NUTRITIONAL STATUS OF INSTITUTIONALISED STREET CHILDREN

By

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B.H.Sc. (Rural)

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DECLARATION

I, Ms**. KAVITHA B**, here by declare that the thesis entitled **"NUTRITIONAL STATUS OF INSTITUTIONALISED STREET CHILDREN"** submitted to Acharya N.G. Ranga Agricultural University for the degree of **MASTER OF SCIENCE IN HOME SCIENCE,** is a result of the original research work done by me. I also here by declare that the thesis or part of has not been published earlier else where in any manner.

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CERTIFICATE

This is to certify that the thesis entitled "**NUTRITIONAL STATUS OF INSTITUTIONALISED STREET CHILDREN"** submitted in partial fulfillment of the requirement for the degree of **MASTER OF SCIENCE IN HOME SCIENCE** of the Acharya N.G. Ranga Agricultural University, Hyderabad is record of the bonafide research work carried out by **Ms. B. KAVITHA** under my guidance and supervision. The subject of the thesis has been approved by the student's Advisory Committee.

No part of the thesis has been submitted for any degree or diploma. The published part has been fully acknowledged. All assistance and help received during the course of the investigations have been duly acknowledged by the author of the thesis.

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LIST OF ABBREVIATIONS

AIDS	:	Acquired Immuno Deficiency syndrome
BMI	:	Body Mass Index
CED	:	Chronic Energy Deficiency
FSC	:	Forum for Street Children
HIV	:	Human Immuno deficiency Virus
ICCW	:	Indian Council for Child Welfare
ICMR	:	Indian Council for Medical Research
IPER	:	Indian Psychological and Educational Research
IRDS	:	Integrated Rural Development services
NCHS	:	National Council for Health Standards
NGO	:	Non Government Organization
NIPCCD	:	National Institute of Public Cooperation and Child development
NIN	:	National Institute of Nutrition
NLI	:	National Labour Institute
PCU	:	Per Consumption Unit
RDA	:	Recommended Dietary Allowance
SIDUR	:	Society for Integrated Development in Urban and Rural areas
UNICEF	:	United Nations International Children's Emergency Fund
URDES-India	:	Urban and Rural Development Society – India
WHO	:	World Health Organization
YMCA	:	Young Men Christian Association

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ABSTRACT

Today, there are millions of children, who are forced to seek survival on the streets of cities of world. These are referred to as street children. The street children are deprived of their basic rights of survival, protection and development. They represent the poor quality of human resource potential that will unfold in future.

Once on the streets, these children face many problems which affect their over all development. They might be suffering from health and nutritional problems in addition to other social and emotional problems. How ever, many studies have been conducted on child labour and situational analysis of street children but information available on health and nutritional problems of the street children is scanty. Hence, it is essential to carry out an intensive study of their health and nutritional status.

The present study was there fore conducted to assess "The nutritional status of institutionalized street children". From the selected shelter homes of Hyderabad and secunderabad, a sample of 120 street children (boys of age group of 9 – 12 years) were selected randomly from the street homes. Shelters for street children are of two types i.e. shelter home and night shelter. Shelter home provide shelter for whole day and night, provide food, education recreation while night shelter provide for an over night stay, a night meal, non formal education and recreation.

Nutritional status of street children was assessed by using nutritional anthropometry, diet surveys, clinical examination and morbidity pattern. A pretested interview schedule was used to obtain information on general particulars of street homes of street children. The weight of the children was recorded with Salter scale balance which is calibrated to nearest 0.5 kg. Height was measured using anthropometric rod of 2 meters length calibrated to nearest 0.1 cms. Food intake of street children was assessed by Inventory method and 24 hour recall method. The clinical examination for nutritional deficiencies of street children was done with the assistance of qualified medical doctor. Morbidity pattern for the last one month was recorded. The data collected was analyzed using suitable stastical procedures.

