children identified a minimal number of studies conducted on the nutritional status of groups of preschool-aged children using a full nutritional assessment. Although there were studies on nutrient intake in children, these studies usually focused on the dietary component rather than incorporating other components of a nutrition assessment. This review of the literature describes the research studies done for the nutritional status of the pre-school children.

1. MAGNITUDE OF THE PROBLEM

A) GLOBAL SCENARIO

According to WHO World Health Report 2005 poor nutrition contributes to 1 out of 2 deaths (53%) associated with infectious diseases among children aged under-five in developing countries. Each year, malnutrition is implicated in about 40% of the 11 million deaths of under-five children in developing countries.

According to the WHO Health Report 2005, [20]

1. Poor nutrition contributes to 1 out of 2 deaths (53%) associated with infectious diseases among children aged under five in developing countries.
2. Out of 2 children in Africa with severe malnutrition dies during hospital treatment due to inappropriate care.
3. Out of 4 preschool children suffers from under-nutrition, which can severely affect a child's mental and physical development.
4. Under-nutrition among pregnant women in developing countries leads to 1 out of 6 infants being born with low birth weight. This is not only a risk factor for neonatal deaths, but also causes learning disabilities, mental retardation, poor health, blindness and premature death.
5. Inappropriate feeding of infants and young children is responsible for one third of the cases of malnutrition.
6. 1 out of 3 people in developing countries is affected by vitamin and mineral deficiencies and therefore more subject to infection, birth defects and impaired physical and psycho-intellectual development.

B) INDIAN SCENARIO

According to the census reports of Indian Census 2011, the population of India is 1.21 crores. And under five children constitute about 13% of the total population. The estimated population of children below 6 years is 158.8 million.[11]

According to WHO report two out of three preschool children in India are malnourished.[19]

Nearly 40% of these children are undernourished, that is more than 63 million children are suffering from malnutrition as per the report of the National Family Health Survey (NFHS-3). Nutritional problems are substantial in every state in India.

More than half (54 percent) of all deaths before five years of age in India are related to malnutrition. Because of its extensive prevalence in India, mild to moderate malnutrition contributes to more deaths (43 percent) than severe malnutrition (11 percent). One out of every five children in India under age five years is wasted. Forty-three percent of children under age five years are underweight for their age.[12]

3. ANTHROPOMETRIC NUTRITIONAL STATUS OF CHILDREN

Anthropometry is the "science of measuring the size, weight and proportions of the human body". [20] Anthropometric nutritional status includes, for example, weight and height status, body composition (skin-fold thickness, waist circumference, head circumference and mid-upper arm circumference), body density (underwater weighing) and bioelectrical impedance (to estimate the percentage of fat and lean tissue in the body).[21]

The interpretation of the weight and height status of children will be highlighted, with the emphasis on growth charts.

3.1 GROWTH CHARTS

The development and the interpretation of growth charts will be discussed for the purpose of this study.

(I) DEVELOPMENT OF GROWTH CHARTS

From the early 1900s, a variety of growth references were developed and used in the United State of America (USA).[22] The growth chart that was widely used between 1946 and 1976 was known as Stuart/Meredith growth chart. The Stuart/Meredith growth chart was developed on the basis of weight and height measurements taken on a small sample of white children from 1930 to 1945.[23]

Most of these earlier references have considerable limitations, including a lack of coverage for infants and preschool children and differences between boys and girls. These limitations led several expert groups to recommend the development of more representative growth charts, hence the development of the 1977 National Centre for Health Statistics (NCHS) growth charts.[24] The NCHS growth charts were developed on the basis of the growth of formula-fed children in the USA. The children were only measured every three months, which is not adequate to describe the rapid and changing rate of growth in early infancy.

In 1978, the Centre for Disease Control and Prevention (CDC) developed a modified version of the 1977 NCHS growth curves.[25] Despite the limitations of the 1977 NCHS normalised growth charts, they were recommended for international use by the WHO until the more representative growth charts were developed in 2006. [22, 26] The 1977 NCHS growth charts are also referred to as the WHO/NCHS or CDC/WHO or NCHS/CDC/WHO growth charts, and they were widely used in paediatric practices and public health for more than 20 years. The CDC revised and published the 1977 NCHS growth charts in 2000. The more representative survey data from the USA was used for the development of the 2000 CDC growth charts.

WHO introduced the new WHO child growth standards with the aim of replacing the USA NCHS growth references.[27] The approach taken to develop the new references was different from that taken in the past, with the new aim being to represent how the child should grow. De Onis *et al*. [28] showed that the new WHO child growth standards described the growth of children whose care has followed recommended health practices and behaviour associated with healthy outcomes.

The mothers of the children selected for the construction of the new WHO child growth standards engaged in fundamental health promoting practices, namely breastfeeding and not smoking.[27] In addition, the new WHO child growth standards were based on international multicentre countries' exclusively breastfed sample of healthy children living under conditions likely to favour achievement of their full genetic growth potential. The new curves may therefore be considered as prescriptive or normative references, as opposed to the traditional descriptive references based on geographically representative samples of children, regardless of feeding or other behaviours.

(II) THE INTERPRETATION OF GROWTH

Anthropometric indices can be interpreted using percentiles and z-scores which are used to compare the growth of a child or group of children with that of a reference population.[29]

(A) Percentiles

A percentile is the "rank position of an individual on a given reference distribution, stated in terms of what percentage of the group the individual equals or exceeds".[29] Percentile growth charts are a quick screening tool for an individual child,

but are not of use in population-based nutrition surveys of young children. [28] The NCHS major percentiles of the growth charts include the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles, and the main percentiles were retained in the revised growth chart of the 2000 CDC charts.

The more representative survey data of both breastfed and formula-fed infants in the USA was used for the development of the 2000 CDC growth chart percentiles. The percentile cut-off points include the 3rd, 5th, 10th, 25th, 50th, 75th, 90th and 97th percentiles.[24, 30] In a clinical setting, percentiles are commonly used because the interpretation of percentiles is straightforward.

According to WHO,[27] the percentiles which fall below the 3rd percentile indicate underweight, wasting or stunting; the 15th to less than the 85th percentiles indicate healthy weight or height, while 85th to 97th percentile indicates overweight. The percentile equal to or greater than the 97th percentile indicates obesity or above normal height.

(b) Z-scores

The z-score (standard deviation score) is the deviation of the value for an individual from the median value of the reference population, divided by the standard deviation for the reference population (WHO, 1995). The WHO also used the z-score classification based on the modified 1977 NCHS growth curves. [22, 26] Z-scores are widely used as a "system for analysing and interpreting of anthropometric measurements". Furthermore, z-scores are gender and age independent, thus permitting the presentation of children's growth status by combining both males and females. The three anthropometric indices can be expressed as weight-for-age z-scores (WAZ), height-for-age z-scores (HAZ) and weight-for-height scores (WHZ). The z-scores based on the modified 1977 NCHS growth curves indicate that a z-score

from minus two standard deviations (-2SD) to smaller than or equal to plus two standard deviations (≤ +2SD) indicates a normal weight or height.[29] The z-score classification of anthropometric indices in children according to the new WHO [31] standards is shown in Table A.

Table A: Z-score classification to determine nutritional status of children (WHO, 2009)

Z-score classification	WAZ	WHZ	HAZ	BMI/A
< -3SD	Severely underweight	Severely wasted	Severely stunted	Severely wasted
-3SD to < -2SD	Underweight	Wasted	Stunted	Wasted
-2SD to < -1SD	Mild underweight	Mildly wasted	Mild stunted	Normal
-1SD to +1SD	Normal WAZ	Normal WHZ	Normal height	Normal weight
>+1SD to ≤ +2SD	Possible growth problem	Possible risk of overweight	Normal height	Possible risk of overweight
>+2SD to ≤ +3SD	Possible growth problem	Overweight	Normal height	Overweight
>+3SD	Possible growth problem	Obese	Above normal	Obese

1. Weight for age status

Weight for age is used to measure a child's weight in relation to his age.[26] In addition, weight for age helps to identify children who are underweight or overweight. Weight is the first parameter to be affected by dietary intake or disease in young children. Therefore, weight for age is an indicator of acute under nutrition on one hand, and overweight or obesity on the other. Weight is the only measurement that has to be taken, while the age of the child will be determined from the records or by asking the mother. However, in situations where the child's age cannot be determined accurately it will be difficult to interpret weight for age accurately using estimated age.

Underweight is defined as a weight for age below -2SD of the reference population, while a weight for age of below -3SD of the reference population is classified as severe underweight. [32] Furthermore, WHO classifications for assessing the public health significance of malnutrition indicated that a prevalence of underweight that is less than 10% indicates a low prevalence of malnutrition, whereas 10 to 19% indicates a medium prevalence.[28] In addition, 20 to 29% indicates a high prevalence, while > 30% indicates a very high prevalence of underweight.

2. Height for age status

Height for age is a measure of how tall or short the child is relative to his age.[29] Height does not increase rapidly in children and a low height for age reflects chronic malnutrition, which is due to long-term starvation or shortage of food or repeated illness. Height for age helps to identify children who are stunted or those who are very tall or above normal height.

Stunting is defined as a height for age of below -2SD of the reference population. In addition, a height for age of below -3SD of the reference population is classified as severe stunting [32]. The WHO [29] classification for assessing the public health significance of malnutrition indicates that the prevalence rate of stunting among children is considered low when it is less than 20%, whereas 20 to 29% indicates a medium prevalence of stunting. Furthermore, 30 to 39% indicates a high prevalence, while more than 40% indicates a very high prevalence of stunting among children.

3. Weight for height status of children

Weight for height reflects body weight in proportion to attained growth in height. The WHO indicated that weight for height also helps to identify children who may be at risk of becoming overweight or obese.[27] Weight for height is a good indicator of short-term effects, such as seasonal changes in food supply or short-term nutritional stress brought about by illness. Furthermore, weight for height is a good indicator of severe-acute under nutrition. Therefore, weight for height is not recommended for the evaluation of change in a population because it is highly susceptible to seasonal changes.[33] In cases where the age of the child is unknown, weight for height is used to measure how thin or fat a child is compared to his height and is useful in determining whether a child is wasted or not.[29]

Weight for height is simple and convenient to use, but it is difficult to detect a shift from muscle to fat and may underestimate obesity trends because it is difficult to distinguish between fat mass and muscle mass.[34] It is important to note if the child has oedema, this can influence the weight for height interpretation.[33] If the child is severely stunted it could affect the weight for height and may lead to the child being erroneously classified as well nourished.

Wasting is defined as a weight for height of below -2SD of the reference population, while a weight for height of below -3SD of the reference population is classified as severe wasting.[32] The WHO (1995) classification for assessing the public health significance of malnutrition indicates that the prevalence rate of wasting among children is considered low when the prevalence is less than 5%, whereas 5 to 9.9% indicates a medium prevalence of wasting. Furthermore, 10 to 14% indicates a high prevalence, while more than 15% indicates a very high prevalence rate of wasting among children.[29]

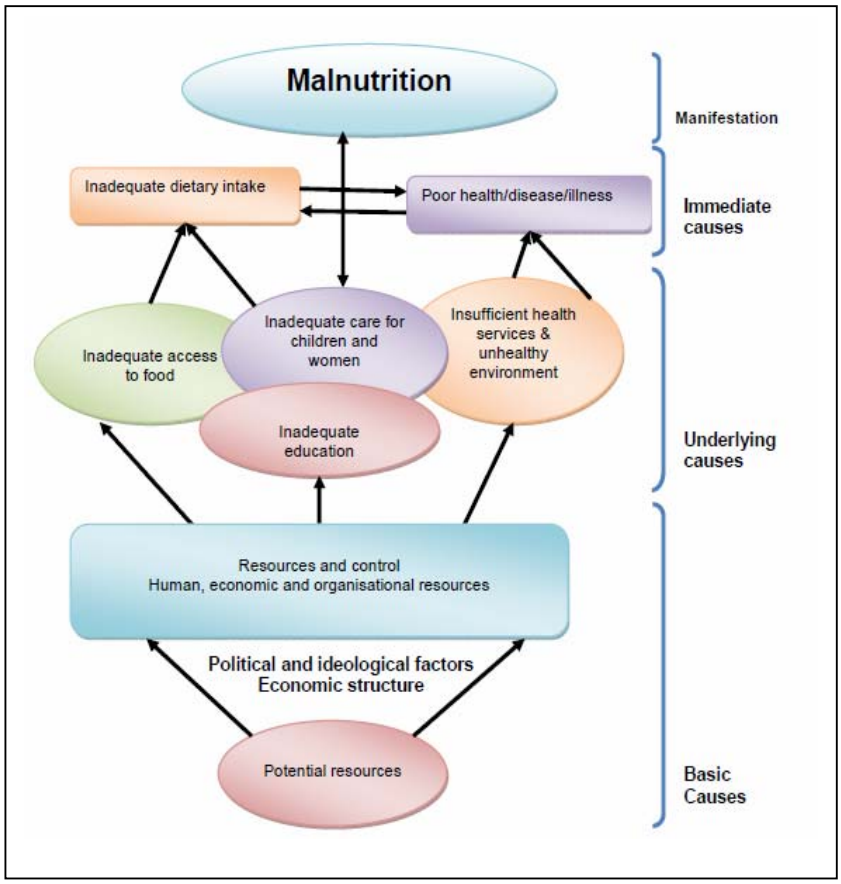
2.3 Causes of malnutrition in children

The causes of malnutrition are complex, ranging from biological and social to environmental factors. The causes of malnutrition can be classified as immediate, underlying and basic, as illustrated in Figure 2.2 (UNICEF, 1990).[35]

2.3.1 Immediate causes of malnutrition in children

The immediate causes of malnutrition in children are associated with dietary intake, psycho-social care (stress, trauma) and disease-related factors.[35] Inadequate dietary intake in young children compromises immune function, which may lead to disease or to disease being more severe or prolonged. The International Food Policy Research Institute (IFPRI, 2000) has indicated that dietary intake and diseases are interdependent, because disease reduces appetite and the absorption and utilisation of ingested nutrients, and increases catabolic losses.[36] According to UNICEF (1990),[35] children with inadequate dietary intakes are more susceptible to disease than children who are well nourished. Therefore, under nutrition may develop as a result of diseases and dietary inadequacies interacting in a mutually reinforcing manner.[37] These interactions between inadequate dietary intake and disease, in the form of a vicious cycle, have been referred to as the malnutrition infection complex.

Figure A: UNICEF conceptual frameworks for causes of malnutrition (Adapted from UNICEF, 1990)



Infectious diseases such as diarrhoea, acute respiratory disease and HIV/AIDS are most common in young children and are the leading cause of death amongst children. Infection increases nutrient needs and, at the same time, may reduce appetite, leading to low food intake and impaired absorption of nutrients, which may result in malnutrition. Allen and Gillespie (2001) [37] have indicated that the impaired absorption of nutrients due to intestinal infections or parasites or combinations of these problems may contribute to poor growth in children. Therefore, inadequate dietary intake may not be the only cause of malnutrition, since the presence of disease

may reduce bioavailability or increase needs or nutrient losses and can thus also be an immediate cause of malnutrition.[38]

Poor infant feeding practices are the leading cause of malnutrition amongst children. The WHO /UNICEF (2003)[39] indicated that breastfeeding is the ideal way of providing children with the nutrients required for healthy growth and development. Several studies have indicated that inappropriate breastfeeding practices are associated with malnutrition in children under five years of age.[40, 41] The FAO/WHO (1992)[42] also recommended that children should be breastfed for two years and beyond, with appropriate and timely complementary foods being provided.

Furthermore, if complementary feeding is introduced too early or too late, and the foods usually given are nutritionally inadequate and unsafe, this could lead to malnutrition in children. The WHO/UNICEF (2003) further indicated that children who are not breastfed are more likely to suffer from infectious diseases such as diarrhoea, which results in malnutrition in children. On the other hand, when children are introduced to complementary foods, the type and quantity of food, as well as the quality of food given, should be taken into consideration.[39] The time of introducing complementary foods places most children at risk of being malnourished, because they are fed inadequate and unsafe foods.

UNDERLYING CAUSES OF MALNUTRITION IN CHILDREN

UNICEF (1990)[35] has indicated that the underlying causes of malnutrition in children include food insecurity, inadequate care for mother and child, lack of education and information of caregivers, as well as inadequate health services and a poor health environment, which includes poor sanitation and water supplies.

BASIC CAUSES OF MALNUTRITION IN CHILDREN

The basic causes of malnutrition include resources and the control of human and organisational, economic structure, political and ideological superstructure. In addition, basic causes of malnutrition include culture, religion, tradition and belief that play a role in how children are fed and cared for, which consequently affects the nutritional status of children.[35]

RELATED STUDIES

Seetharam N et al, in their study estimated the prevalence of under nutrition among under-five children in Coimbatore slums, using Z score system.As per the Z score system, 49.6% were underweight; 48.4% were stunted and 20.2% were wasted.[43]

Manish KG et al., in their study in Northern India, Rohtak city slums among children aged 1-6 years noted that 57.4% were undernourished.[44]

In a cross sectional study conducted by Banerjee. B and Bandopadhyay L, among 130 under five children in a slum area of Kolkata, prevalence of malnutrition was found to be 55.38% (females 77.6%, males 31.7%).[45]

In another cross sectional study of the nutritional status of 1223 pre-school age children carried out in Tamil Nadu, it was found that 45% of the children were underweight, 51% were stunted, 21% were wasted and 9.6% were both stunted and wasted. Rates of wasting increased with age, reaching 63% in 5th year of life whereas rates of wasting peaked at 36% in 2nd year of life.[46]

According to the study conducted by Regional Medical Research Centre for Tribals (ICMR), Jabalpur, India revealed that 61.6% of pre-school children were underweight, 51.6% were stunted and 32.9% were wasted. The study also revealed that severe degree (below -3SD) of underweight, stunting and wasting in 27.8%, 30.3% and 6.5% children respectively.[47]

A cross sectional study conducted by Ray et al., in the municipal area of Siliguri, North Bengal found that the prevalence of the malnutrition in children under-five years was found to be 62.9% and the prevalence of severe degree of malnutrition was 6.65%.[48]

In another study done in rural areas of Karnataka, the prevalence of underweight, stunting and wasting was 31.2%, 9.4% and 29.2% respectively. Wasting was found to be more among younger age groups.[49]

In the study done by Md.Israt Reyhan and M.Sikander Hayat Khan in 2010, malnutrition was assessed for 5419 under five children in Bangladesh. It revealed the prevalence of underweight, stunting and wasting to be 48%, 45% and 10.5% respectively.[50]

Madhu B.S et al. in their study to assess the nutritional status of under five children in Western Rajasthan, about 60% of the children were underweight, while the prevalence of severe underweight was found to be about 31%.The overall prevalence of stunting was about 53% with the extent of severe stunting being about 34% and the

overall prevalence of wasting being 28% with the extent of severe wasting being about 10%.[51]

A study by Bloss Emily et al., (2004) among 184 children under five years of age in Kenya, Africa, 30% of children were underweight, 47% were stunned and 7 % were wasted.[52]

Saxena N et al.,conducted a study in selected urban slums of Delhi, where in the Z scores classification was used to assess the prevalence of malnutrition in 630 children less than 6 years of age, 57.6% were underweight, 53.0% were stunted and 22.5% were wasted.[53]

Joseph B et al in their study aimed at identifying the prevalence of malnutrition among 256 children of rural areas of Karnataka in South India, who attended the anganwadis. The value of using various field-based formulae and of various anthropometric indicators used for classification of malnutrition was also studied. The children, aged 12-60 months, came from villages located at the outskirts of Bangalore city. The prevalence of wasting, stunting, and wasting and stunting was 31.2%, 9.4%, and 29.2% respectively.[49]

NUTRITIONAL STATUS ACCORDING TO THE SOCIODEMOGRAPHIC VARIABLES

I. Age

In the study conducted by Ray SK et al., in Siliguri, North Bengal, the overall prevalence of malnutrition was highest (74.19%) in the age group 12-23 months, followed by 24-35 months (66.18%) and 36-59 months (60.47%). But the trend was somewhat different in case of severe degree of malnutrition which was highest in the age group of 6-11 months of age group followed by 12-23 months age group.[48]

Steinhoff MC et al conducted a cross-sectional survey of the nutritional status of 1223 preschool-age children in the southern Indian state of Tamil Nadu. It was found that 45% of the children were underweight (low weight-for-age), 51% were stunted (low height-for-age), and 21% were wasted (low weight-for-height). The rates of severe malnutrition using any of these criteria were low, and only 9.6% of the children were both wasted and stunted. The nature of the malnutrition strongly depended on age group. Rates of stunting increased with age, reaching 63% in the fifth year of life, whereas rates of wasting peaked at 36% in the second year of life and declined to 14% in the fifth year. [46]

In a study by Bloss Emily et al conducted in Kenya, Africa both underweight and stunting was maximum in 12-24 months age group children at 46.2% and 60.5% and was statistically significant.[52]

A study in rural areas of Allahabad by Harishankar et al., 436 under six children was examined for malnutrition. Maximum overall prevalence of malnutrition was recorded in 32.02% in age group of 13-24 months followed by 28.09% in the age group 37-72 months, 24.31% in age group of 0-12 months and 21.68% in age group of 25-36 months. Majority of children having grade ii malnutrition were in age group of 13-24 months. While grade III Malnutrition was recorded in age group of 0-12 months.[54]

According to study conducted by Chakraborty S, in a rural population of Jhansi district (U.P), the prevalence of PEM was found to be significantly higher in the age group of 1-2 yrs (80.9%) as compared to other age group (52.3%) in 0-1 year age and 3-6 yrs age group (59.4%).[55]

Kapur D et al (2005) dealt with the dietary intakes and growth in early childhood in poor communities in Delhi. The results of the study showed that the intake of cereals, pulses, roots, green leafy vegetables, other vegetables, fruits, sugar, fats and oils among children was grossly inadequate. The nutrient intake for energy was 56% of the current RDA. Anthropometric analysis revealed that the children were grossly undernourished. Seventy five per cent children were underweight, while 35% severely undernourished. The data regarding the degree of malnutrition among children demonstrated that 9.6% girls in 9-36 months of age had severe malnutrition as compared to 6.5% males. The maximum prevalence of severe malnutrition was in the age 31-36 months (10%) followed by 9.6% in 13-18 months. The moderate degree of malnutrition was around 30 to 33% in age group 13-36 months. [56]

II. SEX

Several studies have found that there is a significant association between malnutrition and the gender of the child. The female child are more susceptible to malnutrition when compared to the prevalence in a male child. The difference may be due to negligence of girl child, more morbidity, less health care facilities and preferential treatment given to the male children who receive better nutrition and attention.

In the study conducted in Midnapore district, West Bengal among the tribal population, prevalence of malnutrition was 50.6%.Malnutrtion was observed to be more common among the females than the males.[45]

In Ray SK et al study, 64.74% of males and 61.58 % of females were malnourished. For the overall prevalence of malnutrition, gender was not statistically significant but statistical significance was observed in the prevalence of severe degree

of malnutrition which was almost twice in female children (84.7%) in comparison to the male children (4.3%).[48]

A study of Gond tribal community in Madhya Pradesh by Rao VG et al., prevalence of underweight was found to be similar among both males and females.[47]

A study by Harishankar et al , in rural areas of Allahabad district, prevalence of malnutrition was found to be more in female children (53.01%) as compared to males (45.85%). Severe grade malnutrition was also prevalent in females (2.19%) as compared to their male counterparts.[54]

In a study by Bhalini KD (2002) in 30 anganwadis of urban slums of Vadodara city, more than girls (68.2%) were malnourished than boys (58%) and the difference was statistically significant.[57]

III. Parental Education

a) Maternal education

In a study by Mittal et al prevalence was highest where mothers were illiterate i.e 60.9% and it was 21.2% where mother had education more than high school. And similarly figures for stunting were 65.25% where mother was illiterate and 31.3% where education level was more than high school.[58]

In a study by Jyothi Lakshmi et al, it was observed that a significantly higher rate of under nutrition among under fives in illiterate mother (53%), than in literate mothers (37% in 5-7 years of schooling and 27% in 8-10 years of schooling).[59]

In Ray SK et al, the prevalence of malnutrition among the children of literate mothers was comparatively lower (54.93%) than the illiterate mothers (69.55%) and the difference was also statistically significant.[48]

b) Paternal Education

A study conducted in rural area of Kenya, Africa by Bloss Emily et al (2004) showed neither underweight nor stunting was associated with father's literacy status.[52]

IV .Socioeconomic Status

A large part of our population particularly the poor suffer from serious deficiencies in their diet. Poor families with lack of purchasing power to meet the daily dietary requirements have a direct impact on nutritional status of their children. Many studies have demonstrated direct association between low socio-economic status and malnutrition.

In a study by Harishankar et al. The prevalence of malnutrition was found to be 52.2%, 35.7 % and 11.9% in children belonging to low, middle and high socioeconomic group respectively.[54]

Anoop I B et al showed in their study that 43.8 % of the children of the poorest families (with monthly income of under Rs.1000) were malnourished, while 32.6% of those with monthly family income of Rs.1000-1999 and 16.9% of those with monthly family income of Rs.2000 or more were suffering from PEM. However, nutritional status with economic status was found to be statistically not significant.[60]

V. Exclusive Breastfeeding

In a study by Chakraborty S et al. The proportion of underweight among children who had exclusive breastfeeding for less than 6 months were significantly higher than those who were breastfed more that 6 months (35.4%).[55]

A study by Panpanich R et al. Among children up to 6 months, showed that the prevalence of underweight, wasting and stunting in the exclusively breastfed group was 0%, 1.9% and 7.7% respectively, compared to 13.4% 7.3% and 9.8% respectively in partial/non-breastfed children.[61]

Surya Pathi et al., (2003) observed in their study that malnutrition was higher in those infants who were partially breastfed (71.4%) when compared with the infants who were exclusively breastfed (21.2%).[62]

VI. Dietary Factor

Manish Kumar et al conducted a cross sectional study in urban slums of Rohtak city in North India.540 children aged 1-6 years were included in the study. Calorie and protein were studies and analyzed using percentage and chi square test. 57.4% children were found to be malnourished and it was more in the males. Study also showed that less than 16% of the undernourished children were consuming not more than 90% of the recommended calorie intake and intake of calorie decreased significantly as nutrition status of children deteriorated.[44]

The study conducted to assess the dietary adequacy among rural pre-school children near Mysore revealed that the dietary intake was inadequate by 40-50% of RDA. The percent adequacy level was found to be 55.41% in girls and 54.28% in boys. The level of inadequacy of proteins and calories increased with degree of undernourishment. The energy adequacy among the children with normal status and mild, moderate and severe malnutrition were 63.06%, 57.10%, 53.3% and 46.33% respectively.[59]

Ray SK et al conducted a study in the municipal area of Siliguri, North Bengal. A significantly higher prevalence of malnourished children were observed amongst partially immunised and non-immunised children (81.25% and 88.23% respectively) in comparison to fully immunized children (62.07%). Severe degree of malnutrition was also significantly higher among partially immunized and non-immunized children (12.5% and 1 1.76% respectively) in comparison to the fully immunised children (6.89%). This implies that partially and non-immunized children were at higher risk of malnutrition as they were not protected against the vaccine preventable diseases including measles and contributing to the vicious cycle of malnutrition and infection.[48]

In a cross sectional study by Banerjee B at Kolkata, West Bengal, significantly higher prevalence of malnutrition was observes among partially immunized and non-immunised children (81.25% and 88.23%) in comparison to fully immunized children (62.07%).[45]

Yadav RJ et al assessed the dietary intake and nutritional status in preschool children (0-6 Years) children of the tribal areas of Bihar. It was observed that the intake of protein was broadly in line with the recommended dietary allowances (RDA) in all age groups among children. However, the average intake of energy and other nutrients was lower in all age groups as compared to RDA. Calorie deficiency was 38% whereas protein deficiency was about 19%. More than half of the children were caloric deficient in Katihar, Bokaro, Godda and Singhbhum (east and west). The overall prevalence of stunting was about 60% and underweight about 55% and was comparable in boys and girls. However, wasting was more frequent in girls (urban - 34.5% vs. 16.3% and rural - 34.9% vs 18%). The level of malnutrition was not very different in rural and urban areas.[63]

Laxmaiah A et al assessed the diet and nutritional profile of rural preschool children of Punjab. Four hundred households (HH) were covered in each district of Punjab for socio-economic and demographic information. All the available individuals from these HHs were included for anthropometry and clinical examination. It was found that the intake of macro and micronutrient rich foods such as cereals, pulses and green leafy vegetables, milk and milk products and fats and oils were lower than the RDI among preschool children. Except for protein, calcium and thiamine, the mean intake of all the nutrients was lower than the recommended level. About a half of the preschool children (50.3%) were undernourished 60% were stunted and 12% were wasted. So, it was concluded that despite, the reported high rates of economic growth and food production in the starts a higher proportion of preschool children were consuming diets, which are inadequate with respect to energy, fat, iron, riboflavin, vitamin A and vitamin C. The prevalence of under nutrition was high as was found in other states.[64]

Rao VG conducted a community-based, cross- sectional survey carried out in tribal preschool children. Anthropometric measurements were taken.

The children were examined for nutritional deficiencies and other morbidities. It was found that more than 60 per cent children were underweight. Micronutrient deficiency disorders such as anaemia and vitamin A deficiency were common among them. Unhygienic personal habits and adverse cultural practices relating to child rearing, breast-feeding and weaning were also prevalent among them.[47]

MATERIALS AND METHODS

4.1 Study Design **:** Cross-sectional study.

4.2 Study Area **:** Randomly selected anganwadi centre areas of urban Kolar.

4.3 Study Period **:** One year (January 2012 to December 2012).

4.4 Study subjects: Children aged 1-5 years registered in the selected anganwadi centres.

4.5 SAMPLE SIZE ESTIMATION

Sample size for the study was scientifically determined based on the 65% prevalence of PEM in children under five years of age, [65] the sample size required was calculated as 250 children.

Sample size was calculated using the formula $n = z^2 \times p \times q / L^2$

Where, n is the number of subjects, z is the standard deviate, p is the prevalence, q is 1-p and L is the allowable error

z = 2

p = 65%

q = 35%

L = allowable error = 10% of p

$$n = \frac{2^2 \times 65 \times 35}{6.5^2}$$

n - 250.

4.6 Sampling design:

Study population was selected on the basis of cluster sampling technique.

4.7 Sampling frame:

A list of anganwadi centres was obtained from the list in the Primary health centre in urban Kolar and the list of all the children registered in the selected anganwadi centres.

4.8 Sampling methodology:

All the anganwadi centres which is under the primary health centre in urban Kolar was listed. There were a total of 20 anganwadis centre registered. Anganwadi centre's where selected randomly till the required sample size of 250 was reached. The required sample size was reached with 7 anganwadi centres. All the children aged 1-5 years from the selected anganwadi centres were included in the study.

4.9 Eligibility criteria:

INCLUSION CRITERIA

1) Subjects who were present on the study schedule day.
2) Preschool Children between the ages of 1 year to 5 years in Urban Kolar.
3) Those children whose parents gave consent for the study.

EXCLUSION CRITERIA

1. Subjects who were not attending anganwadi centre's regularly.
2. Children who were severely ill.

4.10 STUDY TOOLS:

Ethical clearance:

The ethical clearance was obtained from ethical committee of Sri Devaraj URS Medical College, Tamaka, Kolar.

Informed consent:

The parents of the children who were recruited for the study were explained about the purpose of the study and were assured that the information collected from them will be kept confidential. Informed consent was then obtained from the parents.

4.11 METHODS OF DATA COLLECTION:

1. Interviewing of the parents or caretakers using a pre-designed Proforma.
2. Clinical examination
3. Anthropometry.

Based on similar studies conducted, a Proforma was designed keeping in mind the objectives and the variables of the study. A copy of the Performa has been annexed (I).

The anganwadi centres were informed about the schedule a day prior before the study was conducted at the particular anganwadi centre. The aims and objectives and the procedure were explained to all the workers. The anganwadi teachers, workers and helpers were requested to inform the parents of the children and accompany them the next day.

The data was collected by interviewing the parent using the Proforma. The information regarding parents' education, occupation, religion, per-capita income, infant feeding practices, immunization status and past history of illness like diarrhoea, and respiratory infections was collected. A meticulous 24 hours recall history was taken on dietary habits and the daily dietary intake of each child was taken.

4.12 Materials used:

- Salter's weighing scale
- Measuring tape
- Proforma

4.13 Method:

1. NUTRITIONAL ASSESSMENT

1. General Clinical Examination.

Clinical examination included complete head to toe and systemic examination. The Proforma was used to record the clinical assessment of individual child at the time of anthropometric measurements.

2. Anthropometric measurements.

Anthropometric measurements were taken as described below, by standard methods as reported by D.B. Jelliffe.[66]

(i) Height (in cms)

Length of children up to 2 years (or up to 85 cms) of age was measured with child on a horizontal measuring board. Height of children over 2 years of age (or over 85 cm) was measured by the child standing on a horizontal surface against the vertical measuring device, (stadiometer). Standing height was recorded up to nearest 0.1 cms. The same scale was used for the whole study.

(ii) Weight (in Kg)

Weight was recorded using a Salter weight scale with minimal clothing and bare feet with a weighing machine pretested for accuracy. The same weighing

machine was used throughout the study period. Weight was recorded to the nearest 0.1 kgs.

Standard deviation or Z scored -2 or more deviations below WHO standard values for height-for-age, weight-for-age & weight-for-height was taken as malnutrition.[67]

3. Anemia

Anemia was assessed clinically for pallor by examination of lower palpebral conjunctiva and nails.

SAHLI METHOD OF HEMOGLOBIN ESTIMATION

Sahli Method of Hemoglobin Estimation is also used to estimate the haemoglobin. This test requires dilution of blood and visual color match.

It is based on converting haemoglobin to acid haematin and then visually matching its color against a solid glass standard. Dilute hydrochloric acid is added to a graduated cylinder containing a blood sample until the colour of the diluted blood sample matches that of the glass standard. The quantity of dilute acid added will be determined by the haemoglobin level of the blood sample.[68]

4. Vitamin A deficiency

Vitamin A deficiency was assessed clinically by presence of conjunctival xerosis/ Bitot spot/corneal xerosis /corneal ulcer and presence of follicular hyperkeratosis/ dermatosis.

II. Morbidity Assessment:

1. Diarrhoea

Diarrhoea is defined as the passage of loose, liquid or watery stools and passed more than three times a day. If associated with passing of blood in stools it will be considered dysentery.

2. Acute Respiratory tract infections (ARI)

Acute Respiratory tract infections (ARI) is classified by clinical syndromes depending on the site of infections and is referred to as acute upper respiratory tract infections (AURI) or lower respiratory tract infections (ALRI). AURTI infections will include common cold, pharyngitis and otitis media. The LRTI will consist of epiglottitis, laryngitis. laryngotracheitis, bronchiolitis and pneumonia. The Clinical features including running nose, cough, sore throat, difficult breathing and ear problem will be considered as respiratory (RTI) ailment. Fever was considerer and other illnesses such as skin infection were categorized as others. Proportion of ill children in each age group was calculated to estimate the prevalence and mean days of illness was be computed.[69]

3. Worm infestation:

For a stool analysis, a stool sample was collected in a clean container with the help of anganwadi workers and collected sample will be transported to the laboratory. Laboratory analysis includes microscopic examination for ova and cyst. Saline mount and iodine stain was used for routine microscopic examination.[70]

4. Trivandrum development screening scale

Trivandrum development screening scale (TDSC) is a simple screening test to assess the mental and motor developmental milestones over the first 2 years of age in community level. Seventeen test items are used.

A vertical line is drawn, or a pencil kept vertically, at the level of the chronological age of the child being tested. If the child fails to achieve any item on the left side of the line they are considered to have developmental delay.[9]

STATISTICAL ANALYSIS:

The data so obtained was compiled systematically. A master table was prepared and the total data was subdivided and distributed meaningfully and presented as individual tables along with graphs.

Statistical procedures were carried out in two steps:

1. Data compilation and presentation.
2. Statistical analysis.

Statistical analysis was done using computer with Statistical Package for Social science (SPSS, Inc., Chicago, IL, USA) version 17. Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons. Probability levels at $P < 0.05$ were considered statistically significant. The prevalence of infectious morbidity, PEM, Anemia, Vitamin A deficiency and worm infestation will be expressed as proportion for age and sex. The pattern of infectious morbidities will be presented according to age and sex. The significance of difference in infectious morbidities and nutritional deficiencies according to age, sex will be assessed by using Chi-square test where appropriate. WHO Anthro (version 3.2.2) , an anthropometry calculator software was used to calculate z-scores.

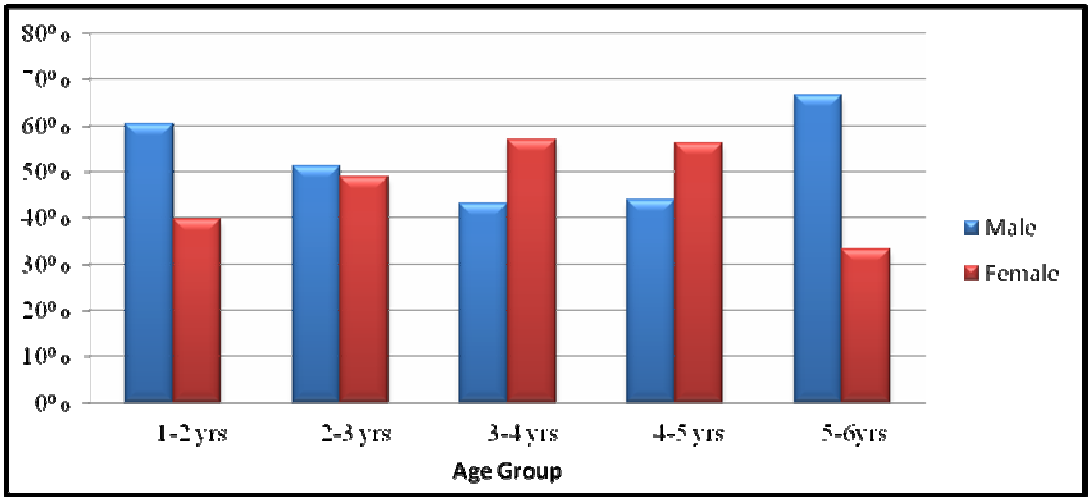
OBSERVATION AND RESULTS :

250 under-five children who are registered in 7 Anganwadi centres in Urban Kolar were studied. Assessment was done with questionnaires asked to mothers. General physical examination, developmental assessment, laboratory assessment was done during the study period.

Table 1: Distribution of preschool children based on age and sex.

	Sex N (%)		
Age	**Male**	**Female**	**Total**
1-2 yrs	35(60.3%)	23(39.7%)	58 (100.0%)
2-3 yrs	46 (51.1%)	44 (48.9%)	90 (100.0%)
3-4 yrs	25 (43.1%)	33 (56.9%)	58 (100.0%)
4-5 yrs	18 (43.9%)	23 (56.1%)	41 (100.0%)
5-6 yrs	2 (66.7%)	1 (33.3%)	3 (100.0%)
Total	126 (50.4%)	124 (49.6%)	250 (100.0%)

Graph 1: Distribution of preschool children based on age and sex.

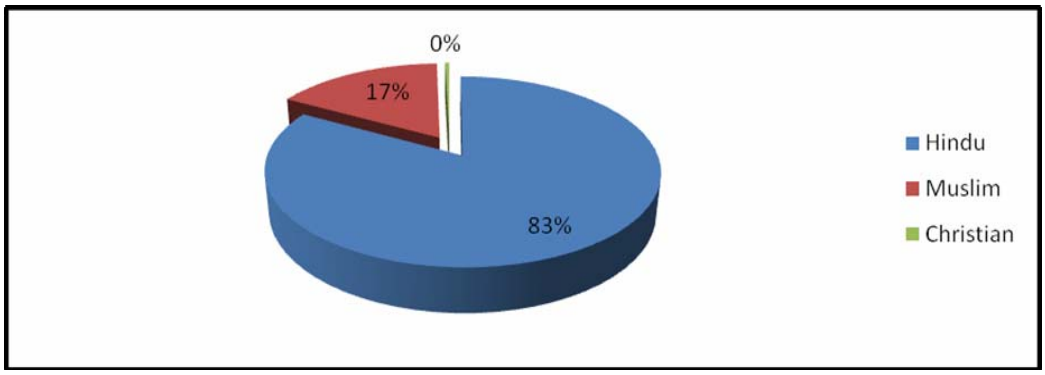


Distribution of preschool children in studied anganwadi at urban Kolar according to age and sex. The above table shows that there was no difference in the sex/distribution. 126 (50%) males and 124 (49.6%) females are present in the study.

Table 2: Distribution of the pre school children based on religion.

Religion	Total
Hindu	200
Muslim	40
Christian	1
Total	250

Graph 2: Distribution of the pre school children based on religion.

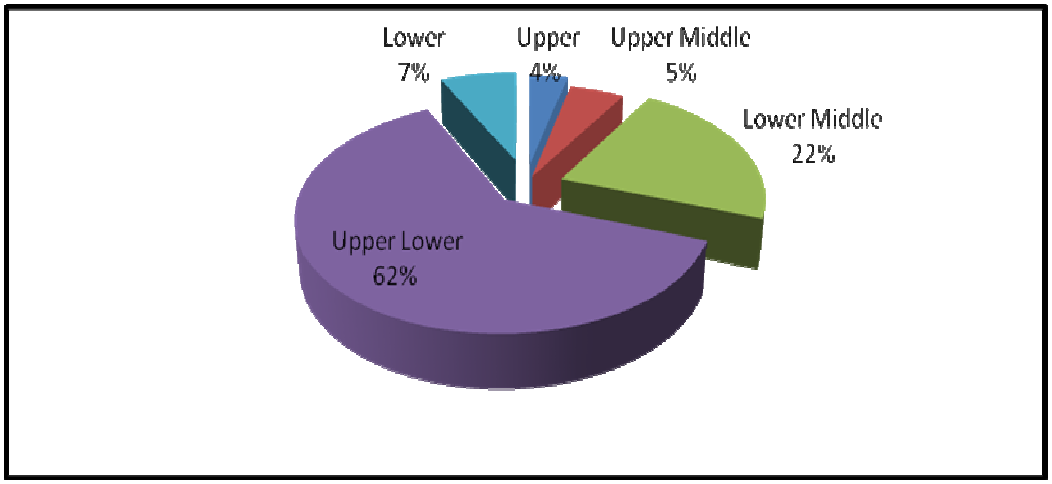


Majority of the children belongs to Hindu community with 209 preschool children.

Table 3: Distribution of the study population based on Socio-economic Status (SES)*

SES	Frequency	Percentage
Upper	1	4
Upper Middle	14	5.6
Lower Middle	61	24.4
Upper Lower	172	68.8
Lower	2	8
Total	250	100.0

Graph 3: Distribution of the study population based on socio-economic status.

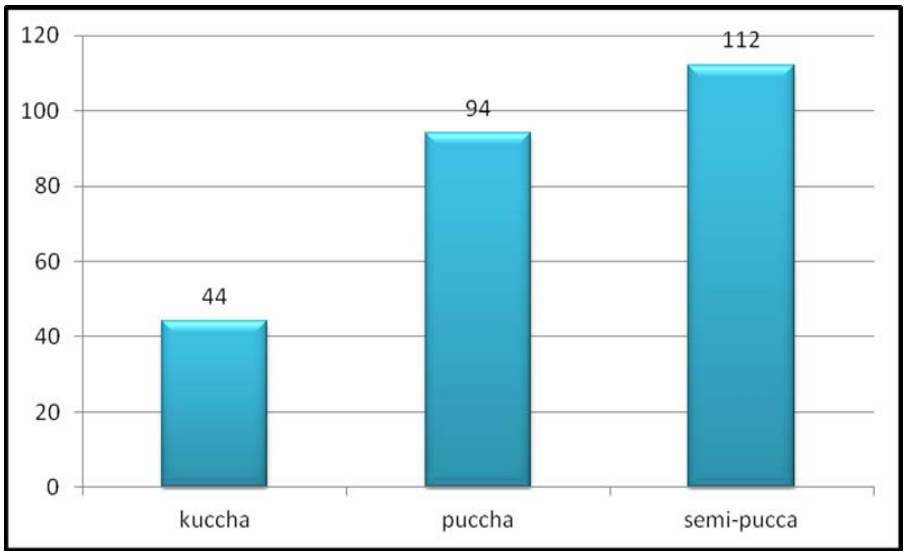


Socio-economic status of the studied children was assessed with the modified Kuppuswamy's scale. The assessment was done by interviewing the mothers. Majority of the children 68.8% belongs to Upper Lower middle economic status, followed by 24.4% children in the lower middle classification. Only 1 child could be categorized by upper socio-economic status.

Table 4 : Distribution of pre-school children according to the house type.

House type	n = 250
Kaccha	44
Pucca	94
Semi Pucca	112

Graph 4 : Distribution of pre-school children according to the house type.

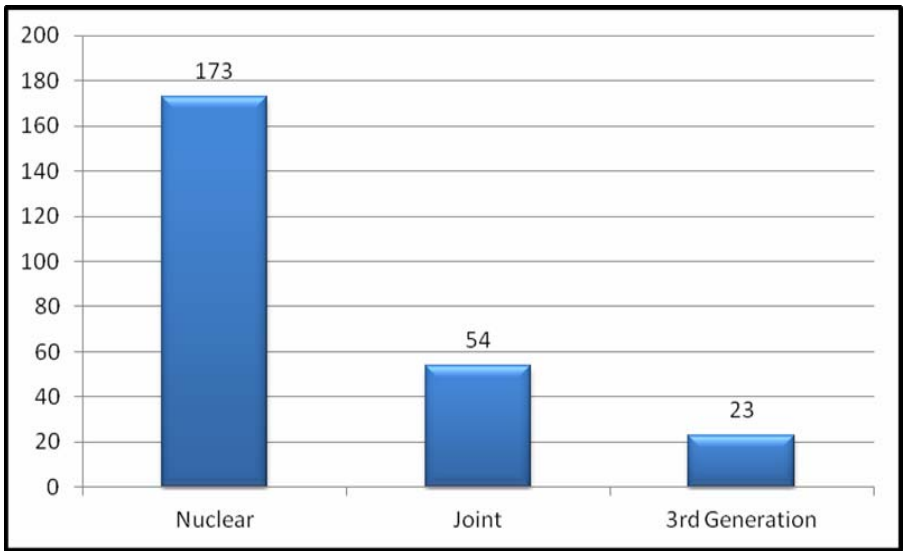


Majority of the preschool children stays in Semi Pucca house.

Table 5 : Distribution of pre-school children according to the family type.

Family Type	n = 250
Nuclear	173
Joint	54
3rd Generation	23

Graph 5: Distribution of pre-school children according to the Family type.

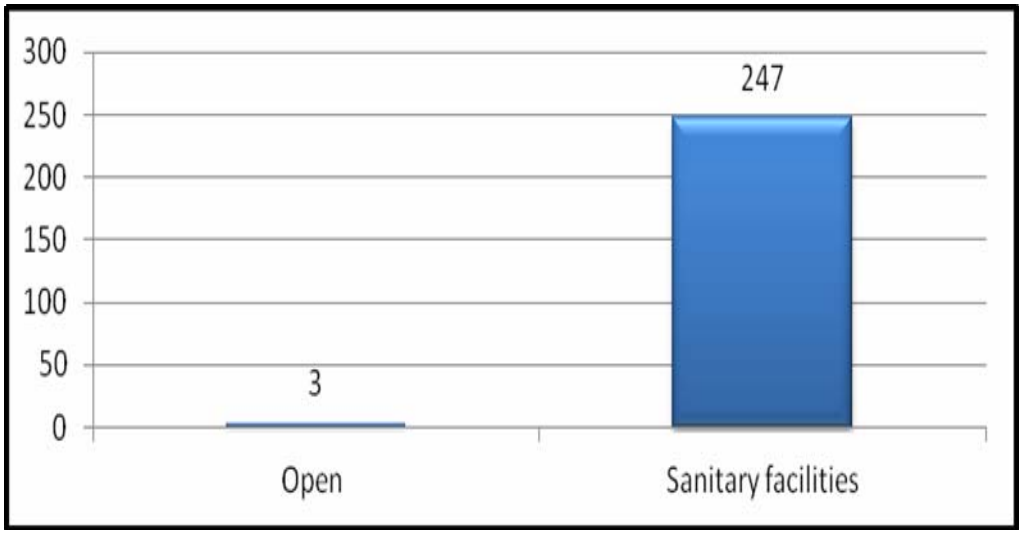


Majority of the preschool children stays in Nuclear families.

Table 6 : Distribution of pre-school children according to the Latrine type.

Defecation Practice	**n = 250**
Open	3
Sanitary facilities	247

Graph 6 : Distribution of pre-school children according to the Latrine type.

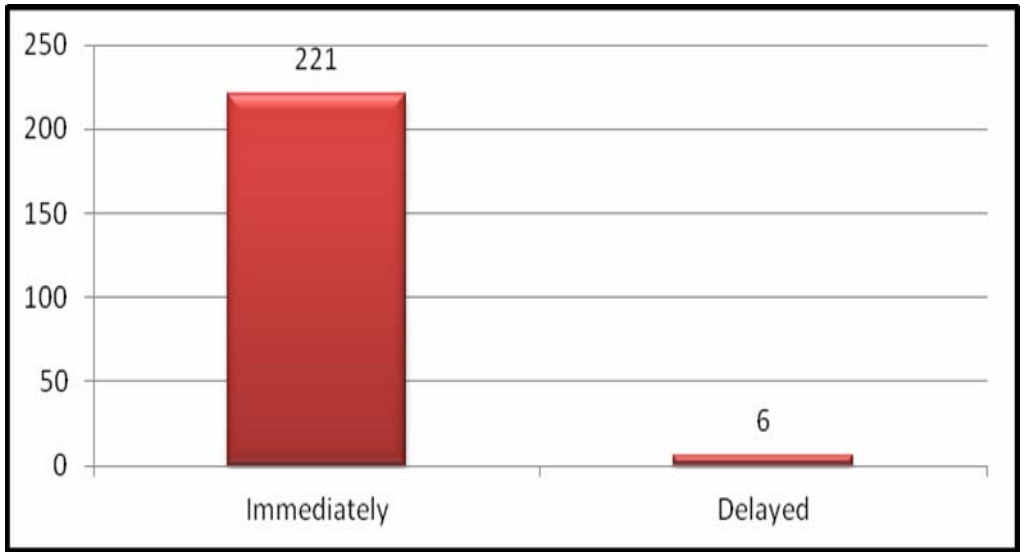


Majority of the preschool children have toilet facilities.

Table 7: Distribution of pre-school children according to the Breastfeeding initiation.

Breastfeeding initiation	n = 250
Immediately	221
Delayed	6

Graph 7 : Distribution of pre-school children according to the Breastfeeding initiation.

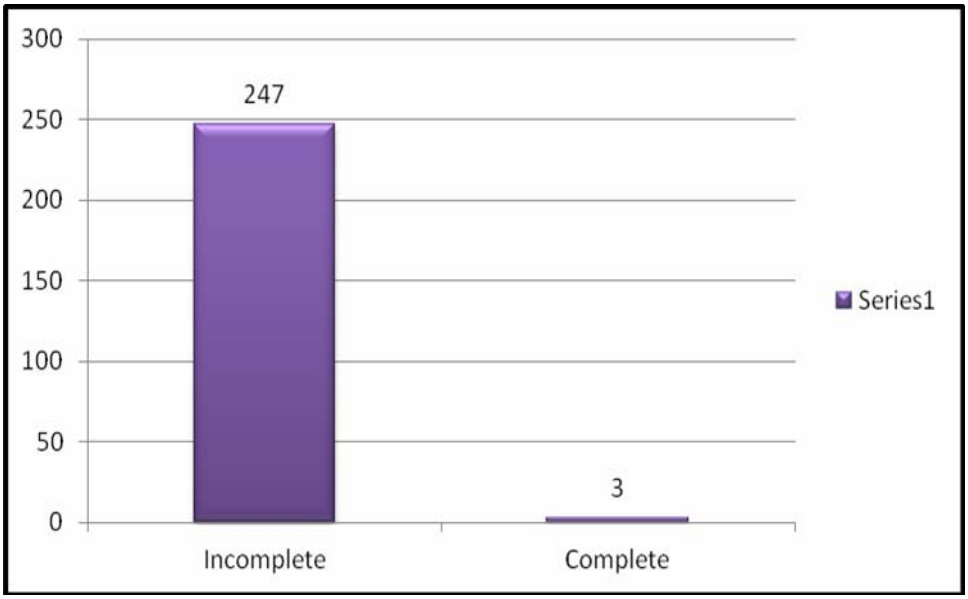


Breast feeding was started immediately in majority of the preschool children.

Table 8 : Distribution of pre-school children according to the Immunisation status.

Immunisation status	n = 250
Incomplete	247
Complete	3

Graph 8 : Distribution of pre-school children according to the Immunisation status.

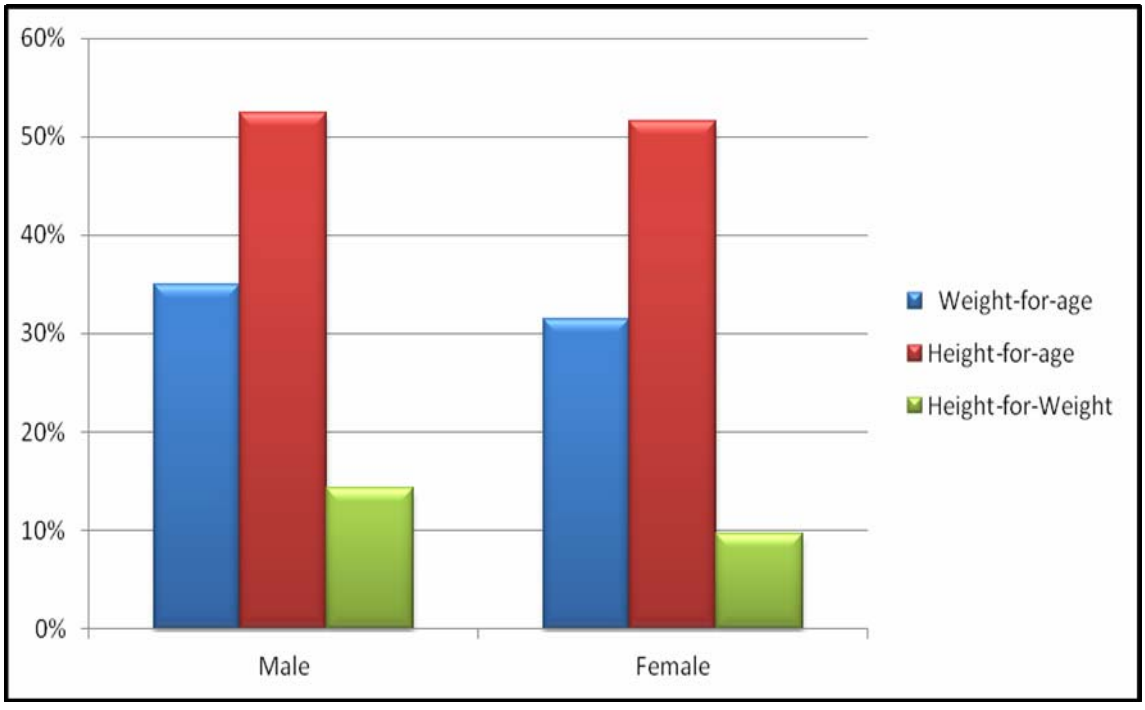


Majority of the preschool children had incomplete immunisation.