The results of the study indicated that mean heights and weights of both shelter home and night shelter street children fell below the 50^{th} percentile of NCHS standards. As per the weight for age status, the percentage of children suffering from very severe (5.0%) and severe grade (3.3%) malnutrition (i.e. body weight less than 50 per cent of standard) was found to be less in shelter home street children compared to night shelter street children. BMI had revealed that 43 and 56 per cent of shelter home and night shelter street children were suffering from different grades chronic energy deficiency except 1.7 per cent of children who were found to be over weight.

The food and nutrient intake was found to inadequate in quantity and quality in the diets of the street children. The calorie intake was met by 80 per cent of the RDA. The other nutrients like proteins, protective nutrients i.e. vitamins and minerals were found to be less (20 – 60 per cent) as compared to RDA. Their diets were found to be inadequate in quantity with special regard to pulses, milk and milk products, fruits, green leafy vegetables as compared with the balanced diets (Gopalan *et al* 1984)

Clinical examinations of the children indicated deficiency signs and symptoms of B complex vitamins (i.e. angular stomatitis, cheilosis, glossitis) and anaemia, Mottled enamel was also observed. Incidence of early manifestation of vitamin A deficiency i.e. night blindness was found in night shelter street children. Morbidity data indicated the greater (60 – 80%) incidence of scabies, upper respiratory infections, fevers, diarrhoea, eye and ear infections in all the children.

The study has revealed that the street children health and nutritional status is very poor as indicated by the high incidence of morbidity and poor nutritional status as reflected in poor growth and dietary inadequacy.

Thus there is an immediate need for health and nutritional intervention of the deprived street children in order to make them potential members of the society.

INTRODUCTION

Street children are defined as under 18 years of age, earning money through casual, street based activities such as scavenging, begging, peddling, shoe – shining, pick pocketing, petty thefts etc. (Bond and Hayter, 1998). Definitions of street children have varied from person to person, and from country to country depending on the kind of perceptual lenses in which street children are seen in their new environment. The street child is any single individual below the age of 18 years, who is living independently on the street as his home to make ends meet, due to lack of parental care and social neglect (UN Convention, 1995).

The term street children is applied to those who are engaged in multifarious activities on the streets of big towns and cities. Most of the children found in street are those, who run away from home. They survive by begging money, selling news papers etc. some of them belong to broken families; others have very poor parents, so they have to struggle on their own.

The Institute of Social Research and Development, Pakistan described street children as "children who for some reasons or other, voluntarily or by compulsion from family, spend their time on streets and are engaged in some economic activities that would supplement their families income" (Choudary, 1990).

Street children refer to all the young girls and boys who have adopted the street as their abode or a source of livelihood or both. Whether

they maintain ties with families or not, these children are inadequately protected, supervised and directed by responsible adults. Generally left on their own, they keep themselves alive or to help their families survive by engaging in odd jobs such as scavenging, begging and even prostitution (Balanon, Brevante, Moselina, 1998).

According to Inter Non – Governmental organization, 1986 "street child is any minor for whom the street (in the widest sense of the word, including unoccupied dwellings, wasteland etc.) has become his or her habitual abode, and who is without adequate protection".

Streetism is a danger that undermines the potentials and developments of children. The street is void of parental care, protection, love warmth and safety and cannot be a home. "Street children" have become stigmatized by society; ironically their name suggests they were begotten by streets. These children do not desire to leave their homes and live on the streets where their lives are constantly in danger. They are yearning for the help of all and to get back into sound and secure society.

Today, there are millions of children in the world who are forced to seek survival on streets. These are referred to as street children. The majority of street children in India are boys, numbering almost twice that of girls on the street. In four cities – Bangalore, Bombay, Kanpur and Madras alone the total number of boys constitutes about 65 to 82.7 per cent of the total street children population. A look at the age composition of street children in India reveals that they are in the formative years of life. Majority of them belongs to the age group of 11 – 15 years; followed by the age

group of 6 – 10 years i.e. almost one third of the total street children population. In Calcutta and Hyderabad, there are more children in the age group 6 – 10 years on the streets; while in Bombay and Bangalore the 11 – 15 years age group figure high. Out of every ten street children in India, eight are found to be Hindus. Christians and Muslims constitute a negligible proportion of the total street children.