Table 9 : Distribution of pre-school children according to the nutritional status.(n=250)

Sex	PEM Malnutrition (>=-2.0)		
	Weight-for-age	**Height-for-age**	**Height-for-Weight**
Male n (%)	44 (34.9)	66 (52.4)	18 (14.3)
Female n (%)	39 (31.5)	64 (51.6)	12 (9.7)
Total n (%)	83 (33.2)	130 (52.0)	30 (12.0)

Graph 9 : Distribution of pre-school children according to the nutritional status.(n=250)

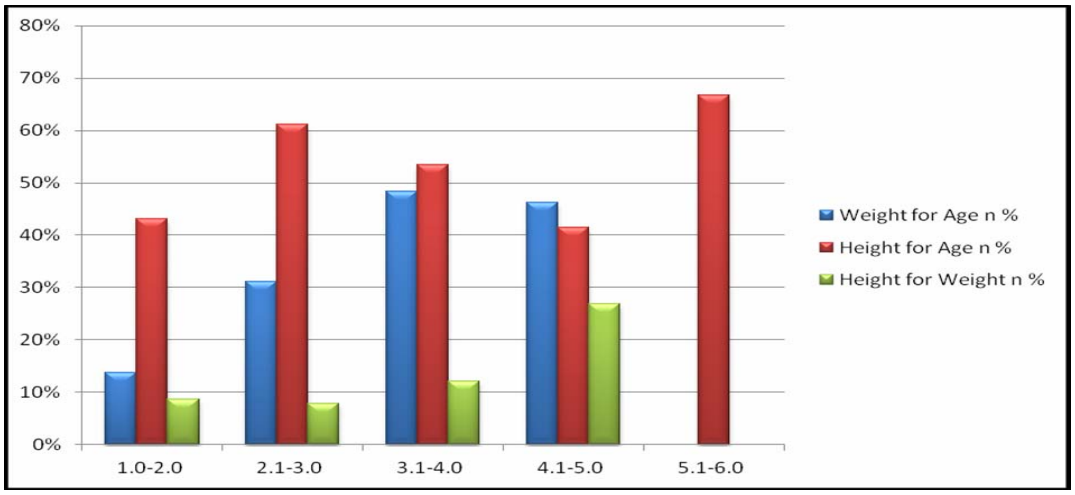


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age male has a predominant number of children with 34.9 %,52.4%,14.3% respectively.

Table 10 : Distribution of PEM among pre-school children according to the age.

Age (yrs)	PEM Malnutrition (>=-2.0)		
	Weight-for-age	Height-for-age	Height-for-Weight
1.0-2.0	8 (13.8)	25 (43.1)	5 (8.6)
2.1-3.0	28 (31.1)	55 (61.1)	7 (7.8)
3.1-4.0	28 (48.3)	31 (53.4)	7 (12.1)
4.1-5.0	19 (46.3)	17 (41.5)	11 (26.8)
5.1-6.0	0	2 (66.7)	0
Total	83 (33.2)	130 (52.0)	30 (12.0)

Graph 10 : Distribution of PEM among pre-school children according to the age.

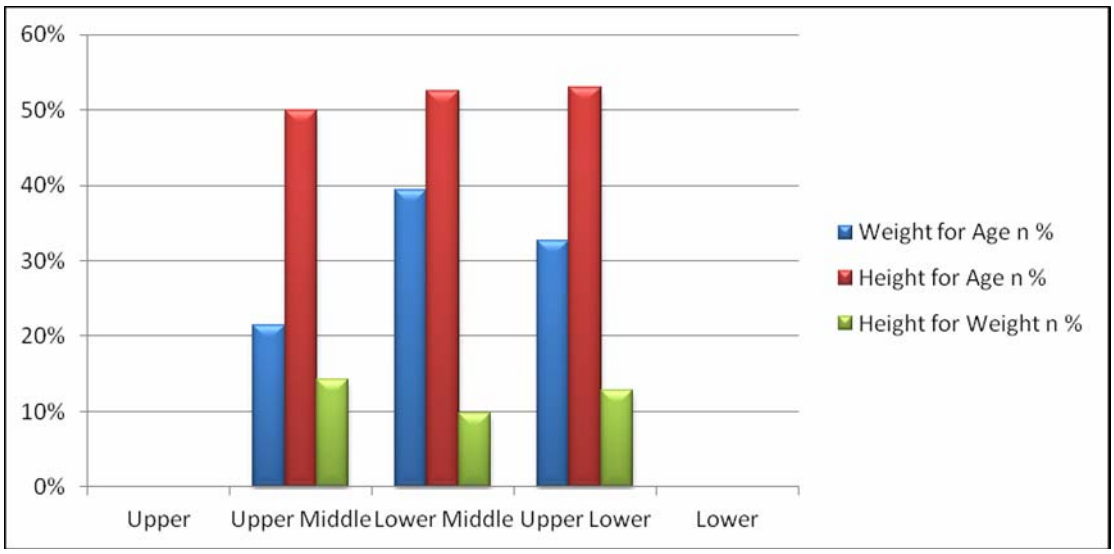


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation to age with comparison < > 3 years of age are 44.9 % 94.6 %, 104.1% 50%, 16.3% 38.9% respectively.

Table 11: Distribution of PEM in pre-school children with socio-economic status.SES*

SES	PEM Malnutrition (>=-2.0)		
	Weight-for-age	Height-for-age	Height-for-Weight
Upper	0	0	0
Upper Middle	3 (21.4)	7 (50.0)	2 (14.3)
Lower Middle	24 (39.3)	32 (52.5)	6 (9.8)
Upper Lower	56 (32.6)	91 (52.9)	22 (12.8)
Lower	0	0	0
Total	83 (33.2)	130 (52.0)	30 (12.0)

Graph 11: Distribution of PEM in pre-school children with socio-economic status.SES*

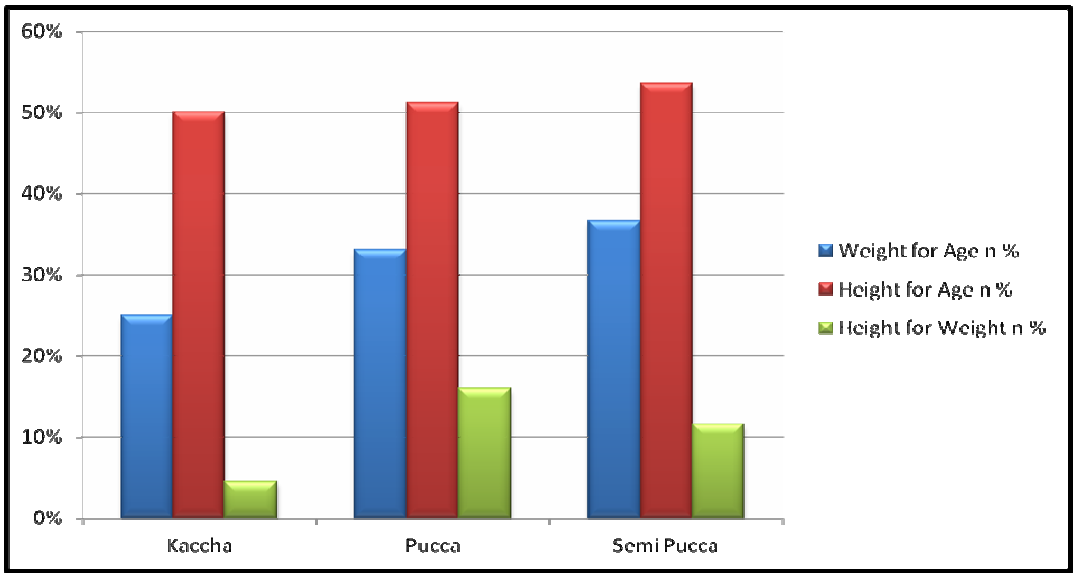


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, upper lower class group of socio-economic status has dominance in all the groups with 32.6%,52.9%,12.85% respectively.

Table 12 : Distribution of PEM in pre-school children with type of house

Type of house	PEM Malnutrition (>=-2.0)		
	Weight-for-age	Height-for-age	Height-for-Weight
Kaccha	11 (25.0)	22 (50.0)	2 (4.5)
Pucca	31 (33.0)	48 (51.1)	15 (16.0)
Semi Pucca	41 (36.6)	60 (53.6)	13 (11.6)
Total	83 (33.2)	130 (52.0)	30 (12.0)

Graph 12 : Distribution of PEM in pre-school children with type of house

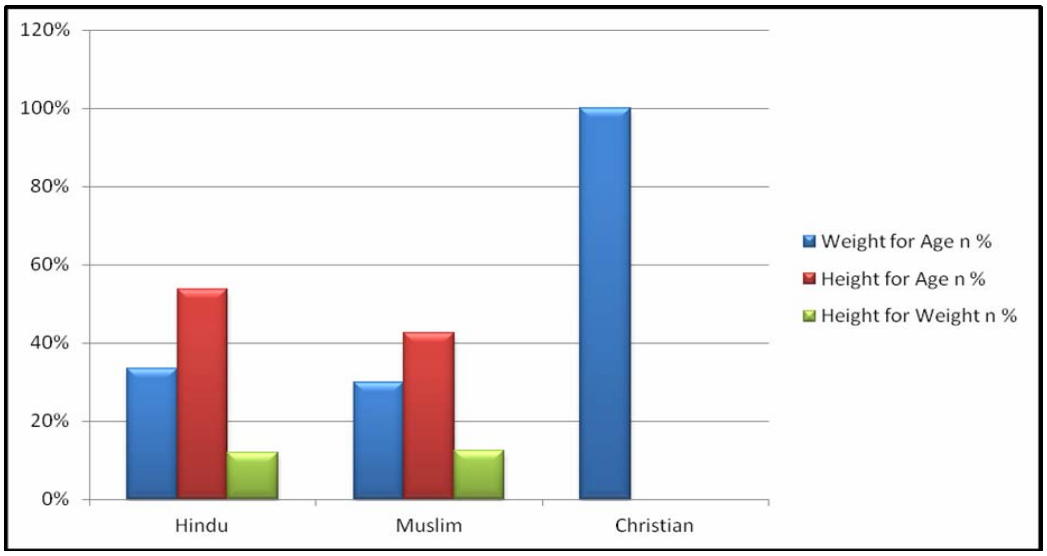


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, majority of the preschool children stays in semi pucca type of house in each group and has dominance with 36.6%, 53.6%,11.6% respectively.

Table 13 : Distribution of PEM in pre-school children with religion

Religion	PEM Malnutrition (>=-2.0)		
	Weight-for-age	Height-for-age	Height-for-Weight
Hindu	70 (33.5)	112 (53.6)	25 (12.0)
Muslim	12 (30.0)	17 (42.5)	5 (12.5)
Christian	1 (100.0)	1 9100.0)	0
Total	83 (33.2)	130 (52.0)	30 (12.0)

Graph 13: Distribution of PEM in pre-school children with religion

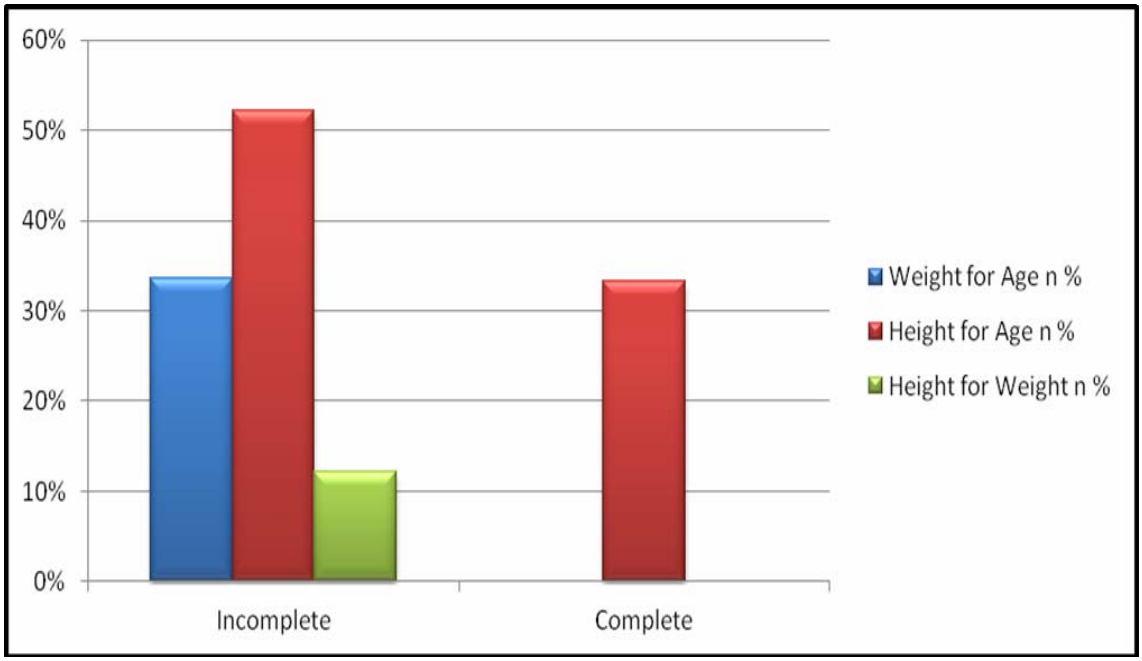


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with religion, majority of the preschool children belongs to Hindu followed by Muslim and Christian community in each group and has dominance with 33.5%,53.6%,12.0% respectively.

Table 14: Distribution of Nutritional status in pre-school children with Immunisation.

Immunisation	PEM Malnutrition (>=-2.0)		
	Weight-for-age	Height-for-age	Height-for-Weight
Incomplete	83 (33.6)	129 (52.2)	30 (12.1)
Complete	0	1 (33.3)	0
Total	83 (33.2)	130 (52.0)	30 (12.0)

Graph 14: Distribution of Nutritional status in pre-school children with Immunisation

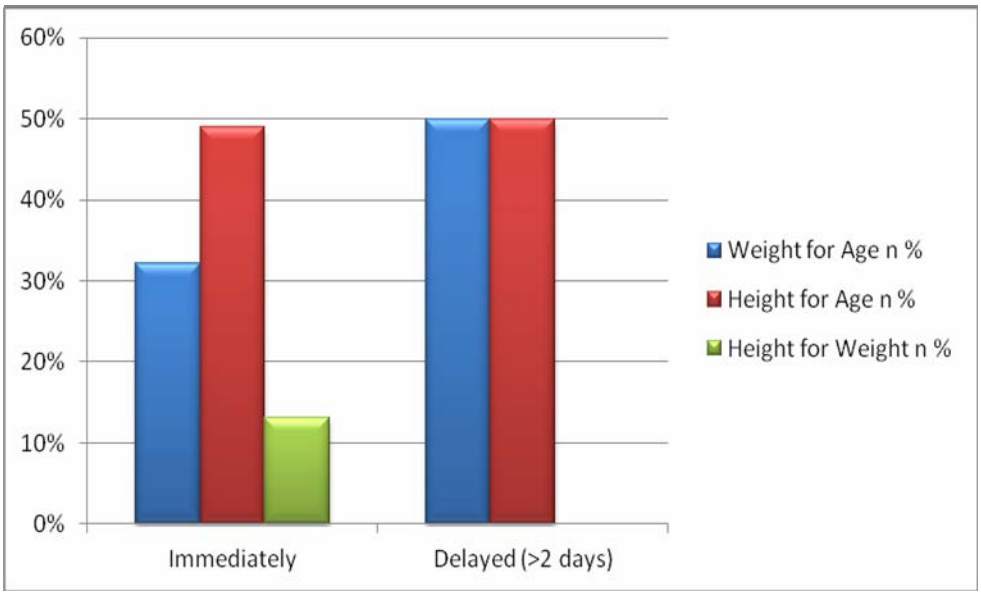


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with immunisation status, majority of the preschool children has incomplete immunisation and has dominance with 33.6%,52.2%,12.1% respectively.

Table 15: Distribution of PEM in pre-school children with Breastfeeding.

Breastfeeding	PEM Malnutrition (>=-2.0)		
	Weight-for-age	Height-for-age	Height-for-Weight
Immediately	71 (32.1)	108 (48.9)	29 (13.1)
Delayed (>2 days)	3 (50.0)	3 (50.0)	0
Total	74 (32.6)	111 (48.9)	29 (12.8)

Graph 15: Distribution of PEM in pre-school children with Breastfeeding.

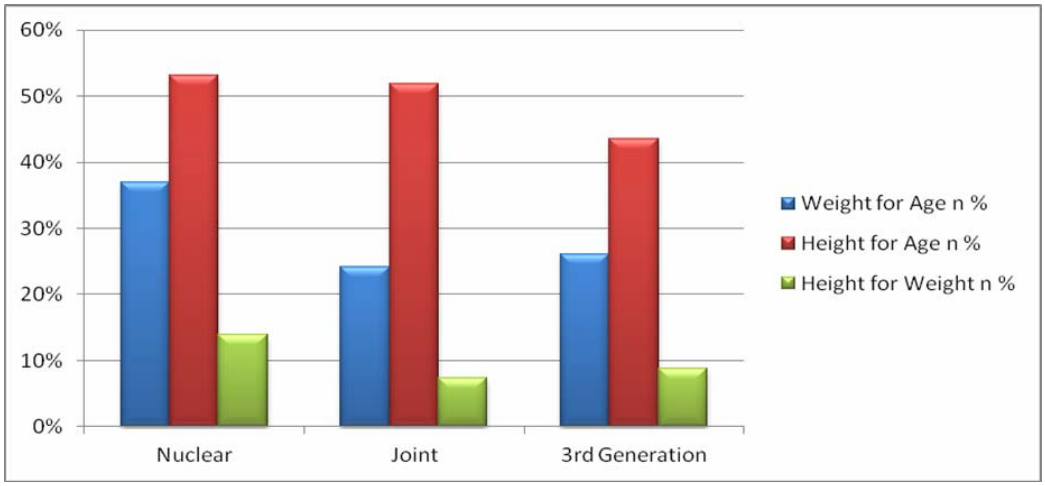


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with breastfeeding, majority of the preschool children has immediate breastfeeding initiation and has dominance with 32.1%,48.9%,13.1% respectively.

Table 16: Distribution of PEM in pre-school children with Family type.

Family type	PEM Malnutrition (>=-2.0)		
	Weight-for-age	Height-for-age	Height-for-Weight
Nuclear	64 (37.0)	92 (53.2)	24 (13.9)
Joint	13 (24.1)	28 (51.9)	4 (7.4)
3rd Generation	6 (26.1)	10 (43.5)	2 (8.7)
Total	83 (33.2)	130 (52.0)	30 (12.0)

Graph 16: Distribution of PEM in pre-school children with Family type.

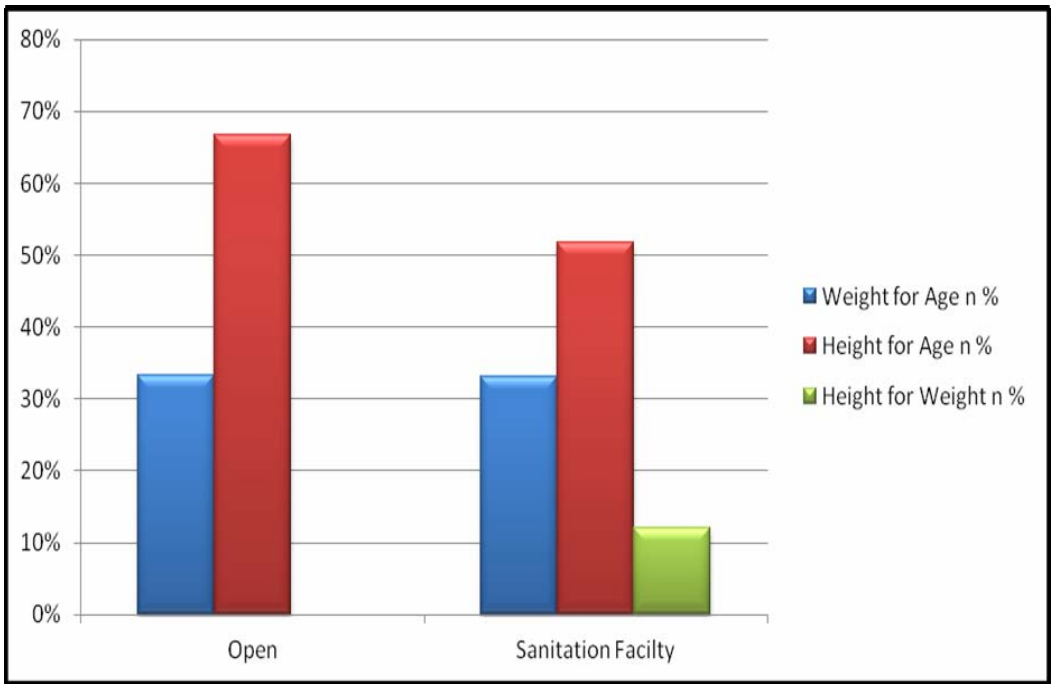


Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with family type, majority of the preschool children stays in nuclear type of family with 37.0%, 53.2%,13.9% respectively.

Table 17 : Distribution of PEM in pre-school children with Sanitation type.

Sanitation type	PEM Malnutrition (>=-2.0) n (%)		
	Weight-for-age	**Height-for-age**	**Height-for-Weight**
Open	1 (33.3)	2 (66.7)	0
Sanitation Facility	82 (33.2)	128 (51.8)	30 (12.1)
Total	83 (33.2)	130 (52.0)	30 (12.0)

Graph 17: Distribution of PEM in pre-school children with Sanitation type.



Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with Sanitation type, majority of the preschool children has sanitation facility in family with 33.3%, 51.8%, 12.1% respectively.

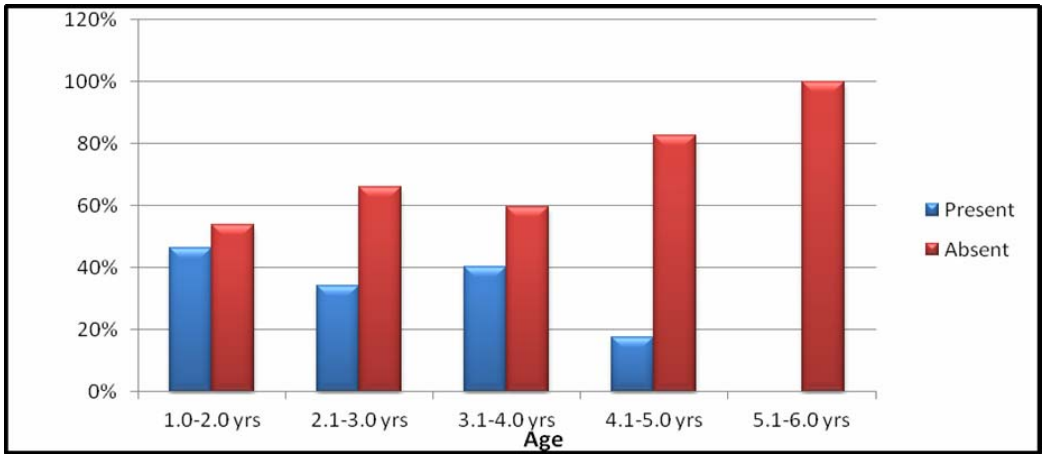
ANAEMIA

Table 18 : Prevalence of anaemia in different age groups.

Age	Anaemia N (%)		Total
	Present	Absent	
1.0-2.0 yrs	25 (46.3)	29 (53.7)	54 (100.0)
2.1-3.0 yrs	28 (34.1)	54 (65.9)	82 (100.0)
3.1-4.0 yrs	19 (40.4)	28 (59.6)	47 (100.0)
4.1-5.0 yrs	7 (17.5)	33 (82.5)	40 (100.0)
5.1-6.0 yrs	0	3 (100.0)	3 (100.0)
Total	79 (35.0)	147 (65.0)	226 (100.0)

'p' value
0.031

Graph 18: Prevalence of anaemia in different age groups



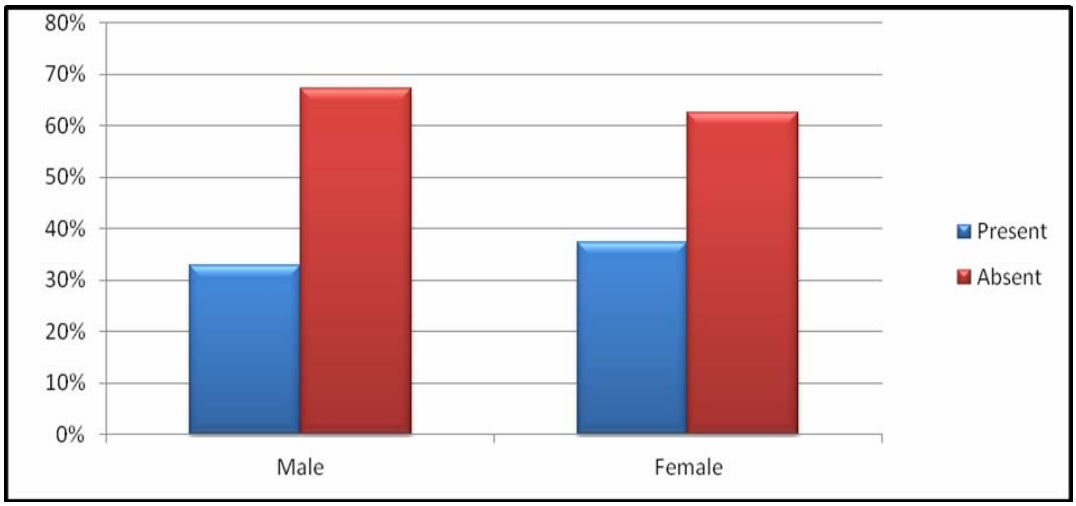
The prevalence of anaemia was slightly higher among the children of age < 3years of age i.e (80.4%) compared to age > 3 years i,e 57. .However, there was significant association between anaemia and age groups.

Table 19 : Prevalence of anaemia in different sex groups.

Gender	Anaemia N (%)		Total
	Present	Absent	
Male	39 (32.8)	80 (67.2)	119 (100.0)
Female	40 (37.4)	67 (62.6)	107(100.0)
Total	79 (35.0)	147 (65.0)	226(100.0)

'p' value
.468

Graph 19: Prevalence of anaemia in different sex groups.



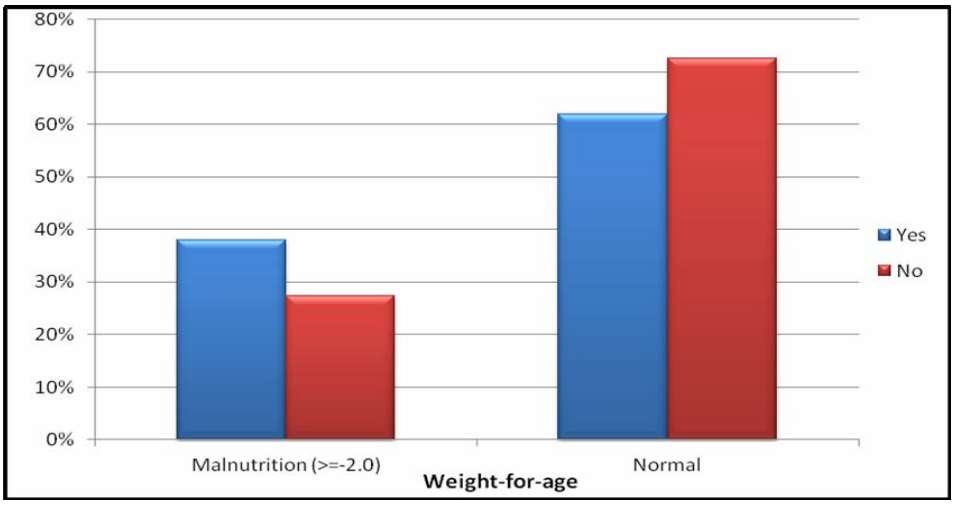
The prevalence of anaemia was almost the same in number in males and in females. However, there was no significant association between anaemia and age groups as well as gender.

Table 20 : Distribution of the study population based on anaemia with malnutrition status in relation to weight-for-age.

		Weight-for-age N (%)		
		Malnutrition (≥-2.0)	**Normal**	**Total**
Anemia	Yes	52 (38.0)	85 (62.0)	137 (100.0)
	No	31 (27.4)	82 (72.6)	113 (100.0)
Total		83 (33.2)	167 (66.8)	250 (100.0)

Chi-Square Tests		
	Value	'p' value
Pearson Chi-Square	3.092	.079

Graph 20 : Distribution of the study population based on anaemia with malnutrition status in relation to weight-for-age.



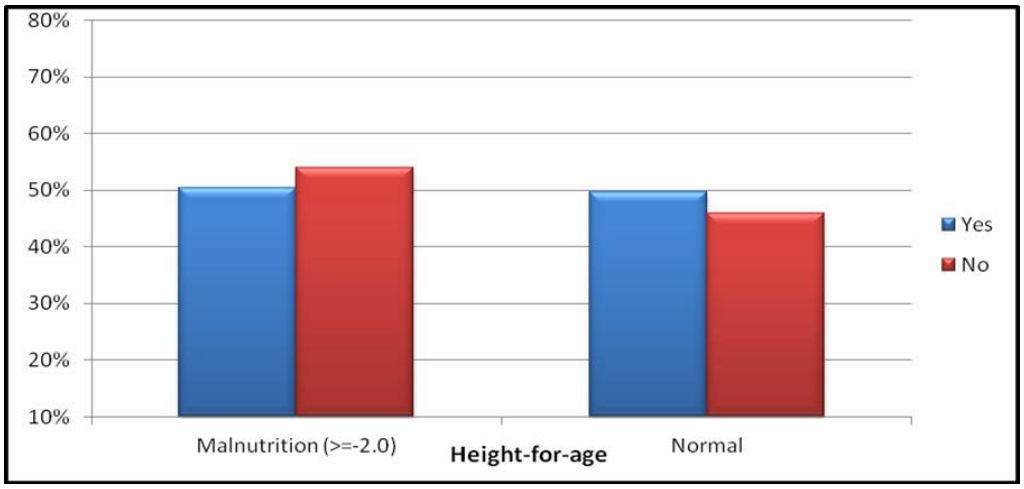
In our study, Anaemia with malnutrition was observed in 52 (38%) children in relation to weight-for-age. However, there was association found between the them.

Table 21: Distribution of the study population based on anaemia with malnutrition status in relation to height-for-age.

		Height-for-age N (%)		
		Malnutrition (>=-2.0)	**Normal**	**Total**
Anemia	Yes	69 (50.4)	68 (49.6)	137 (100.0)
	No	61 (54.0)	52 (46.0)	113 (100.0)
Total		**130 (52.0)**	**120 (48.0)**	**250 (100.0)**

Chi-Square Tests		
	Value	'p' value
Pearson Chi-Square	3.092	0.079

Graph 21 : Distribution of the study population based on anaemia with malnutrition status in relation to height-for-age.



In our study, Anaemia with malnutrition was observed in 69 (50.4%) children in relation to height-for-age and no statistical significance was found between them.

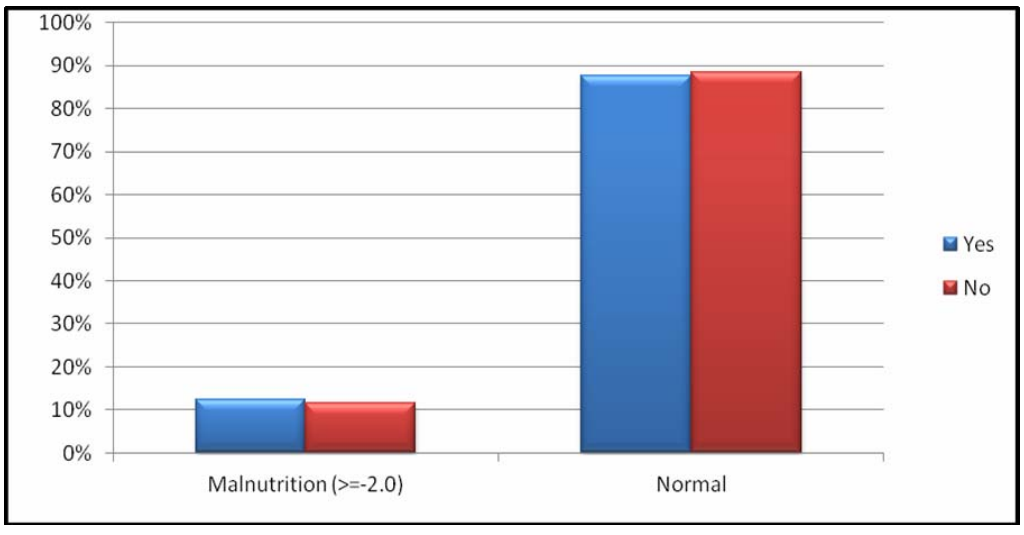
Table 22 : Distribution of the study population based on anaemia with malnutrition status in relation to weight-for-height.

		Weight-for-Height N (%)		
		Malnutrition (≥-2.0)	**Normal**	**Total**
Anemia	**Yes**	17 (12.4)	120 (87.6)	137 (100.0)
	No	13 (11.5)	100 (88.5)	113 (100.0)
	Total	30 (12.0)	220 (88.0)	250 (100.0)

	Value	**'p' value**
Pearson Chi-Square	**.048**	**0.827**

In the present study, Anaemia with malnutrition was observed in 17 (12.4%) children in relation to Weight-for-Height. There was no significant association.

Graph 22 : Distribution of the study population based on anaemia with malnutrition status in relation to weight-for-height.

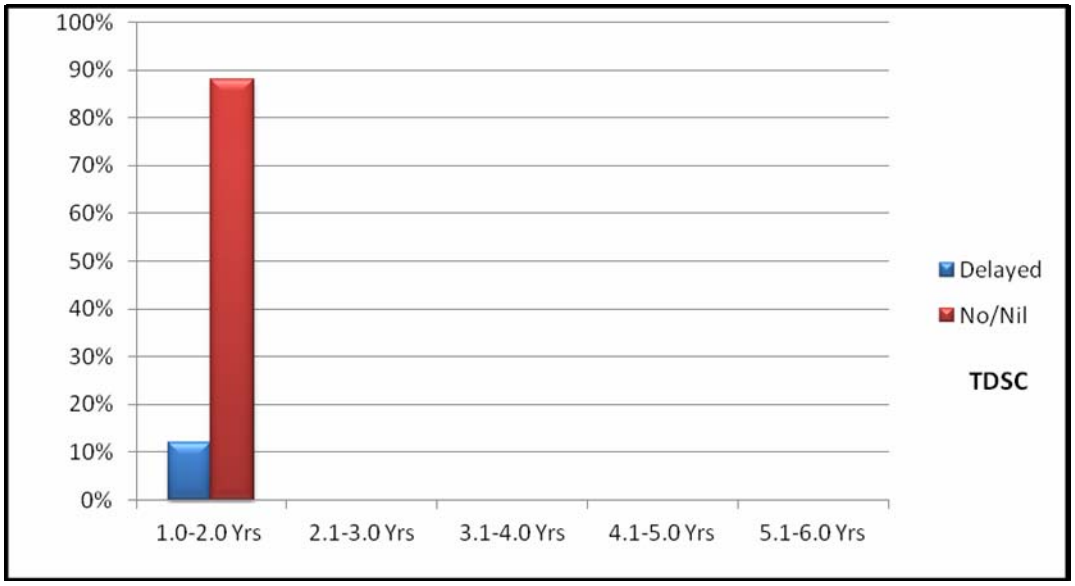


TSDC

Table 23 : Distribution of study population showing development assessment by TDSC in different age groups

		TSDC **N (%)**		
		Delayed	No/Nil	Total
Age	1.0-2.0 yrs	7 (12.1)	51 (87.9)	58 (100.0)

Graph 23: Distribution of study population showing development assessment by TDSC in different age groups



In the development assessment of preschool children upto 2 years of age by TDSC. it was found that 7 (12.1%) children were found to be developmental delay.

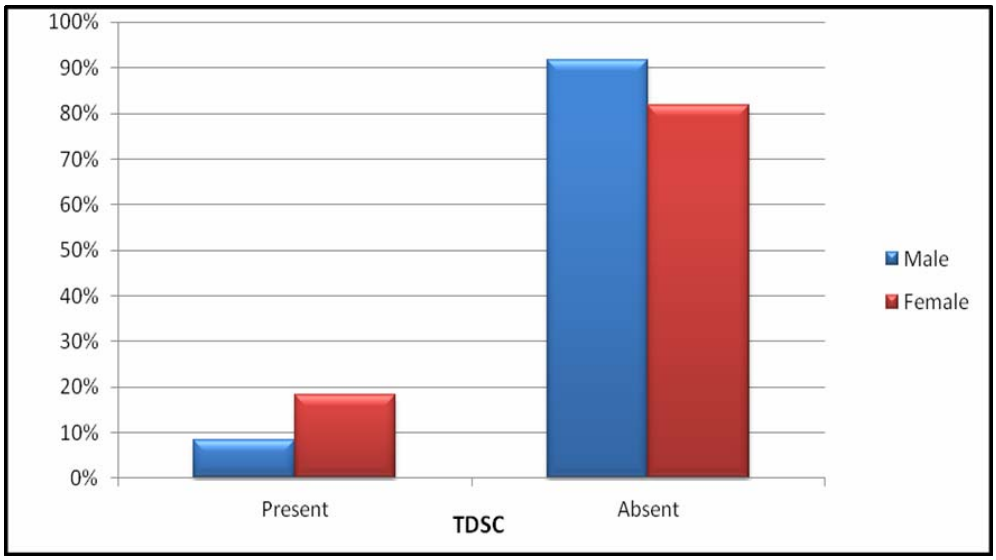
Table 24: Distribution of study population based on the prevalence of development assessment by TDSC in different sex groups

Gender	TDSC n (%)		Total
	Present	Absent	
Male	3 (8.3)	33 (91.7)	36(100.0)
Female	4 (18.2)	18(81.8)	22(100.0)
Total	7 (2.8)	51(97.2)	58(100.0)

Chi-Square Tests

	Value	'p' value
Pearson Chi-Square	.164	.264

Graph 24 : Distribution of study population based on the prevalence of development assessment by TDSC in different sex groups



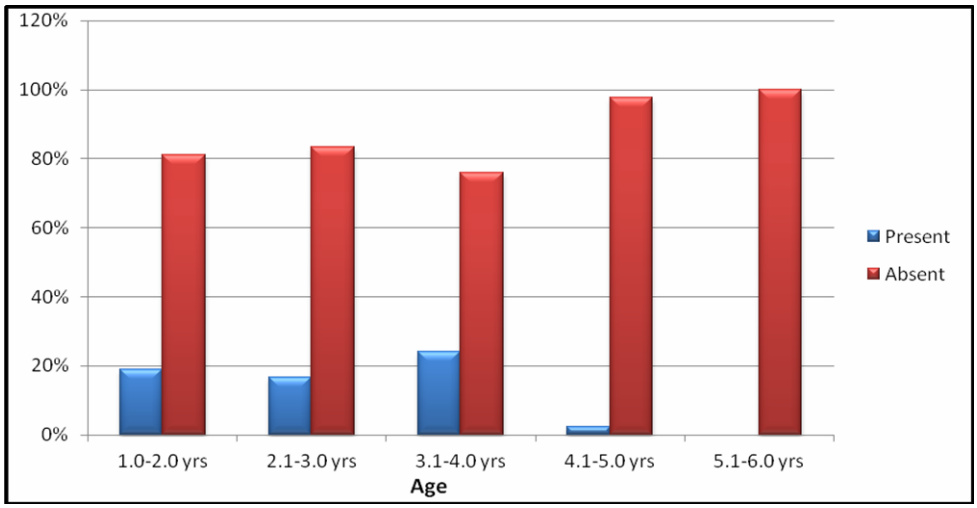
In our study, delayed growth was seen in only 7 (12.1%)children as assessed by TSDC and almost the same number as in males i.e 3(8.3%) and females i.e 4 (18.2%).

VITAMIN A DEFICIENCY

Table 25: Distribution of study population based on the prevalence of Vitamin A Deficiency in different age groups.

	Vitamin A deficiency N (%)		Total
	Present	Absent	
1.0-2.0 yrs	11(19.0)	47(81.0)	58(100.0)
2.1-3.0 yrs	15(16.7)	75(83.3)	90(100.0)
3.1-4.0 yrs	14(24.1)	44(75.9)	58(100.0)
4.1-5.0 yrs	1(2.4)	40(97.6)	41(100.0)
5.1-6.0 yrs	0	3(100.0)	3(100.0)

Graph 25 : Distribution of study population based on the prevalence of Vitamin A Deficiency in different age groups.



The highest prevalence of vitamin A deficiency was seen among the age group of 2-3 years i.e 16.7% . However, there was no significance seen between vitamin A deficiency and age.

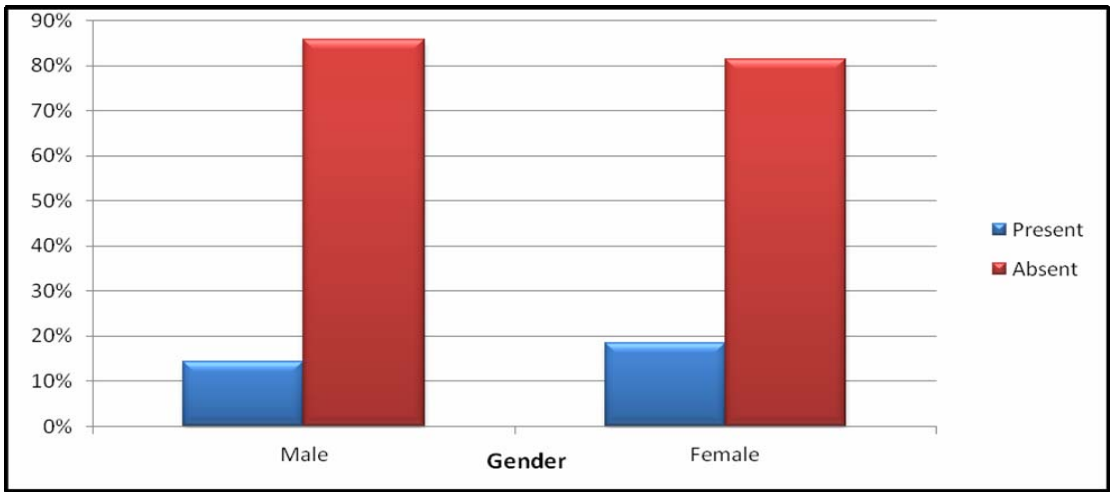
Table 26: Distribution of study population based on the prevalence of Vitamin A Deficiency and gender.

Gender	Vitamin A deficiency N (%)		Total
	Present	Absent	
Male	18(14.3)	108(85.7)	126(100.0)
Female	23(18.5)	101(81.5)	124(100.0)
Total	41(16.4)	209(83.6)	250(100.0)

Chi-Square Tests

	Value	'p' value
Pearson Chi-Square	.828	.363

Graph 26 : Distribution of study population based on the prevalence of Vitamin A deficiency and gender.



In our study, the prevalence of Vitamin A deficiency was seen 41(16.4%) of the children in which the maximum number were seen in the age group of 2-3 years and the majority was seen among the females i.e 23(18.5%). There was no statistically significant relation between Vitamin A deficiency, age and gender.

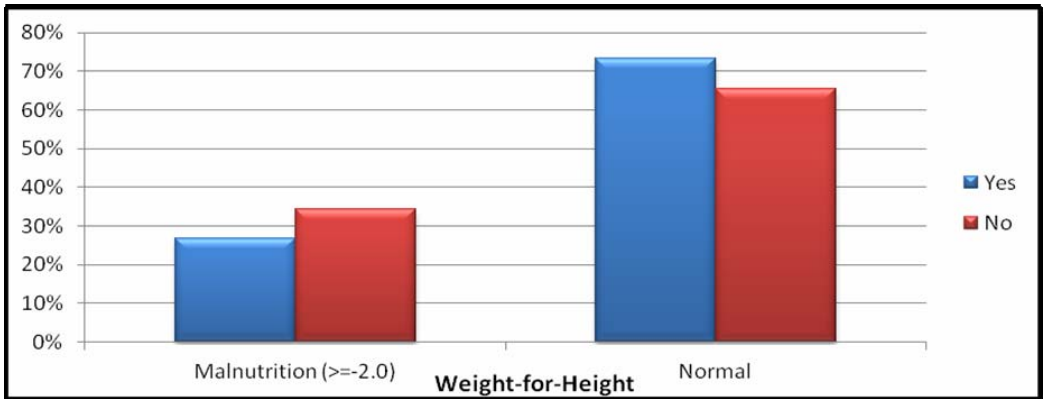
Table 27 : Distribution of the study population based on vitamin A deficiency with malnutrition status in relation to weight-for-age.

		Weight-for-age N (%)		
		Malnutrition (>=-2.0)	**Normal**	**Total**
Vit.A deficiency	Yes	11 (26.8%)	30 (73.2%)	41 (100.0%)
	No	72 (34.4%)	137 (65.6%)	209 (100.0%)
	Total	83 (33.2%)	167 (66.8%)	250 (100.0%)

Chi-Square Tests

	Value	'p' value
Pearson Chi-Square	.898	.343

Graph 27 : Distribution of the study population based on vitamin A deficiency with malnutrition status in relation to weight-for-age.



In the study above, 41 children was found to have Vitamin A deficiency. 11 (26.8%) children had associated malnutrition present according to weight-for-age classification in relation to Vitamin A Deficiency.

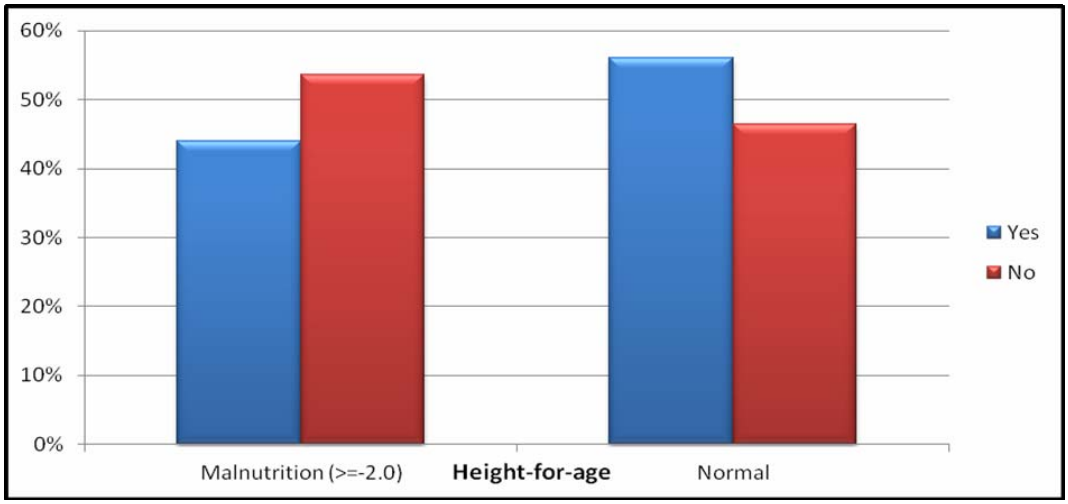
Table 28 : Distribution of the study population based on vitamin A deficiency with malnutrition status in relation to height-for-age.

		Height-for-age N (%)		
		Malnutrition (≥-2.0)	**Normal**	**Total**
Vit. A deficiency	Yes	18 (43.9)	23 (56.1)	41 (100.0)
	No	112 (53.6)	97 (46.4)	209 (100.0)
	Total	130 (52.0)	120 (48.0)	250 (100.0)

Chi-Square Tests

	Value	'p' value
Pearson Chi-Square	.898	.343

Graph 28 : Distribution of the study population based on vitamin A deficiency with malnutrition status in relation to height-for-age.



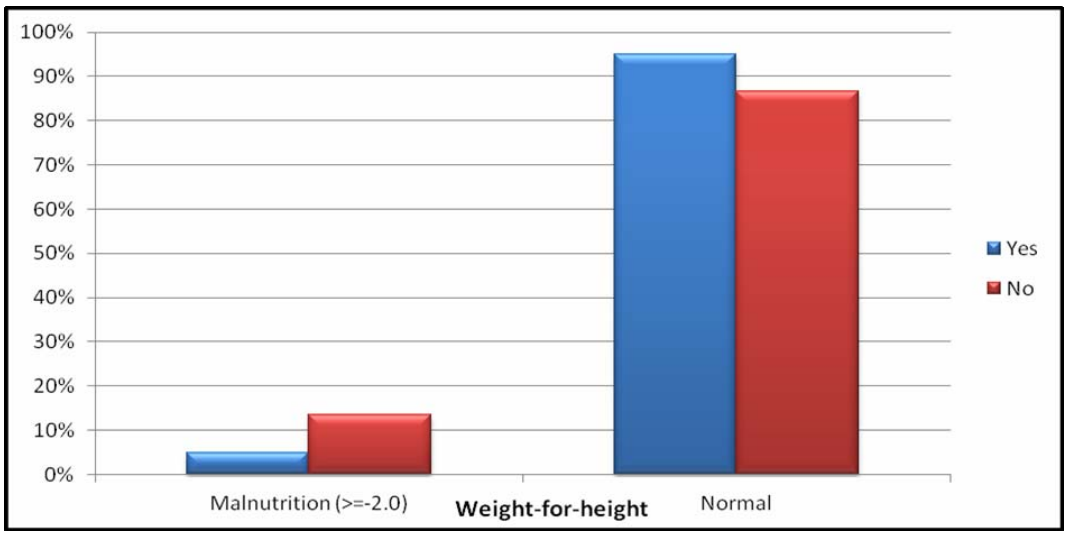
In the study above, 18 (43%) children had Vitamin A deficiency along with malnutrition present according to weight-for-age.

Table 29: Distribution of the study population based on vitamin A deficiency with malnutrition status in relation to weight-for-height.

		Weight-for-height N (%)		
		Malnutrition (≥-2.0)	**Normal**	**Total**
Vit. A deficiency	Yes	2 (4.9)	39 (95.1)	41(100.0)
	No	28 (13.4)	181(86.6)	209(100.0)
	Total	30 (12.0)	220(88.0)	250(100.0)

	Value	'p' value
Pearson Chi-Square	.898	.343

Graph 29: Distribution of the study population based on vitamin A deficiency with malnutrition status in relation to weight-for-height.



In the study above, only 2 (4.9%) children had Vitamin A deficiency along with malnutrition present according to Weight-for-Height. There was no significant association between vitamin a deficiency and malnutrition as assessed by weight for age, height for age and weight for height.

Table 30 : Distribution of the study population based the morbidity with age.

Morbidity		Acute respiratory infection n(%)	Acute respiratory infection and Worm infestation n(%)	Acute respiratory infection and Diarrhoea n(%)	Diarrhoea n(%)	Acute respiratory infection, Diarrhoea and Worm infestation n(%)	Worm infestation n(%)	No morbidity n(%)	Total n(%)
Age	1.0 - 2.0 yrs	2 (3.4)	0	2 (3.4)	12 (20. 7)	1 (1.7)	1 (1.7)	40 (69.0)	58 (100)
	2.1 - 3.0 yrs	3 (3.3)	0	6 (6.7)	21 (23.3)	0	2 (2.2)	57 (63.3)	90 (100)
	3.1 - 4.0 yrs	8 (13.8)	1 (1.7)	2 (3.4)	6 (10.3)	1 (1.7)	0	39 (67.2)	58 (100)
	4.1 - 5.0 yrs	2 (4.9)	0	6 (14.6)	8 (19.5)	0	1 (2.4)	24 (58.5)	41 (100)
	5.1 - 6.0 yrs	1 (33.3)	0	0	0	0	0	2 (66.7)	3 (100)
	Total	16 (6.4)	1 (0.4)	16 (6.4)	47 (18.8)	2 (0.8)	4 (1.6)	162 (64)	250 (100)

Out of the 250 children, 16 (6.4%) had acute respiratory infection,16 (6.4%) had acute respiratory infection and diarrhoea, 47(18.8%) had only diarrhoea, 2 (0.8%), 4 (1.6%) had worm infestation. 162(64.8%) had no morbidity.

Majority of the children having acute respiratory infection were in the age group of 3-4 years, acute respiratory infection and diarrhoea were seen more in 2-3 years age group.

Graph 30: Distribution of the study population based the morbidity with age.

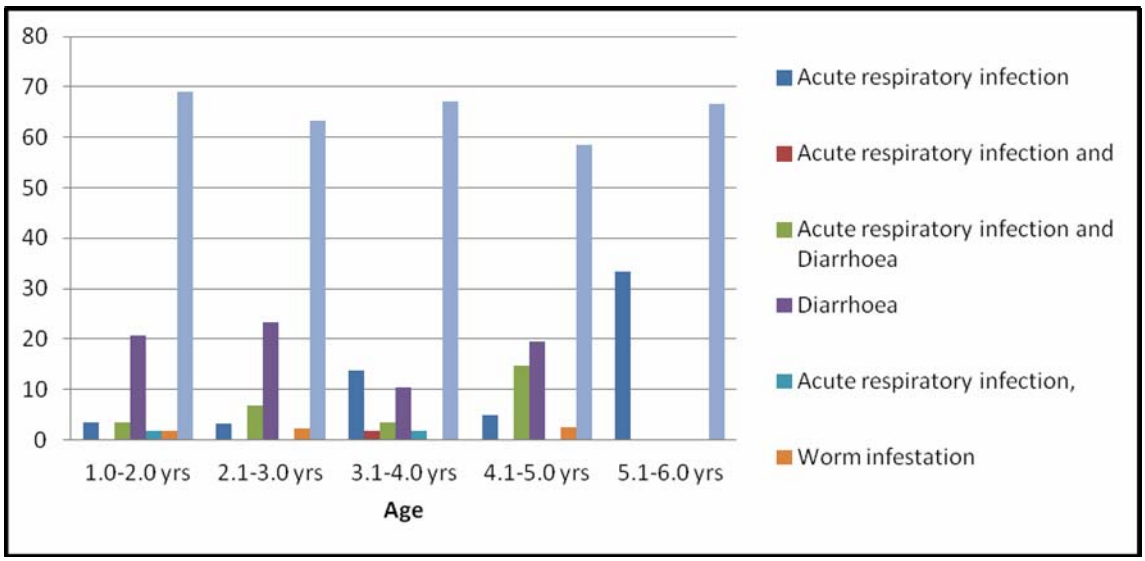
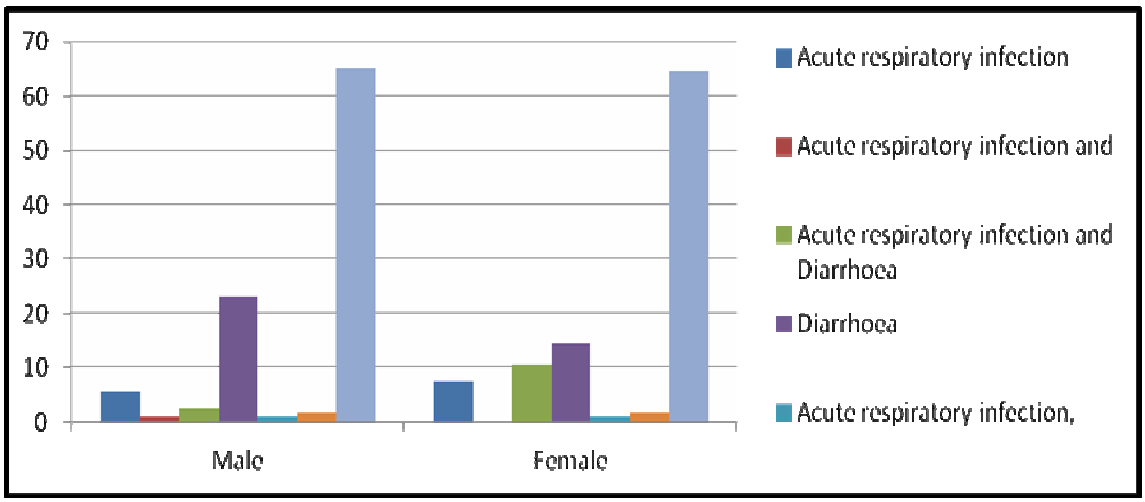


Table 31 : Distribution of the study population based the morbidity with gender.