The street children in the metropolitan cities of India are without family support. Studies indicate that as high as 89.8 per cent live with their parents or other members of their family. A majority of street children work, almost fifty per cent of the working street children are self employed such as rag pickers, hawkers and shoe shine boys. Almost one third of the street children work in shops and establishments.

These children are deprived of basic human needs of health and nutrition, shelter, education, training and recreation. Even if many street children live with their families, their essential needs are hardly met due to extreme conditions of poverty. Studies show that most of the street children do not get adequate food and the quality of the food is very poor. Majority of them suffer form protein deficiency (Rao and Mallick, 1992, Khanna and Khanna,1996). The living conditions of the street child are appalling. The homes are congested and over crowded with hardly any ventilation or sanitary facilities.

Most of the street children in India are exposed to dirt, smoke and other environmental hazards. They are constantly exposed to sun, rain and cold. The health condition of street children is generally poor and many

suffer from chronic diseases like asthma and dysentery. Though there is government and municipal hospitals in all cities, street children do not have easy access due to the indifferent or hostile treatment meted on them. Majority of street children do not have bathing and toilet facilities. The situation is reported to be dismal in the cities of Bangalore and Hyderabad

Street children are a phenomenon, not only of developing countries but also in developed countries. There are major difficulties in trying to estimate the number of street children and the magnitude of difficulties they experience as street children are not adequately covered by national census, educational and health data.

Life on street holds its own share of hardships which have an equally deleterious impact on child's development. Thus there is an immediate need to intervene in their lives, not only to counter act these harmful influences but also to prepare the child for being a contributory member of society.

At present many studies have been conducted on child labour, but the phenomenon of street children as a whole, has not drawn significant attention of researchers. Even with in street children, the focus has been only on a few groups like porters, hotel boys etc who are working and living on streets it self. The situation of girl street children has also been totally neglected.

It has been widely observed that most street children are between 9 – 12 years of age. During this period, children are most sensitive and responsive to the environment in which they live. It is these childhood

years which are likely to influence their development and mould their lives. Good nutrition is of utmost importance in the formative years as it has profound influence on their physical growth and development and to lead an active life

Their acute distressing condition infers to carry out an intensive study of their health and nutritional problems so that appropriate need based intervention programs could be planned to improve the status of street children.

Hence the present study therefore, was undertaken with the following specific objectives.

1. To collect general information by using structured schedules
2. To assess the food and nutrient intake using inventory method
3. To find the height and weight of street children using standard equipment.
4. To conduct clinical examination for any nutritional deficiencies among the subjects and to find morbidity status of street children.
5. To compare the nutritional status of shelter home street children and night shelter home street children.

REVIEW OF LITERATURE

A comprehensive review of literature is essential for any good research as it provides background information to aid the investigation in designing and analyzing research work. The literature collected is presented under following headings:

2.1 General profile of the street children

2.2 Living and working conditions of street children

2.3 Studies on street children abroad

2.4 Studies on street children in India

2.1 General profile of the street children:

The term street children is applied to those who are engaged in multifarious activities on streets of big towns and cities. Street children are a phenomenon, not only of developing countries but also in developed countries. There are major difficulties in trying to estimate the number of street children and the magnitude of difficulties they experience as street children are not adequately covered by national census, educational and health data.

According to UNICEF (1998) estimates, 100 million children work on the streets of cities of world .Majority of them are in developing countries, 40 million in Latin-America, 25-30 million in Asia and 10 million in Africa. In India, there are over 20 million street

children (Ramoo, 1994).I Andhra Pradesh, it is estimated that there are 20 lakhs street children. Among them 58 per cent are boys and 42 per cent are girls. Though no record exists, an estimated 40,000 to 50,000 children are said o live in the streets of Hyderabad and Secunderabad (Kushanan,1995).From the estimated; it is obvious that the problem of street children is becoming a global problem and needs immediate and intensive attention.