Morbidity		Acute respiratory infection n(%)	Acute respiratory infection and Worm infestation n(%)	Acute respiratory infection and Diarrhoea n(%)	Diarrhoea n(%)	Acute respiratory infection, Diarrhoea and Worm infestation n(%)	Worm infestation n(%)	No morbidity n(%)	Total n(%)
Gender	Male	7 (5.6)	1 (0.8)	3 (2.4)	29 (23.0)	1 (0.8)	2 (1.6)	82 (65.1)	126 (100)
	Female	9 (7.3)	0	13 (10.5)	18 (14.5)	1 (0.8)	2 (1.6)	80 (64.5)	124 (100)
	Total	16 (6.4)	1 (0.4)	16 (6.4)	47 (18.8)	2 (0.8)	4 (1.6)	162 (64.8)	250 (100)

Majority of the children having acute respiratory infection were females.. Those with acute respiratory infection and diarrhoea were seen more in females. Diarrhoea was also seen to be more common among the 2-3 years age group children, males. The highest number of children with no morbidity was seen among the 2-3 age group male children.

Graph 31: Distribution of the study population based the morbidity with gender.



DISCUSSION

The study of health and nutrition is important in preschool children as morbidity leads to further hampers the growth and development of the children.

AGE DISTRIBUTION

In the age distribution, 2.1-3.0 years of age has the highest frequency in the present study, accounting for 36 % of the total 250 preschool children.

GENDER DISTRIBUTION:

The present study shows that there was no difference in the sex distribution. 126 (50%) males and 124 (49.6%) females are present in the study**.**

NUTRITIONAL STATUS :-

Weight-for-age **: -** The frequency of malnutrition was 33.2%.

Height-for-age **: -** The frequency of malnutrition was 52.0%.

H**eight-for-Weight** **: -** The frequency of malnutrition was 12.0%.

RELIGION:-

Majority of the children belongs to Hindu community with 209 preschool children.

SOCIO-ECONOMIC STATUS:-

Majority of the children 68.8% belongs to Upper Lower middle economic status, followed by 24.4% children in the lower middle classification.

Only 1 child could be categorize by upper socio-economic status.

HOUSE TYPE :-

Majority of the preschool children stays in Semi Pucca house.

FAMILY TYPE :-

Majority of the preschool children stays in Nuclear families.

SANITATION FACILITIES:-

Majority of the preschool children have toilet facilities.

BREASTFEEDING INITIATION:-

Breast feeding was started immediately in majority of the preschool children.

IMMUNISATION STATUS:-

Majority of the preschool children had incomplete immunization.

NUTRITIONAL STATUS ASSESSMENT FOR WEIGHT-FOR-AGE, HEIGHT-FOR-AGE, HEIGHT-FOR-WEIGHT IN RELATION TO VARIOUS PARAMETERS :-

Nutritional Status assessment for weight-for-age, height-for-age, height-for-weight, male has a predominant number of children with 34.9 %, 52.4%, 14.3% respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation to age with comparison < > 3 years of age are 44.9 % 94.6 %, 104.1% 50%, 16.3% 38.9 % respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, upper lower class group of socio-economic status has dominance in all the groups with 32.6%, 52.9%, 12.85% respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, majority of the preschool children stays in semi pucca type of house in each group and has dominance with 36.6%, 53.6%, 11.6% respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with religion, majority of the preschool children belongs to Hindu, followed by Muslim and Christian community in each group and has dominance with 33.5%,53.6%,12.0% respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with immunization status, majority of the preschool children has incomplete immunization and has dominance with 33.6%, 52.2%, 12.1% respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with breastfeeding, majority of the preschool children has immediate breastfeeding initiation and has dominance with 32.1%, 48.9%, 13.1% respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with family type, majority of the preschool children stays in nuclear type of family with 37.0%, 53.2%, and 13.9% respectively.

Nutritional Status assessment for weight-for-age, height-for-age, height-for-age, in relation with Sanitation type, majority of the preschool children has sanitation facility in family with 33.3%, 51.8%, 12.1% respectively.

NOW WE CAN DISCUSS HOW THIS STUDY IS SIMILAR OR DIFFERENT TO OTHER SIMILAR STUDIES BY COMPARING THE VALUES OF THE RESULT.

1. Malnutrition:

1.) Sex Distribution:

SL. No	Study	Place	Year	Total	Male N. %	Female N. %
1.	Renuka et al.[71]	Mysore	2011	220	103 (46.8)	117 (53.2)
2.	Bobby Joseph et al.[49]	Bangalore	2011	256	138	117
3.	Sanjana Gupta et al.[72]	Jammu	2013	206	134	72
4.	**Our Study**	**Kolar**	**2012**	**250**	**126 (50.4)**	**124 (49.6%)**

The following tables give the incidence of sex distribution with other similar studies.

In the study conducted in Midnapore district, Malnutrition was observed to be more common among the females than the males.[45] But in another study by Renuka et al, sex distribution is almost the same as in our study.[71]

A study of Gond tribal community in Madhya Pradesh by Rao VG et al., shows that prevalence of underweight was found to be similar among both males and females.[47]

2.) COMPARITIVE DATA ON PREVALENCE OF MALNUTRITION IN STUDIED POPULATION AND OTHER STUDIES.

SL No	Study	Place	Year	Total	Normal No. %	Weight-for-age No. %	Height-for-age No.%	Height-for-age No. %
1.	Renuka et al.[71]	Mysore	2011	220	103 (46.8)	85 (38.6)	81 36.8	41 (18.6)
2.	Bobby Joseph et al.[54]	Bangalore	2011	256	138	80 (31.2)	24 9.4	75 (29.3)
3.	Kumar et al[73]	Allahabad	2006	217	-	36.4	51.6	10.6
4.	**Our Study**	**Kolar**	**2012**	**250**	**126 (50.4)**	**83 (33.2)**	**130 (52)**	**30 (12)**

The prevalence of malnutrition in our study has the similar distribution with the study done in Mysore by Renuka et al.[71]

A study by Bloss Emily et al.,among 184 children under five years of age in Kenya, Africa, 30% of children were underweight, 47% were stunned and 7 % were wasted.[52]

Seetharam N et al, in their study estimated the prevalence of under nutrition among under-five children in Coimbatore slums, 49.6% were underweight, 48.4% were stunted and 20.2% were wasted.[43]

In s study conducted by Regional Medical Research Centre for Tribals (ICMR), Jabalpur, India revealed that 61.6% of pre-school children were underweight, 51.6% were stunted and 32.9% were wasted.[47]

In another study done in rural areas of Karnataka, the prevalence of underweight, stunting and wasting was 31.2%, 9.4% and 29.2% respectively. Wasting was found to be more among younger age groups.[49]

3.) COMPARITIVE DATA ON TOTAL NUMBER OF CHILDREN IN STUDY AGE GROUP ACCORDING TO AGE GROUP IN STUDIED POPULATION AND OTHER STUDIES.

STUDY	**Renuka M et al[71]**	**Joseph et al [54]**	**A.Shibulal[74]**	**Present Study**
Place	Mysore %	Bangalore %	Kerala %	Kolar %
Year	2011	2002	2012	2012
1.0-2.0 yrs	19.5	11.1	19	13.8
2.1-3.0 yrs	25.5	11.1	14.2	31.1
3.1-4.0 yrs	16.8	31.8	33.2	23.3
4.1-5.0 yrs	38.2	16.9	42.3	46.3
5.1–6.0 yrs	0	0	63	3.3

In the study conducted by Ray SK et al., in Siliguri, North Bengal, the overall prevalence of malnutrition was highest (74.19%) in the age group 12-23 months.[48]

Chakraborty S et al in a study, in a Jhansi district (U.P), the prevalence of PEM was found to be significantly higher in the age group of 1-2 yrs (80.9%) as compared to other age group (52.3%) in 0-1 year age and 3-6 yrs age group (59.4%).[55]

In the different study conducted by Renuka et al,[71] malnutrition was highest in 4.1-5.0 years. Similarly, In Kerala, also in a study done by A.Shibulal.[74]

In a study by Bloss Emily et al conducted in Kenya, Africa both underweight and stunting was maximum in 12-24 months age group children at 46.2% and 60.5%.[52] Manish KG et al., in their study in Rohtak city slums among children aged 1-6 years noted that 57.4% were undernourished.[44]

6.) COMPARITIVE DATA ON PREVALENCE OF MALNUTRITION IN RELATION WITH UNDERWEIGHT PERTAINING TO AGE GROUP IN STUDIED POPULATION AND OTHER STUDIES.

	Renuka et al[71] (%)	**Joseph et al.[49](%)**	**Present Study (%)**
Place	Mysore	Bangalore	Kolar
Year	2011	2002	2012
1.0-2.0 yrs	25.6	49.2	13.8
2.1-3.0 yrs	37.5	2.3	31.1
3.1-4.0 yrs	29.7	31.8	48.3
4.1-5.0 yrs	50.0	16.9	46.3

In another study done in rural areas of Karnataka, the prevalence of underweight, stunting and wasting was 31.2%, 9.4% and 29.2% respectively. Wasting was found to be more among younger age groups.[49]

7.) COMPARITIVE DATA ON PREVALENCE OF MALNUTRITION IN RELATION WITH STUNTING PERTAINING (%) TO AGE GROUP IN STUDIED POPULATION AND OTHER STUDIES.

	Renuka M et al[71] (%)	**Joseph et al.[49] (%)**	**Subhadeep et al [75](%)**	**Present Study (%)**
Place	Mysore	Bangalore	Bankura	Kolar
Year	2011	2002	2012	2012
1.0-2.0 yrs	30.2	7.9	9	43
2.1-3.0 yrs	32.1	0	6	61.1
3.1-4.0 yrs	37.8	11.8	10	53.4
4.1-5.0 yrs	42.9	7.2	8	41.5
5.1-6.0 yrs	36.8	0		52.0

According to study conducted by Chakraborty S (2006), in a rural population of Jhansi district (U.P), the prevalence of PEM was found to be significantly higher in the age group of 1-2 yrs (80.9%) as compared to other age group (52.3%) in 0-1 year age and 3-6 yrs age group (59.4%).[55]

8.) COMPARITIVE DATA ON PREVALENCE OF MALNUTRITION IN RELATION WITH WASTING (%) PERTAINING TO AGE GROUP IN STUDIED POPULATION AND OTHER STUDIES.

	Renuka M et al[71] (%)	Joseph et al[49] (%)	Subhadeep et al[75] (%)	Present Study (%)
Place	Mysore	Bangalore	Bankura	Kolar
Year	2011	2002	2012	2012
1.0-2.0 yrs	27.9	20.6	1	8.6
2.1-3.0 yrs	17.9	0	0	7.8
3.1-4.0 yrs	8.1	25.5	0	12.1
4.1-5.0 yrs	19.0%	41.0 %	0	26.8
5.1-6.0 yrs	18.6%	0	0.8	12%

Kapur D et al in their study shows that 9.6% girls in 9-36 months of age had severe malnutrition as compared to 6.5% males. The maximum prevalence of severe malnutrition was in the age 31-36 months (10%) followed by 9.6% in 13-18 months. The moderate degree of malnutrition was around 30 to 33% in age group 13-36 months. [56]

In the study conducted in Midnapore district, West Bengal among the tribal population, prevalence of malnutrition was 50.6%.Malnutrition was observed to be more common among the females than the males.[45]

A study by Panpanich R et al. Among children up to 6 months, showed that the prevalence of underweight, wasting and stunting in the exclusively breastfed group was 0%, 1.9% and 7.7% respectively, compared to 13.4% 7.3% and 9.8% respectively in partial/non-breastfed children.[61]

ANAEMIA :-

The prevalence of anaemia was slightly higher among the children of age < 3years of age i.e. (80.4%) compared to age > 3 years i.e. 57. .However, there was significant association between anemia and age groups.

There was no significant association between anemia and age groups as well as gender.

In our study, Anemia with malnutrition was observed in 52 (38%) children in relation to weight-for-age.

In our study, Anemia with malnutrition was observed in 69 (50.4%) children in relation to height-for-age and no statistical significance was found between them.
In the present study, Anemia with malnutrition was observed in 17 (12.4%) children in relation to Weight-for-Height. There was no significant association.

TDSC:-

In the development assessment of preschool children up to 2 years of age by TDSC. It was found that 7 (12.1%) children were found to be developmental delay.
In our study, delayed development was seen in only 7 (12.1%)children as assessed by TSDC and almost the same number as in males i.e. 3(8.3%) and females i.e. 4 (18.2%).

VITAMIN A DEFICIENCY

In our study, the prevalence of Vitamin A deficiency was seen 41(16.4%) of the children in which the maximum number were seen in the age group of 2-3 years and the majority was seen among the females i.e 23(18.5%).

41 children were found to have Vitamin A deficiency. 11 (26.8%) children had associated malnutrition present according to weight-for-age classification in relation to Vitamin A Deficiency.

18 (43%) children had Vitamin A deficiency along with malnutrition present according to weight-for-age.

In the study above, only 2 (4.9%) children had Vitamin A deficiency along with malnutrition present according to Weight-for-Height. There was no significant association between vitamin a deficiency and malnutrition as assessed by weight for age, height for age and weight for height.

INFECTIOUS MORBIDITY:-

Out of the 250 children, 16 (6.4%) had acute respiratory infection, 16 (6.4%) had acute respiratory infection and diarrhoea, 47(18.8%) had only diarrhoea, 2 (0.8%), 4 (1.6%) had worm infestation. 162(64.8%) had no morbidity. Majority of the children having acute respiratory infection were in the age group of 3-4 years, acute respiratory infection and diarrhoea were seen more in 2-3 years age group.

Majority of the children having acute respiratory infection were females.. Those with acute respiratory infection and diarrhoea were seen more in females. Diarrhoea was also seen to be more common among the 2-3 years age group children, males. The highest number of children with no morbidity was seen among the 2-3 age group male children.

CONCLUSION

In this study, numbers of male and female children were almost of the same number.

Maximum number of the children in the study group was found to be in age group of 2-3 years.

The Prevalence of weight-for-age, height-for-age and weight-for -height is 33%, 52%, 12%. Respectively.

Further analysis, reveals that majority of malnourished preschool children comes from upper lower classification of modified Kuppuswamy's scale, belongs to Hindu community and lives in nuclear family type. Most of them stay in the semi-pucca house.

Malnourished preschool children belong within the age group of 2-4 yrs, 2-3 yrs, 2-3 yrs for weight-for-age, height-for- age and weight- for- height respectively. Majority of the children in the age group of 1-2 years had diarrhea with slightly higher number of male than the female. The morbidity was found to be less for worm infestation.

A higher number of children were also found to be anemic with highest percentage being with those malnourished in terms of height-for-age as compared to weight-for-age and weight-for height.

Vitamin A deficiency was not very prevalent with only around one-fifth of the children suffering from it.

The association of vitamin A deficiency with malnutrition status was highest in relation to height- for -age.

Development assessment of preschool children up to 2 years of age was done using TDSC and it was found that 2.8% had developmental delay which comprises about 12.1%.

Out of which 2.4 % were males and 3.2% were females in the study population.

Breastfeeding was initiated immediately after the birth and immunization status was incomplete in majority of the children in the study group.

Poor nutritional status in this children calls for government and NGO's to take immediate steps in uplifting the socioeconomic standard**.**

Development assessment of children up to 2 years can be done by TDSC. It is a simple scale which can be used effectively by even a anganwadi workers which will help in the initial screening and early detection of developmental delay.

SUMMARY

The present study was a cross-sectional study undertaken to evaluate the health and nutritional status of preschool children in urban Kolar.

The nutritional status of the preschool children was assessed and prevalence of protein energy malnutrition, anemia, vitamin A deficiency and worm infestation was studied. Various socio-economic factors associated with PEM were also studied in detail.

Further, Occurrence of infectious morbidity of preschool children was also studied and development assessment of children up to 2 years of age was done using the Trivandrum development scale.

This study was conducted in 5 anganwadi centres in urban Kolar for a period of one year from January 2012- December 2012.

Preschool children from 1-5 years of age was studied.

Health and Nutritional assessment for 250 preschool children were done during the study period.

The findings were recorded in a nutritional assessment Performa containing the detailed history obtained from the mother and physical examination details. Anganwadi centre's were visited during the study period to collect data regarding details required for Proforma, anthropometry and physical examination was performed after taking consent.

Out of the 250 preschool children, . 126 (50%) males and 124 (49.6%) females. In the age distribution, 2.1-3.0 years of age has the highest frequency. Majority of the children belongs to Hindu community.

Assessment of nutritional status reveals that malnutrition in preschool children according to the Weight-for-age, Height-for-age, Height-for-Weight was 33.2%, 52.0%, 12.0% respectively.

Majority of the children belongs to Upper Lower middle 68.8% economic status, followed by 24.4% children in the lower middle classification according to modified B.G Prasad classification. Only 1 child could be categorised by upper socio-economic status.

Majority of the preschool children stays in Semi Pucca type of house.

Majority of the preschool children stays in Nuclear families, incomplete immunization and have toilet facilities. Majority of the preschool children had incomplete immunisation . Breast feeding was started immediately.

The prevalence of anaemia was slightly higher among the children of age < 3years of age i.e (80.4%) as compared to age > 3 years i.e. 57.

In our study, Anemia with malnutrition was observed in 52 (38%) children in relation to weight-for-age, 69 (50.4%) children in relation to height-for-age, 17 (12.4%) children in relation to Weight-for-Height and no statistical significance was found between them.

In our study, delayed growth was seen in only 7 (12.1%) children as assessed by TSDC and almost the same number as in males 3 (8.3%) and females 4 (18.2%).

In our study, the prevalence of Vitamin A deficiency was seen 41(16.4%) of the children in which the maximum number were seen in the age group of 2-3 years and the majority was seen among the females 23(18.5%). 11 (26.8%) children had

associated malnutrition present according to weight-for-age, 18 (43%) according to weight-for-age and only 2 (4.9%) children had Vitamin A deficiency along with malnutrition present according to Weight-for-Height. There was no significant association between vitamin a deficiency and malnutrition.

Infectious morbidity pattern in our study, shows that 16 (6.4%) had acute respiratory infection, 16 (6.4%) had acute respiratory infection and diarrhoea, 47(18.8%) had only diarrhoea, 2 (0.8%), 4 (1.6%) had worm infestation. 162(64.8%) had no morbidity.

Majority of the children having acute respiratory infection were in the age group of 3-4 years, acute respiratory infection and diarrhoea were seen more in 2-3 years age group.

Majority of the children having acute respiratory infection were females.. Those with acute respiratory infection and diarrhoea were seen more in females. Diarrhoea was also seen to be more common among the 2-3 years age group children, males.

The highest number of children with no morbidity was seen among the 2-3 age group male children.

The nutritional status of preschool children is often the result of many interrelated factors. The assessment requires a comprehensive nutritional survey to obtain precise information on the prevalence and various other socioeconomic factors to solve the nutritional problems in the preschool children.

The number of percentage of PEM in preschool children are still present in large number as per the study. Further, health and nutritional status of preschool children needs to be improvise, effective intervention, health education of parents needs to be further intervene with a comprehensive nutritional survey to obtain a large

scale based precise information for better understanding of health and nutritional status of preschool children and its related factors.

Development assessment of children up to 2 years can be done by TDSC and it is a simple scale which can be used effectively by even a anganwadi workers which will help in the initial screening of development delay children. If one can diagnose developmental delay in early stages of development, the early intervention can reduce a long term sequel.The children were observed and assessed for their milestones by Trivandrum Developmental Screening chart (TDSC).[29]

Poor nutritional status in this children calls for government and NGO's to take immediate steps in uplifting the socioeconomic standard**.**

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ANNEXURE

ANGANWADI CENTRE :-

1.) SERIAL NO :-

2.) NAME :-

3.) DATE OF BIRTH :-

4.) AGE/SEX :-

5.) FATHER'S NAME / OCCUPATION / EDUCATION STATUS / INCOME:-

6.) HEIGHT / WEIGHT / BMI:-

7.) MOTHER'S NAME / OCCUPATION / EDUCATION STATUS / INCOME:-

8.) HEIGHT / WEIGHT / BMI:-

9.) RELIGION / CASTE:-

10.) TYPE / NO. OF MEMBERS IN THE FAMILY:-

11.) ADDRESS:-

12.) LIVING CONDITION:-

TYPE OF HOUSE: - PUCCA / KATCHA / MIXED

SOURCE OF WATER: - BOREWELL / PIPE WATER

LATRINE: - OPEN FIELD / PROPER TOILETS / OTHERS

13.) TOTAL FAMILY INCOME:-

14.) IMMUNISATION STATUS:-

15.) ANTHROPOMETRIC MEASUREMENTS

HEIGHT (IN CMS) :-

WEIGHT (IN KGS) :-

MAC (IN CMS):-

16.) ANEMIA: - PALLOR / HB ESTIMATION

17.) VITAMIN A DEFICIENCY: - CONJUNCTIVAL XEROSIS/ CORNEAL ULCERS/ BITOT'S SPOT/ OTHERS.

18.) MORBIDITY ASSESSMENT:-

- DIARRHOEA :-
- ARI :-
- WORM INFESTATION :-
- OTHERS :-

1.) DEHYDRATION:-

2.) SKIN: - DRY/SCALY/DEPIGMENTATION/ULCERATIONS/SCABIES

3.) HAIRS: - DRY/SILKY/ DEPIGMENTATION/ LUSTRELESS/SCANTY/ EASILY PLUCKABLE.

4.) BONY DEFORMITIES: - FRONTAL BOSSING/ ENLARGE EPIPHYSEAL ENDS/ OTHERS.

5.) ORAL CAVITY: - ORAL MUCOSA/GUMS/LIPS/TONGUE/OTHERS.

6.) TEETH: - NO. OF ERUPTIONS/ CARIES.

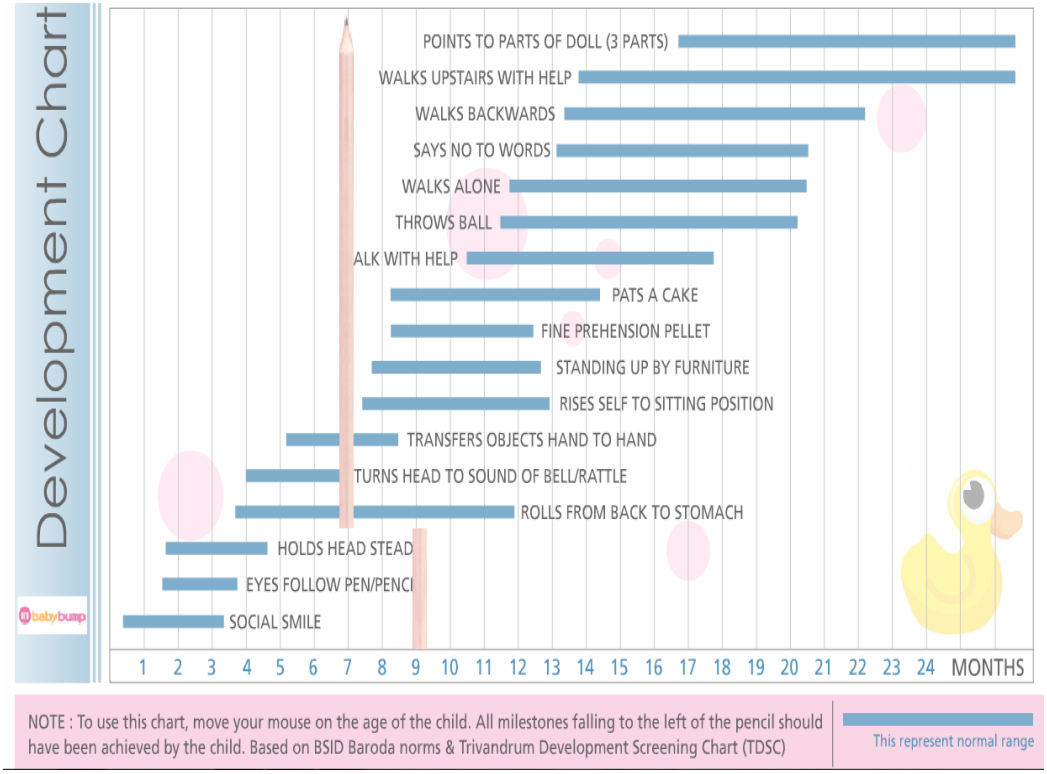
7.) DIETARY ASSESSMENT: - (BY 24 HOUR RECALL METHOD)

INFORMED CONSENT

We the attenders have been explained in details about the condition, blood investigation, stool examination and the need and use of the study. We hereby give our whole hearted consent for the study to be conducted in our children.

Signature

DEVELOPMENT CHART



PHOTOGRAPHS


VEGETABLES


Q-MAX
NOT FOR SALE
25Kg

MASTER CHART

serial no	Name	Age (yrs)	Gender	Father Name	Occupation	Educational Status	Income (Rs)	Mother Name	Occupation	Educational Status	Income	Religion	Family Type	No. of members	family income	Living conditions Type	water	Latrine	Family income	11.Immunisation	ANTHROPOMETRIC						Anaemia Pallor		estimation g/dl	Stool examination	Deficiency		Morbidity assessment No of Days	Frequency	Hospitilization/days	Weaning	Dietary Assessment Breast Feeding	TSDC	kuppuswamy scale	kuppu scale interpretation
																					Height(cms)	weight (kgs)	MAC	for age z score	age z score	for age z score														
1	Darshini	3	f	suresh babu	coolie	sslc	5000	Prabhawari	coolie	sslc	0	muslim	nuclear	4	5000	pucca	borewell	toilet	5000	complete	94	13	15	-0.5	-0.28	-0.54	no		10.9	NAD	no							nil	4	upper lower
2	Neha	3	f	Sathyanarayan	coolie	illiterate	3000	Sujatha	Tailor	sslc	0	Hindu	nuclear	3	3000	pucca	borewell	toilet	3000	complete	87	12	15	-1.14	-2.12	0.1	no		12.2	NAD	no							nil	4	upper lower
3	Anushree	4	f	Prabhakar	Dairy	8th	5000	Kavitha	Agriculture	sslc	0	hindu	nuclear	4	5000	pucca	borewell	toilet	5000	incomplete	77	10	14	-3.61	-5.97	0.4	no		14	NAD	no							nil	4	upper lower
4	Akshay	3	y	late	Military	graduate	20000	Paridha	Housewife	sslc	0	hindu	nuclear	5	20000	Pucca	borewell	toilet	20000	complete	87	12.5	16	-1.14	-2.45	0.33	no		11.2	NAD	no							nil	2	upper middle
5	Shravya	4	f	Challapath	Agriculture	sslc	8000	Sujatha	Housewife	sslc	0	hindu	nuclear	6	8000	pucca	pipewater	toilet	8000	incomplete	91	14	17	-1.02	-2.72	0.91	no		13.6	ova ho	no		diarrhoea		once in 3 months			nil	4	upper lower
6	Mohita	4	f	Nagesh	Painter	8th	4500	Nethravathi	housewife	sslc	0	hindu	joint	5	4500	pucca	borewell	toilet	4500	incomplete	94	13.2	14	-2.96	-2.94	-1.91	no		6.5	NAD	no							nil	4	upper lower
7	Bharath	3	m	Manjunath	coolie	sslc	4500	Soubhagya	coolie	sslc	3000	Hindu	nuclear	4	7500	pucca	borewell	toilet	4500	complete	85	13	16	-0.81	-2.99	1.3	no		12	NAD	no							nil	4	upper lower
8	Akash	3	m	Trimurthy	Security guard	II PUC	4000	Varalakshmi	Housewife	II PUC	0	Hindu	nuclear	4	4000	semipuc	pipe water	toilet	4000	incomplete	88	12	16	-1.48	-2.18	-0.42	no		11	NAD	no					2 yr	immediately	nil	4	upper lower
9	Pallavi	3.2	f	srinivas	painter	ii puc	12000	Sumitra	Housewife	illiterate	0	Hindu	nuclear	3	12000	pucca	borewell	toilet	2000	incomplete	92	11	15	-2.09	-1.2	-2.06	yes	conjunctiva,nail	11.2	NAD	no					9 mon	immediately	nil	3	lower middle
10	Murli	5	m	Pavithrakumar	auto driver	II PUC	3000	Mamtha	Housewife	7th	0	Hindu	nuclear	4	3000	semipuc	borewell	toilet	3000	complete	97	12	15	-3.22	-2.8	-2.46	yes	conjuntiva	13	NAD	no					1 yr	immediately	nil	4	upper lower
11	Pritam	1.3	m	Narayana	painter	sslc	4000	Kantama	Housewife	II PUC	0	Hindu	joint	14	10000	pucca	borewell	toilet	10000	incomplete	71	9	15	-1.34	-3.43	0.48	no		9.4	NAD	no					1YR	immediately	no	3	lower middle
12	sangam	5	f	vijaykumar	coolie	sslc	7000	manjula	Housewife	sslc	0	Hindu	joint	10	10000	pucca	borewell	toilet	10000	complete	96	14	16	-1.86	-2.82	-0.12	no		12.9	NAD	no					7 mon	immediately	nil	4	upper lower
13	Shalini	5	f	srinivas	shopkeeper	5th std	4500	padma	factory worker	illiterate	3000	Hindu	nuclear	5	7500	pucca	borewell	toilet	7500	complete	104	13	15	-2.42	-1.14	-2.67	yes	nail bed	10.7	NAD	no					1 yr	immediately	nil	4	upper lower
14	Gautam	3	m	Chalapathi	Driver	sslc	5000	yashoda	Housewife	sslc	0	Hindu	nuclear	3	5000	pucca	pipewater	toilet	3000	incomplete	87	12	16	-1.48	-2.45	-0.17	yes	nail bed	11.4	NAD	no					3 yr	immediately	nil	3	lower middle
15	yeswah	2.9	m	mohan	army	sslc	25,000	Subharani	Housewife	II PUC	0	Hindu	joint	10	25,000	semipuc	pipewater	toilet	30000	incomplete	77	11	14	-2.1	-5.01	1.1	no		12.4	NAD	no					5 mon	immediately	nil	2	upper middle
16	Vasant	2.9	m	kumar	coolie	7th std	3000	jayalakshmi	coolie	5th std	1000	Hindu	nuclear	3	4000	kutcha	borewell	toilet	5000	incomplete	78	13	15	-0.7	-4.74	2.78	no		6.9	NAD	yes	conjuntival xerosis				7 mon	immediately	nil	4	upper lower
17	Madhumati	5	f	Murthy	business	sslc	4000	sulochana	Housewife	I PUC	0	Hindu	nuclear	5	4000	kutcha	borewell	toilet	4000	incomplete	105	15	13	-1.36	-0.93	-1.24	no		9.9	NAD	no		ari		Frequently	5 mon	immediately	nil	3	lower middle
18	Dhanvanth	4	m	suman	driver	II PUC	3000	shankarna	Housewife	sslc	0	Hindu	nuclear	4	3000	kutcha	borewell	toilet	4000	incomplete	94	12	16	-2.47	-2.22	-1.8	no		12.3	NAD	no		diarhoea	3	once a month	9 mon	immediately	nil	3	lower middle
19	Namrutha	5	f	nagesh	coolie	7th std	3000	chandrakala	Housewife	II PUC	0	Hindu	joint	8	7000	pucca	borewell	toilet	7000	incomplete	105	14	18	-1.86	-0.93	-2.03	yes	conjunctiva	10.4	NAD	no					3 yrs	immediately	nil	4	upper lower
20	Yashwant	5	m	rajkumar	coolie	3th std	5000	kavitha	Housewife	sslc	0	Hindu	nuclear	5	5000	semipuc	pipewater	toilet	5000	incomplete	74	15	14	-1.51	-5.96	-0.58	no		12	NAD	no					1 yr	immediately	nil	4	upper lower
21	Rajesh	5	m	Ravi	Painter	7th std	4000	Nagamma	Housewife	illiterate	0	Hindu	3 gen	8	4000	semipuc	borewell	toilet	4000	complete	95	11	15	-3.81	-3.23	-3.17	yes	conjunctiva, nail	9.9	NAD	no					6 months	first day	nil	4	upper lower
22	Bharath	3	m	manjunath	coolie	sslc	4000	Soubhgaya	coolie	sslc	2500	Hindu	nuclear	4	6500	semipuc	borewell	toilet	4500	complete	85	13	16	-0.81	-2.99	1.3	no		10.8	NAD	no							nil	4	upper lower
23	keerthi	2.6	m	manjunath	fruit vendor	sslc	3500	leelavathi	housewife	sslc	0	Hindu	nuclear	5	3500	semipuc	borewell	toilet	6000	complete	78	11	15	-1.75	-4.27	0.88	no		13	NAD	no							nil	4	upper lower
24	srivan	5	m	krishna	coolie	sslc	4500	gayathri	coolie	sslc	0	Hindu	nuclear	6	4500	pucca	borewell	toilet	10000	complete	92	13.5	17	-2.32	-3.88	0.14	no		11.7	NAD	no							nil	4	upper lower
25	charan	3	m	shankar	diary	sslc	5000	dhanalakshmi	housewife	sslc	0	Hindu	nuclear	4	6000	kutcha	borewell	toilet	6000	complete	96	12.5	17	-1.14	-0.02	-1.71	no		10.2	NAD	no							nil	4	upper lower
26	Shailesh	5	m	srinivas	coolie	sslc	4000	Padmavathi	Housewife	sslc	0	Hindu	nuclear	5	5000	semipuc	pipewater	toilet	5000	incomplete	105	13	15	-2.61	-1.07	-3.18	no		13	NAD	no					6 mon	first day	nil	4	upper lower
27	Sai Varun	3	m	Raju	carpenter	sslc	4000	Bhuvaneshwari	Housewife	sslc	0	Hindu	nuclear	4	4000	kutcha	borewell	toilet	4000	incomplete	96	14	17	-0.2	-0.02	-0.27	no		13	NAD	no					6 mon	14 day	nil	4	upper lower
28	Hemant gov	3	m	Narayanaswamy	Farmer	sslc	4000	Varalakshmi	Housewife	sslc	0	Hindu	3 gen	6	4000	pucca	borewell	toilet	4000	incomplete	74	9	15	-3.81	-5.96	-0.58	no		11	NAD	no						first day	nil	3	lower middle
29	Yogith	3. 4	m	Manjunath	Farmer	Bsc	5000	Aruna	Teacher	B.ed	0	Hindu	nuclear	4	5000	pucca	borewell	toilet	15000	incomplete	94	16	18	0.44	-1.31	1.77	no		10.8	NAD	no					6 mon	first day	nil	3	lower middle
30	Keerthana	4	m	Narayanaswamy	Farmer	sslc	8000	Varalakshmi	Housewife	sslc	0	Hindu	joint	6	8000	pucca	pipewater	toilet	8000	incomplete	92	10	14	-3.84	-2.7	-3.73	no		11.3	NAD	no					6 mon	immediately	nil	3	lower middle
31	Uday kumar	1.6	m	Rajendra	oil pump employ	sslc	8500	priya	Housewife	sslc	0	Hindu	nuclear	3	8500	semipuc	borewell	toilet	7000	incomplete	77	11.5	15	0.25	-2.32	1.76	no		11	cyst Er	no		diarhhoea		regular			no	3	lower middle
32	Appu	3	m	Ramesh	painter	sslc	5000	vasantha	Housewife	illiterate	0	Hindu	nuclear	4	5000	semipuc	borewell	toilet		complete	97	12	13	-1.48	0.25	-2.46	no		12.8	NAD	no							nil	4	upper lower
33	Surya babu	5	m	Lakshman	painter	BA	5000	Bharathi	Housewife	sslc	0	Hindu	nuclear	4	5000	semipuc	pipewater	toilet	5000	incomplete	98	15	16	-1.51	-2.58	0.15	no		12.3	NAD	no					1 yr	immediately	nil	3	lower middle
34	Mishal	3	m	Ashwath	Conductor	B.ed	6000	Gayatri	Housewife	sslc	0	Hindu	nuclear	4	6000	semipuc	pipewater	toilet	6000	incomplete	100	15	15	0.37	1.06	-0.29	no		11.3	NAD	no					1 yr	immediately	nil	3	lower middle
35	Rakshith	2	m	Harish	Bussiness	10th std	8000	Bhavya	Housewife	BA	0	Hindu	nuclear	4	8000	semipuc	Pipewater	toilet	8000	complete	72	9	14	-2.64	-5.18	0.18	yes	conjunctiva	12.1	NAD	no		diarrohea		frequent			no	3	lower middle
36	Janardhan	1.2	m	Manjunath	coolie	9th std	4000	Jayamma	Housewife	6th	0	Hindu	joint	6	5000	semipuc	pipewater	toilet	5000	incomplete	78	12	19	1.5	-0.19	2.03	no		10.8	NAD	no					6 mon	immediately	no	4	upper lower
37	pawan	4	m	ashok	coolie	sslc	5000	soumya	Housewife	sslc	0	Hindu	joint	6	5000	kutcha	pipewater	toilet	5000	incomplete	90	15	17	-0.68	-3.18	1.84	no		14	NAD	no					4 month	immediately	nil	4	upper lower
38	Sanjay	2	m	sridhar	Farmer	sslc	4000	Pramila	Housewife	illiterate	0	Hindu	3 gen	7	4000	kutcha	borewell	toilet	4000	incomplete	85	12	15	-0.11	-0.93	0.52	no		9.9	NAD	no					9 mon	first day	no	3	lower middle
39	Deepika	3	f	nagaraj	tailor	7th std	5500	narayannamma	Housewife	sslc	0	Hindu	joint	6	5500	semipuc	borewell	toilet	5500	incomplete	76	10	14	-2.66	-5	0.61	no		11.4	NAD	no							nil	4	upper lower
40	Chandan	4	m	Subramani	driver	7th std	5000	Jayathri	tailor	sslc	3000	hindu	joint	6	10000	kutcha	borewell	toilet	10000	incomplete	82	12	15	-2.47	-5.09	1.06	no		10	NAD	no							nil	3	lower middle
41	Lokesh	3	m	Manjunath	painter	sslc	6500	prerna	housewife	8th std	0	hindu	nuclear	4	6500	kutcha	borewell	toilet	6000	incomplete	82	11.5	15	-1.84	-3.8	0.56	yes	conjunctiva	13	NAD	no							nil	4	upper lower
42	Moushimita	3	f	nagaraj	tailor	7th std	5000	Narayani	Housewife	illiterate	0	Hindu	nuclear	5	5000	semipuc	borewell	toilet	4000	incomplete	84	10.5	15	-2.24	-2.9	-0.68	yes	nail bed	15	NAD	no							nil	4	upper lower
43	Yeswant	3	m	lokesh	painter	5th std	8000	lalitha	housewife	illiterate	0	Hindu	nuclear	4	8000	pucca	borewell	toilet	8000	complete	82	13	16	-0.81	-3.8	1.99	no		12.6	NAD	no					1yr	immediately	nil	4	upper lower
44	Arun	3	m	Govindaraj	coolie	6th std	3000	Lakshmi	Housewife	illiterate	0	Hindu	3 gen	8	5000	pucca	borewell	toilet	5000	complete	86	12	14	-1.48	-2.72	0.09	no		8.4	NAD	no					9 mons	immediately	nil	4	upper lower
45	Praveen	4	m	Govindappa	coolie	7th std	3000	mahalakshmi	Housewife	illiterate	0	Hindu	joint	6	10000	pucca	borewell	toilet	10000	complete	101	15	16	-0.68	-0.55	-0.51	yes	conjunctica, palm	13.2	NAD	no					9 mons	immediately	nil	4	upper lower
46	Bindu	4	f	Amaresh	coolie	4th std	5000	Shakuntala	Housewife	5th std	0	Hindu	nuclear	3	5000	pucca	borewell	toilet	5000	incomplete	92	11	14	-2.91	-2.49	-2.06	yes	conjunctiva	12	NAD	yes	conjunctival xerosis	Ari		once a month	1 yr	first day	nil	4	upper lower
47	Vidya	3	f	Manjunath	coolie	7th std	4000	renuka	Housewife	9th std	0	Hindu	nuclear	5	4000	semipuc	borewell	toilet	5000	incomplete	82	11	14	-1.85	-3.43	0.34	yes	conjunctiva, nail	7.9	NAD	yes	conjunctival xerosis				7 mon	first day	nil	4	upper lower
48	Pallavi	3	f	Kashana murthy	coolie	4th std	3000	Manjula	coolie	sslc	3000	Hindu	joint	14	10000	pucca	borewell	toilet	10000	incomplete	80	9	15	-3.51	-3.95	-1.47	yes	nail bed	9.4	NAD	no					2 1/2 y	immediately	no	4	upper lower
49	Mahalakshn	1.6	f	naresh	coolie	7th std	3000	chandrakala	Housewife	ii puc	0	Hindu	joint	8	7000	pucca	borewell	toilet	7000	incomplete	72	9	15	-1.26	-3.34	0.54	yes	nail bed	10	NAD	no					1 yr 6 mon	immediately	no	4	upper lower
50	Vaibhav	3	m	Manjunath	coolie	9th std	5000	Punitha	Housewife	B.A	0	Hindu	nuclear	4	5000	pucca	borewell	toilet	5000	incomplete	80	10	16	0.35	-0.75	0.98	no		5.4	NAD	no					1 yr	immediately	nil	4	upper lower
51	Spandana	4	f	Patelappa	milkman	ii puc	4000	Shyla	Housewife	9th std	0	Hindu	nuclear	4	4000	pucca	borewell	toilet	4000	incomplete	96	10	15	-3.61	-1.56	-4	no		10.1	NAD	no					3 yr	immediately	nil	4	upper lower
52	Pavan	5	f	Nagesh	coolie	sslc	4000	Manjula	Housewife	illiterate	0	Hindu	nuclear	5	4000	pucca	borewell	toilet	4000	incomplete	102	11	16	-3.62	-1.56	-4.11	no		10	NAD	no					2 yr	immediately	nil	4	upper lower
53	Amruthi	4 .	f	Mariyappa	farmer	sslc	5000	Pavithramma	Housewife	8th std	0	Hindu	nuclear	3	5000	pucca	borewell	toilet	5000	incomplete	93	11	13	-2.91	-2.26	-2.28	yes	conjunctiva	11.2	NAD	no					2 yr	immediately	nil	3	lower middle
54	Harsha	4	f	Devaraj	business	B.com	4000	Nethravathi	Housewife	8th std	0	Hindu	nuclear	3	4000	pucca	borewell	toilet	3000	incomplete	88	12	15	-2.21	-3.42	-0.14	yes	conjunctival	12.7	NAD	no					2y 6 mon	immediately	nil	3	lower middle
55	Yaswanth	6	m	Somappa	coolie	7th std	2500	Shymala	Housewife	sslc	0	Hindu	nuclear	5	2500	kutcha	borewell	toilet	2500	incomplete	71	10	15	-1.26	-3.34	0.54	yes	conjunctival, nail	12.2	NAD	no					1 yr	immediately	nil	4	upper lower

MASTER CHART

56	Nitesh	2	m	Raghupathi	Factory worker	sslc	4000	Saritha	Housewife	II PUC	0	Hindu	3 gen	8	4000	pucca	borewell	toilet	4000	incomplete	70	9	15	-1.71	-5.51	1.72	yes	conjunctival	9.8	ova ho	yes	conjunctiva l xerosis				6 mon	first day	no	4	upper lower
57	Nikitha	1.3	m	Nagesh	coolie	7th std	5000	Malathi	coolie	sslc	3000	Hindu	nuclear	5	8000	semipuc	pipe water	toilet	8000	incomplete	88	11	14	-1.34	-3.82	0.8	no		9.8	NAD	no					6 mon	first day	nil	4	upper lower
58	Tejashwini	3	f	Late shivanna				Saraha	coolie	illiterate	3000	Hindu	3 gen	6	3000	pucca	borewell	toilet	3000	incomplete	85	12	15	-1.85	-1.85	-1.14	yes	conjunctiva	9.4	NAD	yes	conjunctiva l xerosis				1 yr	immediately	nil	5	lower
59	Shivkumar	3	m	Srinivas	coolie	sslc	4000	Lakshmi	Housewife	7th std	0	Hindu	joint	10	4000	kutcha	borewell	toilet	4000	incomplete	94	13	15	-1.48	-2.99	0.34	no		10.4	NAD	no		Jaundice		4 days	9 mons	first day	nil	4	upper lower
60	Manjunath	3	m	Amarnath	painter	sslc	4000	Gouramma	Housewife	illiterate	0	Hindu	nuclear	5	4000	kutcha	borewell	toilet	4000	incomplete	94	14	15	-0.81	-0.56	-0.77	yes	nail bed	13	cyst Er	yes	conjunctiva l xerosis	diarhoea		twice/month	5 mon	immediately	nil	4	upper lower
61	Bhagyashree	4	f	Rajkumar	coolie	ii puc	4000	kavitha	Housewife	sslc	0	Hindu	nuclear	5	4000	kutcha	borewell	toilet	4000	incomplete	102	15	15	-1.02	-2.03	0.29	yes	conjunctiva	9.8	NAD	no		ari	4 time	3 mon	6 mon	first day	nil	4	upper lower
62	Monica	5	f	venkatash	plumber	5th std	3000	Krishnama	Housewife	sslc	0	Hindu	3 gen	6	3000	kutcha	borewell	toilet	3000	incomplete	82	13	15	-1.36	-1.56	-0.59	yes	conjunctiva	11.2	NAD	no					1 yr	first day	nil	4	upper lower
63	Jayasurya	3	f	narashimamurthy	driver	sslc	4000	Nalini	Housewife	BA	0	Hindu	joint	6	4000	pucca	pipewater	toilet	4000	incomplete	105	15	19	-0.5	-3.43	2.13	no		9.6	NAD	no					1 yr	first day	nil	4	upper lower
64	Rakesh	4	m	Manjunath	painter	6th std	4000	Prema	Housewife	8th std	0	Hindu	nuclear	4	4000	kutcha	borewell	toilet	4000	incomplete	88	13	15	-0.68	0.4	-1.39	yes	conjunctiva	11.3	NAD	no		ari		onec in 3 month	1 yr	first day	nil	4	upper lower
65	Chetan Kun	3	m	Jagadish	hotel waiter	7th std	4000	anshika	Housewife	10th std	0	Hindu	nuclear	3	4000	semipuc	pipewater	toilet	4000	incomplete	90	13	17	-0.81	-2.18	0.57	no		11.5	NAD	no					4 mon	not breastfe	nil	4	upper lower
66	Vanitha	2.6	f	Manjunatha	farmer	ii puc	8000	gayathri	Housewife	8th std	0	Hindu	nuclear	4	8000	semipuc	pipe	toilet	8000	incomplete	90	13	15	0.04	-0.45	0.31	yes	conjunctiva	9.1	NAD	no					6 mon	first day	nil	3	lower middle
67	sanjay	3	m	somashekhar	business	sslc	8000	kalavathi	Housewife	BA	0	Hindu	3 gen	5	11000	semipuc	pipe	toilet	11000	complete	78	9.5	15	-0.81	-1.64	0.11	yes	nail bed	13.2	NAD	no					4 months	first day	nil	3	lower middle
68	Swetha	1.3	f	venkatesh	electrician	sslc	3000	Bhuvaneshwari	Housewife	sslc	0	Hindu	nuclear	4	3000	semipuc	pipe	toilet	3000	incomplete	85	12	12	-0.19	-0.06	-0.24	no		10.3	NAD	no					6 mon	first day	no	4	upper lower
69	Sanjay	2	m	Sridhar	farmer	sslc	4000	Pramila	Housewife	sslc	0	Hindu	3 gen	7	4000	kutcha	borewell	toilet	4000	incomplete	90	13	15	-0.11	-0.93	0.52	no		13	NAD	no					9 mons	first day	no	3	lower middle
70	Gokul	4	m	srinivas	driver	sslc	6000	rekha	Housewife	PUC	0	Hindu	nuclear	4	6000	semipuc	pipe	toilet	6000	incomplete	74	8	16	-1.82	-3.18	0.11	no		13.4	NAD	no					6 mon	day 2	nil	3	lower middle
71	Bhavana	2	f	sanjay	painter	sslc	4000	sumithra	Housewife	illiterate	0	Hindu	nuclear	3	4000	pucca	borewell	toilet	4000	complete	74	10	13	-3.07	-3.85	-1.28	yes	nail bed, conjunct	8.7	NAD	no					6 mon	immediately	no	4	upper lower
72	Yashwanthi	1	m	Santhosh	farmer	9th std	4500	saritha	Housewife	9th std	0	Hindu	nuclear	5	4500	pucca	borewell	toilet	4500	incomplete	83	13	18	0.33	-0.73	0.87	no		13.1	NAD	no							no	3	lower middle
73	Meghana	3	f	Late shankar	Govt employee	sslc	3000	Kanthamma	Govt employee	sslc	3000	Hindu	nuclear	3	6000	pucca	borewell	toilet	3000	complete	80	11.5	14	-0.5	-3.17	1.91	no		11.2	NAD	no							nil	3	lower middle
74	Prateeksha	3	f	Sheshadri	coolie	sslc	3000	Shobhamma	Tailor	9th std	2000	Hindu	nuclear	4	5000	semipuc	borewell	toilet	5000	incomplete	78	11.5	15	-1.48	-3.95	1.28	no		11.8	NAD	no					5mon	immediate	nil	4	upper lower
75	Vikashini	3	f	Nataraj	Police	ii puc	20000	Vinutha	Housewife	sslc	0	Hindu	nuclear	5	20000	pucca	borewell	toilet	20,000	complete	84	10.5	15	-1.48	-4.48	1.7	no		8.8	NAD	no					6mon	immediate	nil	2	upper middle
76	Moushimita	4	f	Nagaraj	tailor	7th std	4500	Narayannamma	Housewife	illiterate	0	Hindu	nuclear	5	4500	semipuc	borewell	toilet	4500	incomplete	82	11.5	15	-3.27	-4.35	-0.68	no		12.7	NAD	no					7 mon	first day	nil	4	upper lower
77	Lokesh	3	m	Manjunath	painter	sslc	5000	prema	Housewife	8th std	0	Hindu	nuclear	4	5000	kutcha	borewell	toilet	6000	incomplete	87	12	15	-1.84	-3.8	0.56	yes	nail bed	8.9	NAD	no					6 mon	first day	nil	4	upper lower
78	Chandan	1	m	Subramaniam	driver	7th std	7000	Jayanthi	tailor	sslc	3000	Hindu	nuclear	6	10000	semipuc	borewell	toilet	10000	complete	76	10	15	2.01	4.74	0.01	yes	conjunctiva	12.7	NAD	no					8 mon	immmediate	no	3	lower middle
79	Deepika	3	f	Nagaraj	tailor	7th std	6000	Nandhini	Housewife	sslc	0	Hindu	joint	7	9000	semipuc	borewell	toilet	9000	complete	87	11.9	14	-2.66	-5	0.61	yes	conjunctiva	12.4	NAD	no					7 mon	first day	nil	3	lower middle
80	Parag saif	2	m	Nawab saif	farmer	Msc	7000	Sadiya begum	Housewife	sslc	0	muslim	joint	9	10000	pucca	borewell	toilet	10000	incomplete	76	12	14	-0.19	-0.27	-0.09	yes	nail bed	11	NAD	no					7 mon	second day	no	3	lower middle
81	Venkatesh	2.6	m	Vishwanath	mechanic	7th std	2000	Nandini	Housewife	puc	0	Hindu	3 gen	10	12000	pucca	borewell	toilet	12000	complete	89	11	13	-1.01	-4.85	2.31	no		11.6	NAD	no					6 mon	immmediate	nil	3	lower middle
82	Ajay	4	m	manjunath	coolie	5th std	2000	sujatha	Housewife	10th std	0	Hindu	nuclear	3	2000	semipuc	pipe	toilet	4000	incomplete	93	11.3	15	-3.16	-3.42	-1.78	yes	conjunctiva,nail b	10.6	NAD	no							nil	4	upper lower
83	Tejashwani	4	f	Subramanyam	tailor	10th std	6000	Bhagya	Housewife	9th class	0	Hindu	nuclear	4	6000	semipuc	pipe	toilet	6000	complete	99	13	16	-2.69	-2.26	-1.96	yes	nailbed	12.6	NAD	no		ari	3 days		1 y	immediately	nil	3	lower middle
84	Charanya	4	f	Ramesh	coolie	7th std	3000	Manjula	Housewife	sslc	0	Hindu	joint	12	10000	kutcha	pipe	toilet	10000	incomplete	98	13.3	15	-1.58	-0.87	-1.58	no		8.7	NAD	no					1 y	immediately	nil	4	upper lower
85	Priyanka	4	f	Rammamurthy	driver	sslc	5000	Amudha	Housewife	5th std	0	hindu	nuclear	4	5000	semipuc	borewell	toilet	5000	complete	92	13	15	-1.41	-1.1	-1.11	yes	nailbed	13.5	NAD	no		ari			1y	immediately	nil	3	lower middle
86	Lakshmi	3 .	f	Nyanthappa	wage worker	sslc	2000	gayathri	Housewife	6th std	0	Hindu	nuclear	5	2000	semipuc	pipe	toilet	2000	incomplete	103	14.4	16	-0.5	-0.8	-0.12	no		10.5	NAD	no					1 y	first day	nil	4	upper lower
87	Kishore	3	m	Manju	coolie	puc	3000	rukmini	Housewife	3th std	0	Hindu	nuclear	5	3000	pucca	pipe	toilet	4000	complete	92	12.5	15	0.03	1.86	-1.46	no		9.9	NAD	yes	conjunctiva l xerosis				1 y	immediately	nil	4	upper lower
88	Roja	3	f	Venkatesh	coolie	puc	3000	Lakshmi	Housewife	Puc	0	Hindu	nuclear	4	3000	semipuc	pipe	toilet	3000	complete	109	18	15	-0.81	-0.8	-0.57	no		10	NAD	no					1y	immediately	nil	4	upper lower
89	Harilakshmi	5	f	chandrashekhar	driver	sslc	3000	Mangalamma	Housewife	sslc	0	Hindu	nuclear	5	3000	semipuc	pipe	toilet	3000	incomplete	103	14.4	11	-0.08	-0.09	-0.13	no		11.8	NAD	no					1y	immediately	nil	4	upper lower
90	Divya	4	f	narayanamurthy	mistry	5th std	5000	Bhavani	Housewife	8th std	0	Hindu	3 gen	5	5000	semipuc	pipe	toilet	5000	incomplete	86	10.4	16	-0.8	0.06	-1.26	yes	nailbed	12.5	NAD	no					1y	immediately	nil	4	upper lower
91	Rajit	2	m	Srinivas	Workshop	10th std	5000	Latha	Housewife	10th std	0	Hindu	nuclear	4	5000	semipuc	pipe	toilet	5000	incomplete	79	8.8	15	-1.37	-0.6	-1.52	yes	conjunctiva, nailb	12.5	NAD	no					1y	immediately	no	3	lower middle
92	Rajiv	3	m	krishnamurthy	driver	6th std	3000	Pavithramma	Housewife	8th std	0	Hindu	nuclear	4	3000	semipuc	pipe	toilet	3000	incomplete	85	12	14	-3.96	-4.61	-2.06	yes	conjunctiva, nailb	11.7	NAD	no					9 months	immediately	nil	4	upper lower
93	Badrinath	1.8	m	Naveen babu	Engineer	B.tech	10000	Hemavathi	Housewife	sslc	0	Hindu	nuclear	4	10000	pucca	pipe	toilet	10000	complete	112	15	17	0.25	-0.23	0.52	yes	nailbed	9.4	cyst Er	no		diarrhoea	15	6-7/mon	6 mon	immediately	no	2	upper middle
94	Ganesh	5 .	m	Nyantappa	wage worker	5th std	2000	Gayathri	Housewife	6th std	0	Hindu	nuclear	5	2000	semipuc	pipe	toilet	3000	incomplete	78	10	16	-1.51	0.44	-2.92	yes	nailbed, conjuncti	12	NAD	no					1y	immediately	nil	4	upper lower
95	Murali	1	m	Harinath	wage worker	sslc	3000	Varalakshmi	Housewife	sslc	0	Hindu	3 gen	5	8000	semipuc	pipe	toilet	8000	incomplete	78	7.5	14	0.33	0.95	-0.1	yes	nailbed	11.7	NAD	no					9 months	immediately	no	4	upper lower
96	Sharad	2	m	Naresh	wage worker	5th std	2000	Gangamma	Housewife	5th std	0	Hindu	nuclear	5	2000	semipuc	pipe	toilet	2000	complete	105	12	12	-4.09	-3.22	-3.68	yes	conjunctiva,nailb	12.8	NAD	no		diarrhoea	7 days	6-8/mon	1 yr	first day	no	4	upper lower
97	Dhanush	5	m	naveen	driver	8th std	3000	maniamma	Housewife	4th std	0	Hindu	nuclear	5	3000	kutcha	borewell	toilet	6000	incomplete	98	15	17	-3.22	-1.07	-4.1	no		12.2	NAD	no					1 y	first day	nil	4	upper lower
98	mishal	4	m	riyaz	fruit vendor	8th std	4300	najla	Housewife	8th std	0	muslim	joint	11	9000	kutcha	pipe	toilet	9000	incomplete	78	10	16	-0.68	-1.27	0.15	no		10.6	NAD	no					3 mon	first day	nil	4	upper lower
99	Mansoor	2	m	Asif	tailor	8th std	3000	nadia	Housewife	8th std	0	muslim	joint	9	6000	kutcha	pipe	open f	6000	incomplete	91	14	9	-1.71	-3.22	-0.1	no		12.4	ova ho	no		diarrhoea,ari		1/mon	1 y	immediately	no	4	upper lower
100	ami sultan	3	f	ansal	auto driver	4th std	4500	mumtaz	Housewife	7th std	0	muslim	nuclear	3	4500	kutcha	borewell	toilet	4500	complete	110	18	13	0.08	-1.07	0.91	no		12.6	NAD	no					6 mon	first day	nil	4	upper lower
101	Rukhya	4	f	Ayub ali	conductor	sslc	5000	nazia	Housewife	4th std	0	muslim	nuclear	5	5000	pucca	pipe	toilet	5000	incomplete	96	16	15	0.8	1.69	-0.35	no		11.3	NAD	no		thypoid	7 day		1 yr	first day	nil	4	upper lower
102	Imran	3	m	Shahid pasha	auto driver	5th std	5000	sadia	Housewife	7th std	0	muslim	joint	7	5000	pucca	pipe	toilet	5000	complete	83	8	12	0.9	-0.02	1.36	no		11.3	NAD	no		diarrhoea	4 days	1/mon	6 mon	immediately	nil	4	upper lower
103	Javed	3	m	mohmamed	unemployed	5th std	1000	Sakeena	beedi maker	illiterate	1000	muslim	nuclear	5	2000	kutcha	borewell	toilet	1000	incomplete	88	14	14	-4.6	-3.53	-4.19	yes	conjunctiva,nail b	13.2	NAD	no					1 y	first day	nil	4	upper lower
104	Afreen	4	m	Amjad	milkman	sslc	6000	rihanna	Housewife	5th std	0	muslim	nuclear	4	6000	pucca	pipe	toilet	6000	complete	102	15	16	-1.23	-3.65	1.46	no		10.4	NAD	no					6 mon	immediately	nil	4	upper lower
105	Shoiab	3.6	m	ikhar pasha	Conductor	sslc	7000	rehna	Housewife	8th std	0	muslim	nuclear	4	7000	kutcha	pipe	toilet	7000	complete	98	15	17	-0.29	0.36	-0.73	no		11.9	NAD	no					7 mon	second day	nil	4	upper lower
106	Junaid	3	m	Ameer	coolie	5th std	3000	aseena	Housewife	sslc	0	muslim	nuclear	6	3000	semipuc	pipe	toilet	3000	complete	95	11	16	0.37	0.52	0.15	no		9.6	NAD	yes	conjunctiva l xerosis	diarhhoea	3	3-4/day	1 yr	immediately	nil	4	upper lower
107	Shohail	4	m	nasir	auto driver	5th std	5000	heena	Housewife	4th std	0	muslim	nuclear	4	5000	semipuc	pipe	toilet	5000	incomplete	79	10	14	-3.16	-1.99	-3.17	no		9.7	NAD	no		diarrhoea	2	4/day	1 yr 6 mon	immediately	nil	4	upper lower
108	Usain saif	2	m	Saifulla	auto driver	7th std	5000	haseena begum	housewife	5th std	0	muslim	nuclear	4	5000	pucca	borewell	toilet	5000	complete	78	10	14	-1.71	-2.89	-0.32	no		11	NAD	no					1y	second day	no	4	upper lower
109	Ajmal	4.6	m	nawajuddin	Driver	7th std	3000	tasleema	Housewife	9th std	0	muslim	nuclear	5	3000	pucca	pipe	toilet	3000	complete	79	10	15	-4.2	-1.99	-0.25	yes	nailbed	12	NAD	no		diarrhoea	1	2-3/day	1 y	first day	nil	4	upper lower
110	Musafudin	1.9	m	mehmood	tailor	7th std	4000	sultana	Housewife	sslc	0	muslim	nuclear	7	4000	pucca	borewell	toilet	4000	complete	81	11	15	-4.45	-2.6	-4.66	yes	conjunctiva	12	NAD	no					1y	immediately	no	4	upper lower
111	Md.Maaz	3	m	Zunaid	driver	sslc	5000	gaoushia	Housewife	sslc	0	muslim	nuclear	6	5000	semipuc	pipe	toilet	5000	complete	79	11	13	-2.21	-4.07	0.25	yes	nail bed	13	NAD	no		worm infes	2 days	once/2 mons	1 y	immediately	nil	3	lower middle
112	Alfiya	1.9	f	Baseer khan	driver	7th std	3000	Ayesha	Housewife	8th std	0	muslim	nuclear	5	3000	Pucca	pipe	Toilet	3000	incomplete	81	13	13	-0.17	-2	1.16	no		10.7	NAD	no					1y	immediately	no	4	upper lower
113	Ameen taj	3	f	Amjad	auto driver	9th std	3000	amreen	Housewife	8th std	0	muslim	nuclear	6	3000	pucca	pipe	toilet	3000	incomplete	85	13	16	-0.5	-3.69	2.35	no		12.5	NAD	no		diarrhoea	2	4-5/day	1y	first day	nil	4	upper lower

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114	Seema	5	f	Baseer ahmed	conductor	5th std	3500	naushad	Housewife	5th std	0	muslim	nuclear	6	3500	pucca	pipe	toilet	5000	incomplete	99	14	16	-2.42	-5.14	1.45	no		12.1	NAD	no		diarrhoea		3-4/day	1y	second day	nil	4	upper lower
115	Khanse tasl	4.2	f	syed aleem	garage worker	sslc	4000	rajia	Housewife	7th std	0	muslim	joint	8	4000	pucca	pipe	toilet	4000	incomplete	98	15	14	-1.2	-1.17	-0.73	no		11	NAD	no					1y	immediately	nil	4	upper lower
116	Ammena	3	f	mustafaq	waiter	7th std	5000	nameera	Housewife	6th std	0	muslim	joint	7	5000	pucca	pipe	toilet	4000	complete	81	13	16	0.61	0.77	0.24	yes	nailbed	13	NAD	no		diarrhoea		2-3/day	1y6m	immediately	nil	4	upper lower
117	Chetana	2	f	babu	welding worker	sslc	4000	Harshiya	Housewife	5th std	0	Hindu	nuclear	6	4000	pucca	pipe	toilet	4000	incomplete	89	14	14	0.98	-1.68	2.5	yes	nail bed	12.2	NAD	no		diarrhoea		3-4/day	1y	immediately	delay	4	upper lower
118	Ayaan	3	m	md.nasir	auto driver	7th std	4000	mumtaz	Housewife	7th std	0	muslim	nuclear	4	4000	pucca	pipe	toilet	4000	incomplete	90	14	16	-0.2	-1.91	1.24	yes	nailbed	11.2	NAD	no		diarhoea		2-3 days	1y	immediately	nil	4	upper lower
119	Sara	3	f	Shayad haja	waiter	8th std	5000	tabassum	Housewife	8th std	0	muslim	nuclear	5	5000	pucca	pipe	toilet	5000	complete	84	12	14	0.08	-1.33	1.12	yes	conjunctiva	12.7	NAD	no		diarhoea		1-2 days	1y	immediately	nil	4	upper lower
120	Asma taj	2	f	Afjal	mechanic	8th	5000	rizwana	Housewife	7th	0	muslim	nuclear	4	5000	pucca	pipe	toilet	4500	incomplete	80	10	13	0.35	-0.75	0.98	yes	nailbed	7.1	NAD	no					1 y	immediately	no	4	upper lower
121	Md.Sufiyan	1.4	m	Riyaz	welding worker	4th std	3000	asheena	Housewife	7th	0	muslim	nuclear	4	3000	semipuc	borewell	toilet	3000	incomplete	90	15	11	-0.6	-0.39	-0.53	yes	nailbed	12.8	NAD	no					1y	immediately	delay	4	upper lower
122	Md.umeer	2. 2	m	taj khan	waiter	5th std	5000	harshiya	housewife	9th std	0	muslim	joint	9	5000	pucca	borewell	toilet	3000	incomplete	79	11	16	1.49	0.27	1.84	no		13.5	NAD	no		diarhoea		3-4/days	1y6m	first day	nil	4	upper lower
123	Mahee	3	f	samir	coolie	5th std	2000	shahida	Housewife	6th std	0	muslim	joint	7	4500	pucca	borewell	toilet	4500	complete	82	13	13	-1.85	-4.22	1.02	yes	conjunctiva	13.4	NAD	no					6m	first day	nil	4	upper lower
124	Syed	1	m	salman	coolie	9th std	3000	mansoor	housewife	10th std	0	muslim	nuclear	6	3000	pucca	pipe	toilet	3000	incomplete	76	13	14	2.76	2.64	2.14	no		11	NAD	no					6m	immediately	no	4	upper lower
125	Akshith rao	1.8	m	darshath rao	press worker	7th std	4000	gauthami	housewife	10th std	0	Hindu	nuclear	4	4000	pucca	pipe	toilet	4000	complete	82	14	14	0.96	-3.32	3.38	yes	nail bed	11	NAD	no					5m	immediately	no	4	upper lower
126	faiza	3	f	zaved	rationshop	7th std	6000	nigeer sultana	housewife	1st std	0	muslim	joint	10	6000	pucca	pipe	toilet	6000	complete	92	11.5	13	0.08	-3.43	2.89	yes	nail bed	11	NAD	no					1y	immediately	nil	3	lower middle
127	Varshini	5	f	chalapathi	coolie	3th std	2000	srilakshmi	housewife	3th std	0	Hindu	3 gen	6	3000	semipuc	pipe	toilet	3000	complete	90	12	14	-3.33	-3.66	-1.53	yes	nail bed, conjunct	12.4	NAD	no					1y	first day	nil	4	upper lower
128	Lavanya	4	f	muniyappa	coolie	5th std	3000	Bhagyashree	Housewife	5th std	0	hindu	nuclear	7	3000	semipuc	pipe	toilet	4000	complete	97	11	14	-2.21	-2.96	-0.59	yes	nail bed	13.4	NAD	no					1 y	second day	nil	4	upper lower
129	nikhil	1.3	f	manjunath	electrician	ii puc	7000	anitha	Housewife	6th std	0	hindu	nuclear	4	7000	semipuc	pipe	toilet	7000	complete	91	13.2	14	-2.61	-3.23	-0.99	yes	nail bed	11.2	NAD	no					5m	immediately	delay	3	lower middle
130	Akash	2.6	f	Ram maohan	Bank employee	puc	20000	lakshmi	Housewife	5th std	0	Hindu	3 gen	8	20000	semipuc	pipe	toilet	20000	complete	85	11	14	-0.28	0.11	-0.57	no		10.9	NAD	no					1y	immediately	nil	2	upper middle
131	Sahana	2.5	f	Late muniappa				Saraswati	tailor	6th std	4000	Hindu	nuclear	4	4000	semipuc	pipe	toilet	4000	complete	74	9	15	-1.17	-1.61	-0.4	yes	nail bed	12.1	NAD	no		worm infest	1		1y	first day	nil	4	upper lower
132	Yukti	1.9	m	Shankarnag	business	sslc	7000	prathibha	Housewife	4th std	0	hindu	nuclear	3	7000	kutcha	pipe	toilet	10000	complete	82	11.2	14	-2.47	-4.28	-0.39	yes	nail bed	9.8	NAD	no		diarrhoea	5	1-2/day	1y	immediately	no	2	upper middle
133	Vishwanath	3	m	Balaji	coolie	puc	5000	Mangalamma	Housewife	sslc	0	Hindu	nuclear	4	5000	semipuc	pipe	toilet	5000	complete	72	10	14	-2.06	-3.8	0.24	yes	nail bed	12.1	NAD	no					1y	immediately	nil	4	upper lower
134	venka gowd	1.4	m	romesh	mechanic	9th std	4000	savitha	Housewife	puc	0	Hindu	joint	11	9000	semipuc	pipe	toilet	19000	complete	101	15	15	-1	-4.13	1.42	yes	nail bed,conjuncti	9.6	NAD	no					1y6m	immediately	delay	3	lower middle
135	Ramya	5	f	venkatesh	driver	sslc	8000	Shobha	Housewife	sslc	0	Hindu	nuclear	4	8000	semipuc	pipe	toilet	6000	complete	74	10	16	-1.36	-1.77	-0.37	yes	nail bed	13.2	cyst Er	no		worm infest	1		1y	first day	nil	3	lower middle
136	venkatesh	3.2	m	Narayana	farmer	sslc	5000	Varalakshmi	Housewife	sslc	0	Hindu	joint	8	5000	semipuc	pipe	toilet	5000	complete	101	15	15	-3.21	-0.55	0.69	no		7.8	NAD	no					5 m	immediately	nil	3	lower middle
137	Lokesh	4	m	rajesh	pan shop	10th std	5000	pushpa	Housewife	9th std	0	Hindu	joint	7	5000	pucca	pipe	toilet	5000	complete	102	13.8	16	-0.68	-0.55	-0.51	yes	conjunctiva	12	NAD	no					1y	immediately	nil	3	lower middle
138	Kiran	5	m	subramaniam	business	7th std	3000	munniamma	Housewife	3rd std	0	Hindu	3 gen	6	3000	semipuc	pipe	toilet	3000	incomplete	103	14	15	-2.15	-1.72	-1.77	no		9.8	NAD	no					9m	first day	nil	3	lower middle
139	Balaji	3	m	narayanaswamy	coolie	sslc	3000	sharadamma	Housewife	8th std	0	Hindu	nuclear	4	3000	pucca	pipe	toilet	3000	complete	74	10	16	-0.2	1.86	-1.81	no		11.5	NAD	no					1y 6 m	first day	nil	4	upper lower
140	Zaheer	4.7	m	Late shayad				Nasima	beedi maker	5th std	3000	muslim	nuclear	4	3000	pucca	pipe	toilet	3000	incomplete	94	14	15	-4.25	-0.87	0.69	yes	nailbed	11.6	NAD	no		diarhoea		3-4/day	1y6m	first day	nil	4	upper lower
141	Hamim	3.2	m	sohail	driver	ii puc	7000	nazia	Housewife	ii puc	0	muslim	joint	5	11000	semipuc	pipe	toilet	11000	complete	77	10	16	-0.43	-0.95	0.16	yes	nailbed	12.1	ova ho	no		diarrhoea		2-3/day	5m	second day	nil	3	lower middle
142	Usha	1	f	Amar	business	10th std	4000	Bhagya	housewife	10th std	0	hindu	nuclear	3	4000	kutcha	pipe	toilet	4000	complete	82	9.6	15	0.9	1.16	0.55	no		10.7	NAD	no		ari	3	2/mon	9m	first day	no	3	lower middle
143	Deepthi	2.6	f	kumar	coolie	sslc	2000	roopa	Housewife	5th std	0	Hindu	nuclear	5	2000	semipuc	pipe	toilet	3000	complete	74	8.3	14	-2.48	-2.68	-1.21	no		11.2	NAD	no		diarrhoea	3	6/day	9m	immediately	nil	4	upper lower
144	Ganesh	1.1	m	venkataraman	coolie	3rd std	2000	nagamma	Housewife	sslc	0	Hindu	nuclear	5	2000	kutcha	pipe	toilet	2000	incomplete	87	9	14	-1.62	-1.3	-1.4	no		11	NAD	no		worm infes	2 days	once/2 mons	6m	immediately	no	4	upper lower
145	Rani	3	f	Bhaskar	driver	ii puc	4000	vishala	housewife	sslc	0	Hindu	joint	8	4000	pucca	pipe	toilet	4000	complete	72	9.5	15	-1.57	-2.12	0.99	no		12.5	NAD	no					1y	immediately	nil	3	lower middle
146	Akhshaya	2.6	f	ramkrishna	auto driver	5th std	7000	pooja	coolie	puc	2000	Hindu	joint	5	9000	kutcha	pipe	toilet	9000	incomplete	83	11	15	-2.57	-5.46	0.95	yes	conjunctiva	11.3	NAD	no					1y	immediately	nil	4	upper lower
147	Rakshita	1.9	f	rammana	coolie	sslc	3500	aarthi	Housewife	sslc	0	Hindu	nuclear	4	3500	kutcha	borewell	toilet	3500	incomplete	78	9.4	16	-0.17	-0.74	0.27	yes	nailbed	9.7	NAD	no					6m	first day	no	4	upper lower
148	yeshant	4	m	mukund kumar	coolie	4th std	6000	jayalakshmi	coolie	sslc	2000	Hindu	nuclear	3	8000	semi-pu	pipe	toilets	7000	complete	87	11.3	16	-4.25	-2.3	-1.01	yes	nail bed		NAD	yes	conjunctiva xerosis,	ari,worm infestation			1y	immediately	nil	4	upper lower
149	shruti	3	f	shiva	coolie	8th std	4000	subhasini	Housewife	puc	0	hindu	nuclear	5	4000	semi-pu	pipe	toilets	4000	incomplete	80	9.3	15	-1.63	-2.12	-0.58	yes	nail bed		cyst Er	yes	conjunctiva xerosis,	diarrhoea			1 y	immediately	nil	4	upper lower
150	chetan	3	f	rajesh babu	coolie	sslc	3000	jayalakshmi	anganwadi wor	sslc	0	Hindu	nuclear	4	3000	semi-pu	pipe	toilets	5000	incomplete	73	7.8	15	-3.26	-3.95	-1.09	yes	conjunctiva,palm,nail be		NAD	yes	bitot spots				1	immediately	nil	4	upper lower
151	Shayana	4	f	chandrappa	coolie	BA	3000	Sujatha	Housewife	puc	0	hindu	nuclear	7	3000	semi-pu	pipe	toilets	4000	incomplete	68	8	12	-5.14	-0.54	-1.5	yes	conjunctiva, palm,nail be		NAD	yes	conjunctiva xerosis,				1	immediately	nil	4	upper lower
152	Abhilasha	3	m	vinod	coolie	sslc	7000	Pavithramma	coolie	puc	0	Hindu	nuclear	3	7000	puca	borewell	toilets	7000	incomplete	94	12	15	-4.6	-0.87	-0.19	yes	conjunctiva,nail bed		NAD	no					1.5	immediately	nil	4	upper lower
153	Nithya	4	f	nagesh	engineer	ii puc	15000	veena kumari	Housewife	sslc	0	Hindu	joint	8	25000	pucca	borewell	toilets	25000	complete	80	10	16	-1.49	-0.88	-1.46	yes	nail bed		NAD	no					6 mon	immediately	nil	2	upper middle
154	Nitin	1	f	manju	coolie	sslc	3000	sujatha	coolie	sslc	0	hindu	nuclear	7	3000	semi-pu	pipe	toilets	3000	incomplete	71	9.5	14	0.9	2.33	-0.1	yes	conjunctiva,nail bed		ova ho	yes	conjunctiva l xerosis,	diarrhoea			4 mon	immediately	no	4	upper lower
155	Murali	4	m	murari	engineer	sslc	7000	Malathi	Housewife	puc	0	hindu	nuclear	5	7000	pucca	borewell	toilets	7000	incomplete	82.5	10.5	16	-4.18	-2.03	0.91	no			NAD	no					6 mon	immediately	nil	2	upper middle
156	Bhargavi	3	f	Shivakumar	artist	B.A	5000	Anuradha	Housewife	BA	0	Hindu	nuclear	4	5000	pucca	pipe	toilets	5000	incomplete	94	13	16	-2.24	-3.3	-0.3	yes	conjunctival		NAD	no					3	immediately	nil	3	lower middle
157	Amrutha	4	f	mariyappa	coolie	sslc	6000	Parvathi	coolie	sslc	0	Hindu	nuclear	3	6000	semi-pu	pipe	toilets	9000	incomplete	82	10	17	-1.58	-2.03	-0.54	yes	conjunctiva		NAD	no					2.5	immediately	nil	4	upper lower
158	Madhusuda	2	m	murthy	coolie	sslc	6000	deepa	Housewife	5th std	0	Hindu	joint	6	6000	kutcha	pipe	toilets	6000	incomplete	98	14.5	14	-1.71	-1.91	-0.98	yes	conjunctiva		NAD	no					1	immediately	no	4	upper lower
159	Likitha	3	f	Hanumanthappa	medical college	sslc	3000	geetha	coolie	sslc	3000	hindu	joint	15	9000	pucca	pipe	toilets	9000	incomplete	76	10.4	16	0.35	0.77	-0.13	yes	conjunctiva,palm,nail be		NAD	yes	conjunctiva l xerosis				2.5	immediately	nil	3	lower middle
160	kavitha	3	m	Manjunath	painter	7th std	7000	mamtha	Housewife	ii puc	0	hindu	nuclear	3	7000	pucca	borewell	toilets	5000	incomplete	75	10.5	15	-2.68	-5.42	0.66	no		10.1	NAD	no					1	immediately	nil	4	upper lower
161	Akthar	4	f	Jagadeesh	business	BA	25000	Shashikala	Housewife	illiterate	0	hindu	nuclear	3	25000	pucca	borewell	toilets	7000	incomplete	96	16	15	0.8	1.69	-0.35	no		10.5	NAD	no					1 y	immediately	nil	2	upper middle
162	Yeshwani	3	m	nataraj	mechanic	puc	5000	Bhagyalakshmi	housewife	BA	0	hindu	joint	4	5000	kutcha	borewell	toilets	5000	incomplete	79	9.5	16	-3.81	-1.68	1.9	yes	conjunctiva,nail bed		NAD	yes	conjunctiva l xerosis	diarhhoea	once a month		9 mon	immediately	nil	3	lower middle
163	Sri eshwar	2	f	Krishnamurthy	painter	sslc	5000	mamtha	housewife	MA	0	Hindu	nuclear	3	5000	pucca	borewell	toilets	5000	incomplete	87	12	15	-1.57	-2.3	-0.45	yes	conjunctiva		NAD	no					1.5	immediately	delay	4	upper lower
164	Priyardarshi	4	f	Narayanswamy	attender	BA	3000	Sugandha	housewife	sslc	0	Hindu	nuclear	5	3000	pucca	pipe	toilets	4000	incomplete	94	12	16	-2.21	-3.65	0.1	yes	conjunctiva,nail bed		NAD	no					1	immediately	nil	4	upper lower
165	Lakshmi	4	f	Kesaremurthy	coolie	illiterate	6000	Manjula	housewife	sslc	0	Hindu	nuclear	4	6000	kutcha	pipe	toilets	6000	complete	100	13.9	15	-2.21	-2.03	-1.46	yes	conjunctiva,nail bed		NAD	yes	conjunctiva l xerosis				2.5	immediately	nil	4	upper lower
166	Nanditha	4.9	f	nagaraj	coolie	illiterate	3000	Rathnamma	housewife	5th std	0	hindu	nuclear	4	3000	pucca	borewell	toilets	3000	incomplete	88	10.5	16	-1.84	-1.87	-1.02	yes	conjunctiva,palm,nail be		NAD	no					2	immediately	nil	4	upper lower
167	Tejashwini	3.2	f	thimmayaraju	coolie	sslc	3000	bhagyashree	housewife	sslc	0	Hindu	nuclear	4	3000	pucca	borewell	toilets	4000	incomplete	80	11.2	14	-2.71	-2.56	-1.68	yes	conjunctiva,nail bed		NAD	no					2	immediately	nil	4	upper lower
168	Eshan	2.9	f	manjunath	autodriver	7th std	2500	chandrakala	housewife	sslc	0	hindu	nuclear	4	2500	kutcha	borewell	toilets	2000	incomplete	72	8.4	17	-1.57	-3.78	0.99	yes	conjunctiva,nail bed		cyst Er	no		diarrhoea,ari			1.4	first day	nil	4	upper lower
169	Bhagya	3	f	prakash	coolie	sslc	3000	Bhagya	coolie	sslc	2500	hindu	nuclear	3	5500	semi-pu	pipe	toilets	4000	complete	86	12	14	-4.02	-3.8	-0.4	yes	conjunctival xerosis		NAD	no					1	immediately	nil	4	upper lower
170	Ketan kuma	3.6	f	srinivas	coolie	5th std	6000	geetha	housewife	5th std	0	Hindu	nuclear	5	6000	kucha	pipe	toilets	6000	complete	74	10.5	14	-1.82	-3.36	0.34	yes	nail bed		NAD	yes	conjunctiva l				1	immediately	nil	4	upper lower
171	Harsha	1.7	m	anand kumar	coolie	sslc	5000	shilpa	coolie	sslc	0	Hindu	joint	11	10000	semi-pu	pipe	toilets	10000	complete	89	12.6	16	-0.75	-3.73	1.44	yes	conjunctiva,nail bed		NAD	yes	conjunctiva l xerosis,				1	immediately	no	4	upper lower

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172	Charan	3.2	m	govindappa	coolie	sslc	4000	manjula	coolie	sslc	0	Hindu	joint	4	6000	semi-pu	pipe	toilets	6000	incomplete	97	13	16	-1.07	-1.91	-0.05	yes	conjunctiva,nail bed		cyst Er	yes	conjunctiva l xerosis	diarrhoea			1	immediately	nil	4	upper lower
173	Shravati	4	f	lakshman	autodriver	sslc	6000	lakshmi	housewife	5th std	0	Hindu	nuclear	5	6000	semi-pu	pipe	toilets	5000	complete	83	10.2	15	-1.58	-1.33	-1.16	no		10.1	NAD	no					1	immediately	nil	3	lower middle
174	priya	3	f	selvaraj	driver	graduate	6000	asharani	housewife	sslc	0	Hindu	nuclear	5	6000	semi-pu	pipe	toilets	6000	complete	91	11	16	-2.49	-3.17	-0.76	no		11.3	NAD	no		diarrhoea			1.5	first day	nil	3	lower middle
175	Girish	3	m	venkataraj	coolie	sslc	4000	nalini	housewife	sslc	0	Hindu	3 gen	16	15000	pucca	pipe	toilets	15000	incomplete	99	12	13	-2.21	-1.37	-2.27	no		12.9	NAD	no		ari			6mon	first day	nil	3	lower middle
176	bindusana	4	f	munniswamy	coolie	3th std	3000	sarju	housewife	sslc	0	Hindu	nuclear	4	3000	semi-pu	borewell	toilets	3000	incomplete	94	11.5	14	-2.21	-0.87	-2.53	yes	conjunctica,nail bed		NAD	yes	conjunctiva l xerosis	ari			5mon	first day	nil	4	upper lower
177	Tanushree	5	f	balaji	coolie	sslc	3000	anjali	housewife	sslc	0	Hindu	3 gen	5	3000	kutcha	borewell	toilets	3000	complete	77	9	16	-3.33	-3.24	-1.97	no		10.2	NAD	no					1	first day	nil	4	upper lower
178	Manasa	1. 3	f	ravichandra	painter	sslc	4000	rukmini	teacher	Ded	4000	hindu	nuclear	4	8000	pucca	borewell	toilets	8000	complete	88	15	13	-0.64	-0.42	-0.63	no		8.7	NAD	no					1yr	first day	no	4	upper lower
179	Chetan	5.2	m	chandrashekhar	coolie	7th std	3000	lakshamma	coolie	8th std	1000	Hindu	nuclear	6	4000	kutcha	borewell	toilets	4000	complete	105	15.5	15	-1.36	-0.93	-1.24	yes	conjunctiva,nail b	11.9	NAD	no					1 yr	first day	nil	4	upper lower
180	Spandana	4.2	f	chandrashekhar	coolie	8th std	3000	rathnamma	coolie	3rd std	2100	Hindu	nuclear	5	5100	kutcha	borewell	toilets	4000	incomplete	79	10.5	14	-0.69	-3.67	2.28	no		11.6	NAD	no		diarrhoea	once a month		2 y	first day	nil	4	upper lower
181	Divya	5.2	f	manjunath	coolie	3rd std	4000	renuka	Housewife	9th	0	Hindu	nuclear	5	4000	semi-pu	pipe	toilets	7000	incomplete	82	11	13	-1.85	-3.43	0.34	no		12.6	NAD	no		ari			1 yr	first day	nil	4	upper lower
182	Lalitha	5	f	narayanswamy	lawyer	Llb	7500	manjula	Housewife	illiterate	0	Hindu	3 gen	8	7500	kutcha	borewell	toilets	5000	complete	80	9	14	-1.12	-0.93	-0.87	yes	conjunctiva,nail b	11.4	ova ho	no		diarrhoea	once a month		1 yr	first day	nil	2	upper middle
183	gauthami	1.8	f	srinath	coolie	sslc	5000	soumya	Housewife	8th std	0	Hindu	joint	5	5000	semi-pu	pipe	toilets	5000	incomplete	79	10	12	-0.36	-1.68	0.66	no		6.3	NAD	no					8 mon	first day	no	4	upper lower
184	anushka	3	f	nagaraj	teacher	B.ed	7000	rajeshwari	teacher	B.ed	5000	Hindu	joint	6	12000	semi-pu	pipe	toilets	9000	incomplete	100	14	14	-1.85	-3.43	0.34	no		11.8	NAD	no					6 mon	first day	nil	2	upper middle
185	Chandrasek	3	f	nandish	painter	9th std	6000	padmavathi	Housewife	illiterate	0	Hindu	nuclear	4	6000	semi-pu	pipe	toilets	6000	incomplete	76	10	13	-3.51	-3.95	-1.47	no		13.2	NAD	no		diarrhoea	2 days,6 times,		1 y	first day	nil	4	upper lower
186	Warshid ku	2	m	ramachandra	coolie	sslc	4000	roopa	Housewife	illiterate	0	Hindu	3 gen	16	20000	semi-pu	pipe	toilets	20000	incomplete	108	15	15	-1.71	-2.89	-0.32	yes	conjunctiva,nail b	11.4	NAD	yes	conjunctiva l xerosis	ari			5 mon	first day	no	2	upper middle
187	Prajukta	5	f	vasanth kumar	coolie	sslc	4000	sukhanya	Housewife	illiterate	0	Hindu	nuclear	6	4000	semi-pu	pipe	toilets	5000	incomplete	79	9	16	-1.86	-1.98	-0.94	yes	conjunctiva	13.3	NAD	no					7 mon	first day	nil	4	upper lower
188	Amulya	2	f	venkatariya	coolie	sslc	4000	nalini	Housewife	sslc	0	Hindu	3 gen	16	15000	pucca	pipe	toilets	15000	incomplete	95	13	15	-1.14	-3.23	0.76	no		9.9	NAD	yes	conjunctiva l xerosis	diarrhoea,ari			5 mon	first day	no	3	lower middle
189	Ganesh	5	m	shivappa	Hotel manager	BA	4000	manju	Housewife	5th std	0	Hindu	nuclear	5	4000	semi-pu	pipe	toilets	4000	incomplete	91	14	15	-1.51	-0.42	-2.05	no		12	NAD	no					5yr	first day	nil	2	upper middle
190	Gagan	1.5	m	arun kumar	painter	sslc	6000	pallavi	Housewife	ii puc	0	Hindu	3 gen	3	6000	pucca	pipe	toilet	6000	incomplete	93	12.8	13	-1.75	-1.21	-1.62	yes	nail bed	8.2	NAD	no					1yr	immediately	no	4	upper lower
191	neelam	5	m	ramappa	coolie	7th std	5000	mary	Housewife	illiterate	0	Hindu	nuclear	6	5000	kutcha	pipe	toilets	5000	incomplete	91	13.2	14	-2.61	-3.23	-0.99	no		11	cyst Er	no		diarrhoea	once a month		1.5	immediately	nil	4	upper lower
192	dikshit	4	m	gopal	coolie	3th std	4000	aruna	Housewife	illiterate	0	Hindu	nuclear	4	4000	semi-pu	pipe	toilets	4000	incomplete	78	9	14	-1.23	-2.94	0.8	yes	conjunctiva	9.1	NAD	no					1	first day	nil	4	upper lower
193	karthik	3.6	m	yellappaswamy	coolie	sslc	4000	gowramma	Housewife	4th std	0	Hindu	nuclear	5	4000	semi-pu	pipe	toilets	4000	complete	104	15.5	13	-1.57	-1.89	-0.75	yes	conjunctiva,nail b	12.1	NAD	yes	conjunctiva l	diarrhoea,ari, worm infestation			2	immediately	nil	4	upper lower
194	anushree	2	f	ramakrishna	auto driver	5th std	4000	poojalakshmi	Housewife	5th std	0	Hindu	nuclear	4	4000	semi-pu	pipe	toilets	14000	incomplete	75	9.5	16	1.1	1.42	0.41	yes	conjunctiva,palm	11.1	NAD	yes	conjunctiva l	diarrhoea,ari, worm infestation			2	immediately	no	4	upper lower
195	shankar	2	m	narashimappa	coolie	sslc	3000	renukha	Housewife	3th std	0	Hindu	nuclear	4	3000	semi-pu	pipe	toilet	3000	complete	109	16.5	14	-2.64	-3.22	-1.39	yes	conjunctiva,palm	9.9	NAD	yes	conjunctiva l xerosis	diarrhoea			2	immediately	no	4	upper lower
196	Bhavani	5	f	punnaswamy	painter	sslc	3000	narayanamma	Housewife	5th std	0	Hindu	nuclear	6	3000	semi-pu	pipe	toilets	3000	complete	90	12	17	-1.12	-1.14	-0.65	yes	conjunctiva,nail b	13.1	NAD	no		diarrhoea,ari			2	immediately	nil	4	upper lower
197	Sudheer	1.4	m	manjunath	coolie	puc	6000	swathi	Housewife	5th std	0	Hindu	joint	6	6000	semi-pu	pipe	toilets	6000	complete	82	10.5	16	-1.06	-2.29	0	yes	conjunctiva	10.4	ova ho	no		diarrhoea			5 mon	immediately	delay	4	upper lower
198	Swetha	2.5	f	sridhar	coolie	sslc	2000	mamtha	housewife	sslc	0	Hindu	nuclear	5	2000	semi-pu	pipe	toilets	2000	complete	82	10	17	1.99	5.19	-1.07	yes	conjunctiva,nail b	11.8	NAD	yes	conjunctiva l xerosis	diarrhoea,ari			1	immediately	nil	4	upper lower
199	yeswanth	5	m	yellapa	painter	7th std	4000	Gangamma	Housewife	5th std	0	Hindu	joint	5	4000	semi-pu	pipe	toilets	3000	complete	102	14.6	15	-3.22	-4.31	-0.9	no		12.6	NAD	no		diarrhoea			1.5	immediately	nil	4	upper lower
200	chandana	2	f	nagaraj	painter	9th std	2000	muniamma	housewife	sslc	0	Hindu	nuclear	4	2000	semi-pu	pipe	toilets	2000	complete	98	14.2	15	-0.73	-1.37	-0.01	yes	conjunctiva,nail b	9.3	NAD	yes	conjunctiva l xerosis				10 mon	immediately	no	4	upper lower
201	mohit	2.6	m	manju	painter	bsc	6000	nandhini	housewife	sslc	0	Hindu	nuclear	4	6000	semi-pu	pipe	toilet	4000	complete	95	13	15	-2.56	-3.12	-1.15	yes	conjunctiva,palm	11.5	NAD	yes	conjunctiva l xerosis	diarrhoea			2	immediately	nil	3	lower middle
202	nitin	5	m	venkataraman	coolie	sslc	4000	nagamma	coolie	sslc	3000	Hindu	nuclear	4	7000	semi-pu	pipe	toilet	7000	complete	79	12	16	-1.71	-1.72	-1.06	yes	conjunctiva,nail b	12.2	NAD	yes	conjunctiva l xerosis	diarrhoea, ari			1.5	immediately	nil	4	upper lower
203	nivedita	3	f	murthy	coolie	sslc	3000	Shashikala	housewife	sslc	0	hindu	nuclear	4	3000	semi-pu	pipe	toilet	3000	complete	104	16	16	0.19	0.77	-0.36	yes	conjunctiva	13.2	NAD	no		diarrhoea			1	immediately	nil	4	upper lower
204	naina	4	f	murthy	coolie	sslc	3000	Shashikala	Housewife	sslc	0	hindu	nuclear	4	4000	semi-pu	pipe	toilet	4000	incomplete	77	10.2	16	-1.58	-1.79	-0.75	yes	conjunctiva	8.4	NAD	yes	conjunctiva l xerosis	diarrhoea,ari			1	immediately	nil	4	upper lower
205	Dhanushakh	2	f	shankar	factory worker	ii puc	5000	yashodha	Housewife	sslc	0	Hindu	nuclear	4	5000	semi-pu	pipe	toilets	2000	complete	96	12	17	0.35	-2.3	2.08	yes	conjunctiva,nail b	12.5	NAD	yes	conjunctiva l xerosis				10 mon	immediately	no	3	lower middle
206	shashikanth	3.2	m	gopinath	auto driver	sslc	4000	neleema	coolie	sslc	3000	Hindu	nuclear	4	7000	semi-pu	pipe	toilets	7000	incomplete	72	8	16	0.66	1.67	-0.39	yes	conjunctiva, nail	13	NAD	yes	conjunctiva l xerosis	diarrhoea			1.5	immediately	nil	3	lower middle
207	mahanti	1.5	f	ranganath	petrol bunk worl	ii puc	3000	manjula	Housewife	b.ed	0	hindu	nuclear	3	3000	semi-pu	pipe	toilets	3000	incomplete	78	91	15	-0.03	-1.28	0.76	yes	conjunctiva,nail b	11.4	NAD	yes	conjunctiva l xerosis				1	immediately	no	4	upper lower
208	yogesh	5	m	ravichandra	painter	sslc	2500	rukmini	teacher	d.ed	4000	Hindu	nuclear	4	6500	pucca	borewell	toilets	5000	incomplete	78	9	16	-3.22	-3.01	-2.24	yes	conjunctiva	11.2	NAD	no					1	first day	nil	4	upper lower
209	sneha	1	f	chandrshekhar	coolie	7th std	3000	lakshmamma	coolie	8th std	1000	Hindu	nuclear	6	4000	kutcha	borewell	toilets	4000	complete	87	9.5	13	-0.92	-0.78	-0.77	no		12.6	NAD	no		diarrhoea	thrice a month		6 mon	first day	delay	4	upper lower
210	Raghav	2.5	m	Krishnamurthy	housewife	sslc	5000	Pavithramma	Housewife	sslc	0	Hindu	nuclear	4	5000	pucca	pipe	toilet	5000	complete	96	14.4	14	-2.56	-4.09	-1.15	no		12.7	NAD	no		ari	5-6 /month		6 mon	first day	nil	4	upper lower
211	Sudhir	2.9	m	Muniraju	coolie	illeterate	5000	asharani	Housewife	10th std	0	Hindu	nuclear	5	5000	kucha	pipe	toilet	5000	complete	107	11	15	-3.72	-4.74	-1.55	yes	palm,nail bed	9.8	NAD	no		dairrhoea,ar	5-6/ month,3-4/mon		5 mon	first day	nil	4	upper lower
212	Anshu	3	f	ashok	business	12th std	8000	saraswathi	Housewife	8th std	0	Hindu	nuclear	4	8000	pucca	pipe	toilet	8000	complete	94	14	15	-3.09	-2.12	-2.64	no		9.8	NAD	no		diar,ari	2-3/mon,4-5/mon		6 mon	first day	nil	3	lower middle
213	Gayathri	3	f	Chinnaswamy	housewife	sslc	6000	kantha	Housewife	8th std	0	Hindu	joint	6	6000	pucca	pipe	toilet	6000	complete	94	13	17	0.3	0.25	0.2	no		10.6	NAD	no		diarrhoea,ar	2-3/mon,5-6/mon		5 mon	first day	nil	3	lower middle
214	Mahi	5	f	Md,Ahmed	coolie	4th std	3000	Shareen taj	Housewife	9th std	0	muslim	nuclear	6	3000	semi-pu	pipe	open f	3000	complete	82	9	14	-3.62	-0.51	-0.77	yes	conjunctiva,nail b	12.1	NAD	no		diarrhoea,ar	5-6.mon,1-2/mon		6 mon	first day	nil	4	upper lower
215	Shahida	4.3	f	taj pasha	electrician	4th std	4000	nagma taj	Housewife	7th std	0	muslim	joint	6	4000	pucca	pipe	toilet	3000	complete	84	8.2	16	-1.29	-2.44	0.29	yes	nail bed	11	NAD	no		diarrhoea,ar	2-3/mon,5-6 mon		4 mons	first day	nil	4	upper lower
216	Tayeeb kha	5	m	tauseed khan	painter	8th std	4000	khumeeda	Housewife	illiterate	0	muslim	nuclear	4	4000	semi-pu	pipe	toilet	2000	complete	82	10	17	-2.61	-3.44	-0.77	yes	conjunctiva,nail b	11.2	NAD	no		diarhoea	4-5/mon,10/mon		6 mon	first day	nil	4	upper lower
217	Nazeen ahm	2.3	m	Ahmed	driver	sslc	5000	Mubaraka	Housewife	8th std	0	muslim	nuclear	5	5000	semi-pu	pipe	toilet	5000	complete	92	12.5	15	-3.07	-2.48	-2.49	yes	conjunctiva,palm	10.1	cyst Er	no		diarrhoea	15 days, 2-3/mon		5 mon	first day	nil	3	lower middle
218	Fateema	3	f	amjad	tailor	illiterate	3000	shameena	housewife	sslc	0	muslim	nuclear	4	3000	semi-pu	pipe	toilet	3000	complete	90	12	13	-4.18	-2.9	-3.6	yes	conjunctiva	12.5	NAD	no		diarrhoea			1	immediately	nil	4	upper lower
219	Jabin	3	m	nawaz pasha	fruit vendor	7th std	4000	najiya sultana	Housewife	4th std	0	muslim	nuclear	5	4000	semi-pu	pipe	toilet	3000	complete	86	13.3	14	-3.01	-3.8	-1.15	yes	palm,nail bed	9.9	cyst Er	no		diarhoea	5-6/mon,		6 mon	fifth day	nil	4	upper lower
220	Ayan	3	m	mubarak	business	7th std	4000	chandani	Housewife	7th	0	muslim	nuclear	5	4000	pucca	pipe	toilet	5000	complete	107	15	16	-1.14	-1.1	-0.83	yes	palm,nail bed	13	NAD	no					1	immediately	nil	3	lower middle
221	Tarun	3	m	venkatesh	dhobi	sslc	3000	lakshmi	dhobi	8th std	2000	hindu	nuclear	5	5000	pucca	pipe	toilet	3000	complete	102	13	14	-1.48	-1.64	-0.9	yes	conjunctica,nail b	12.3	NAD	yes	conjunctiva l xerosis	ari	1 day, 1-2/mon		6 mon	first day	nil	4	upper lower
222	yehdina	4	m	nataraj	nathulla	illiterate	4000	Nisha khanum	Housewife	7th std	0	muslim	nuclear	4	4000	semi-pu	pipe	toilet	4000	complete	78	12.2	17	-1.64	-4.13	1.33	no		10	NAD	no		ari	5-6/mon		4 mon	first day	nil	4	upper lower
223	Suhana	4.5	f	nazeen baig	fruit vendor	illiterate	1500	sutura	Housewife	8th std	0	muslim	joint	8	1500	pucca	pipe	toilet	1500	incomplete	99	14.2	16	-0.96	0.18	-1.69	yes	nail bed	12.8	NAD	no		ari	3 days,1-2/mon		1.6	immediately	nil	5	lower
224	salyapuneey	4.3	f	venkatesh	milk vendor	sslc	5000	sridevi	Housewife	sslc	0	hindu	joint	6	5000	pucca	pipe	toilet	5000	complete	76	9.1	16	-1.85	-0.64	-2.23	no		13	NAD	no		diarrhoea,ar	2 days 2-3/mon, 3 d		6 mon	first day	nil	4	upper lower
225	Chinmayee	1.1	f	Krishnamurthy	painter	sslc	4000	nagalakhsmi	Housewife	sslc	0	Hindu	nuclear	8	4000	semi-pu	pipe	toilets	2000	complete	83	10.6	17	2.22	0.96	2.45	yes	conjunctiva,nail b	10.3	NAD	yes	conjunctiva l xerosis				10 mon	immediately	no	4	upper lower
226	Bhavana	5	f	chandrappa	coolie	puc	1000	sujatha	Housewife	sslc	0	Hindu	joint	7	5000	semi-pu	pipe	toilets	5000	incomplete	91	12.2	16	-1.76	-2.19	-0.57	yes	conjunctiva	13.1	NAD	no					7 mon	first day	nil	4	upper lower
227	Harshid	1.7	m	santhosh	painter	puc	3000	renuka	Housewife	10th std	0	Hindu	joint	6	6000	pucca	pipe	toilet	6000	incomplete	94	16.1	13	-2.03	-3.02	-0.78	yes	nail bed	11.4	NAD	no					1yr	immediately	no	3	lower middle
228	Keerthana	3.2	f	ravikumar	painter	puc	6000	nagamma	Housewife	7th std	0	Hindu	nuclear	5	6000	semipuc	borewell	toilet	4000	incomplete	72	9.9	15	-2.4	-3.5	-0.32	yes	nail bed	13.6	NAD	no							nil	3	lower middle
229	Sudharshini	4	f	gopala	electrician	6th std	2000	nandhini	Housewife	sslc	0	Hindu	nuclear	3	2000	semipuc	pipe	toilet	4000	complete	89	13.2	14	-2.08	-2.72	-0.63	yes	nail bed	11.8	NAD	no					1 y	second day	nil	4	upper lower

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230	Gautham	3	m	suresh	auto driver	sslc	3000	rabha	Housewife	sslc	0	Hindu	joint	12	5000	pucca	pipe	toilet	5000	complete	84	9.1	12	0.95	-0.56	1.85	no		13.7	ova ho	no		diarrhoea	4 days	1/mon	6 mon	immediately	nil	3	lower middle
231	Chandan	4	m	rajeshbabu	coolie	sslc	2000	jayalakshmi	coolie	sslc	0	Hindu	nuclear	5	2000	pucca	borewell	toilets	7000	incomplete	83	9.8	16	-3.91	-0.56	1.11	no		9.4	NAD	no					6 mon	immediately	nil	4	upper lower
232	Sanjana	2	f	Ramchandra	coolie	5th std	6000	manjula	Housewife	5th std	0	Hindu	nuclear	5	6000	semipuc	pipe	toilet	8000	incomplete	93	13.2	15	1.1	0.8	0.85	yes	conjunctiva	10.5	NAD	no					6 mon	first day	no	4	upper lower
233	hema	2	f	venkatesh	painter	sslc	21000	lalita	Housewife	II PUC	0	Hindu	nuclear	4	21000	semi-pu	pipe	toilet	5000	complete	71	7.9	15	-1.94	-0.75	-2.18	yes	conjunctiva,palm	12.7	NAD	no		diarrhoea	15 days, 2-3/mon		5 mon	first day	no	2	upper middle
234	Vamsi	2	m	Lakshman	driver	sslc	7000	Latha	Housewife	II PUC	0	Hindu	joint	8	3000	semipuc	pipe	toilet	3000	complete	91	11.3	14	-1.89	-1.58	-1.48	no		12.4	cyst Er	no		diarrhoea	3	6/day	9m	immediately	no	4	upper lower
235	Lakshmi	4	f	nagaraj	business	sslc	4000	bhagyalakshmi	coolie	sslc	2000	Hindu	joint	6	10000	semi-pu	pipe	toilets	10000	incomplete	100	13.6	17	-1.46	-2.26	-0.16	yes	conjunctiva	5.7	NAD	no					2.5	immediately	nil	3	lower middle
236	Dhanushree	4	f	umesh	embroidery wor	bsc	3000	nagamani	coolie	8th std	2500	Hindu	nuclear	5	5500	semi-pu	pipe	toilets	4500	incomplete	82	11.2	12	-5.07	-0.51	-0.83	yes	conjunctiva, palm	12.1	NAD	yes	conjunctiva xerosis,				1	immediately	nil	3	lower middle
237	keerthana	4	m	anand	factory worker	5th std	3000	mary	Housewife	sslc	0	christian	joint	6	5000	pucca	borewell	toilet	5000	incomplete	94	13.2	14	-2.96	-2.94	-1.91	yes	conjunctiva	9	NAD	yes	conjunctiva l xerosis	Ari		once a month	1 yr	first day	nil	4	upper lower
238	Vinay kuma	5	m	manjunath	auto driver	9th std	7000	lakshmi	Housewife	ii puc	0	Hindu	nuclear	5	7000	semipuc	pipe	toilet	3000	incomplete	93	12.4	15	-2.26	-2.15	-1.51	no		11.9	NAD	no					9m	first day	nil	4	upper lower
239	Yamuna	3	f	kushalaapa	painter	sslc	5000	shyamala	Housewife	sslc	0	Hindu	nuclear	4	5000	semipuc	borewell	toilet	5000	incomplete	91	10.5	15	-1.7	-3.43	0.54	no		11.6	NAD	no					5mon	immmediate	nil	3	lower middle
240	kriti	3.1	f	eshwaar	advocate	B.A.llb	23000	madhumati	Housewife	sslc	0	Hindu	joint	8	23000	semi-pu	pipe	toilet	4000	incomplete	90	10.4	16	-0.5	-0.48	-0.37	yes	conjunctiva	12.8	cyst Er	yes	conjunctiva l xerosis	diarrhoea,ari			1	immediately	nil	1	upper
241	padma	4	f	gangadhar	coolie	sslc	3000	amravathi	coolie	sslc	2000	Hindu	nuclear	4	5000	kutcha	pipe	toilets	6000	complete	85	11.4	15	-1.95	-2.26	-0.87	yes	conjunctiva,nail b	12.9	NAD	yes	conjunctiva l xerosis				2.5	immediately	nil	4	upper lower
242	jeevan	2	m	anand	painter	sslc	3000	maanasa	Housewife	7th std	0	Hindu	nuclear	6	8000	pucca	pipewater	toilet	8000	incomplete	79	10.1	14	-1.28	1.04	-2.72	no		11.2	NAD	no					6 mon	immediately	no	4	upper lower
243	Vimal	2	m	harish	painter	sslc	4000	sumithra	Housewife	sslc	0	Hindu	joint	7	8000	pucca	pipewater	toilet	8000	incomplete	90	11.4	14	-1.37	0.71	-2.6	no		10.5	NAD	no					6 mon	immediately	no	4	upper lower
244	rakhi	3	f	manjunath	coolie	5th std	4000	Varalakshmi	Housewife	sslc	0	Hindu	nuclear	4	4000	semi-pu	pipe	toilets	4000	incomplete	77	11	15	-1.56	-2.64	0.01	yes	nail bed	7.4	NAD	yes	conjunctiva xerosis,	diarrhoea			1 y	immediately	nil	4	upper lower
245	sanchi	2	f	srinivas	coolie	sslc	2000	triveni	Housewife	ii puc	0	Hindu	nuclear	4	3000	semipuc	pipe	toilet	3000	incomplete	92	13.2	12	-1.05	-2.3	0.23	no		11.3	NAD	no					6 mon	first day	no	4	upper lower
246	Spoorthi	3	f	ramu	mechanic	sslc	7000	deepika	Housewife	ii puc	0	Hindu	nuclear	3	2000	semi-pu	borewell	toilet	2000	incomplete	85	12.2	15	-1.56	-1.33	-1.19	yes	conjunctiva,nail	9.4	NAD	no					9 mon	immediately	nil	4	upper lower
247	Tanushree	2.8	f	krishnaappa	coolie	sslc	6000	venkatarathnamr	Housewife	nursing	0	Hindu	3 gen	6	6000	kutcha	pipe	open f	6000	incomplete	102	15.5	9	-1.59	-4.42	1.43	no		11.8	cyst Er	no		diarrhoea,ari		1/mon	1 y	immediately	nil	4	upper lower
248	rohit	2.6	m	gopalakrishna	coolie	sslc	2500	sushma	Housewife	BA	0	Hindu	nuclear	5	4000	kutcha	borewell	toilet	4000	incomplete	92	13.2	15	-0.2	-0.23	-0.14	yes	nail bed	10.1	ova ho	yes	conjunctiva l xerosis	diarhoea		twice/month	5 mon	immediately	nil	4	upper lower
249	Akash	2	m	yellapa	coolie	BA	6000	Malathi	Housewife	sslc	0	Hindu	nuclear	3	10000	pucca	borewell	toilet	10000	incomplete	85	12.2	14	0.03	-0.93	0.71	yes	nail bed	11.3	NAD	no					7 mon	second day	no	3	lower middle
250	anusha	5	f	Nanjunda	coolie	ii puc	4000	nagamani	Housewife	7th std	0	Hindu	3 gen	6	4000	semi-pu	pipe	toilets	3000	complete	102	15.5	17	-1.12	-1.56	-0.22	yes	conjunctiva,nail b	11.5	cyst Er	no		diarrhoea,ari			2	immediately	nil	4	upper lower