Definitions of street children

Street children are defined as under 18 years of age, earning money through casual, street based activities such as scavenging, begging, peddling, shoe – shining, pick pocketing, petty thefts etc.(Bond and Hayter, 1998). Definitions of street children have varied from person to person, and from country to country depending on the kind of perceptual lenses in which street children are seen in their new environment. The street child is any single individual below the age of 18 years, who is living independently on the street as his home to make ends meet, due to lack of parental care and social neglect (UN Convention,1995).

Most of the children found in street are those, who run away from home. They survive by begging money, selling news papers etc. some of them belong to broken families; others have very poor parents, so they have to struggle on their own.

The Institute of Social Research and Development, Pakistan described street children as "children who for some reasons or other, voluntarily or by compulsion from family, spent their time on streets and are engaged in some economic activities that would supplement their families income" (Choudary, 1990).

Street children refer to all the young girls and boys who have adopted the street as their abode or a source of livelihood or both. Whether they maintain ties with families or not, these children are inadequately protected, supervised and directed by responsible adults. Generally left on their own, they keep themselves alive or to help their families survive by engaging in odd jobs such as scavenging, begging and even prostitution (Balanon, Brevante, Moselina, 1998).

According to Inter Non – Governmental organization, 1986 "street child is any minor for whom the street (in the widest sense of the word, including unoccupied dwellings, wasteland etc.) has become his or her habitual abode, and who is without adequate protection".

Categories of street children

Neela shroff (1988) has classified street children in to following Categories.

1. Street children who live with their families: though they work on streets, they often attend school and have presence of their family support.
2. Children who live on streets with the street being their home. It is there they seek shelter, food and sense of belonging among their companions. A majority of them have no ties with their families; even if they do have contact it is rare. They can be classified in to two groups.
    a) Children who run away from unpleasant or traumatic home environment. They have family problems that they are unable to resolve. They have experienced conflicts which go beyond their tolerance level.
    b) Children who ran away from home to taste exciting experiences of a glamorized city life.
    c) These street children are those young people who live or work on the streets of world's cities.

According to ICCW (1989) street children fall mainly under three categories.

1. *Children on the street :* This category consists primarily of working children who have family contact of more or less regular nature i.e. they return home at the end of the working day normally have a sense of belonging to local community. The UK

committee for UNICEF estimates about 75% of street children fall in this category.

2. *Children of the street :* These children (about 20%) see the street as their home and seek a sense of belonging among companions. Family ties exist but are remote and visits to home are infrequent.
3. *Abandoned children :* About 5% of all street children are those who severed all ties with their biological families and have no family at all. They are entirely on their own not only for material but also for psychological survival.

According to UNICEF (1998), street children were classified into three categories

Category A: Children who run away from their family and earn a living for themselves alone.

Category B : Children who live with their migrant families

Category C : Migrant children who leave home for reasons of poverty and earn money in order to help family.

Street children in India

A view of situation of street children in India is being presented below.

The majority of street children in India are boys, numbering almost twice that of girls on the street. In four cities – Bangalore, Bombay, Kanpur and Madras – alone the total number of boys

constitutes about 65 to 82.7 per cent of the total street children population. Significantly, sex distribution is almost even in Calcutta, the number of boys being only 6 per cent higher than the girls. Street girls are not often visible in more number, but they are the most vulnerable of street kids.

A look at the age composition of street children in India reveals that they are in the formative years of life. Majority of them (40 per cent) belongs to the age group of 11 – 15 years; followed by the age group of 6 – 10 years i.e. almost one third of the total street children population. In Calcutta and Hyderabad, there are more children in the age group 6 – 10 years on the streets; while in Bombay and Bangalore the 11 – 15 years age group figure high.

Out of every ten street children in India, eight are found to be Hindus. Christians and Muslims constitute a negligible proportion of the total street children. Only the cities of Madras and Bangalore have street children from Christian communities, while street children belonging to the Muslim community are in substantial number in Bombay, Calcutta and Kanpur. Among the Hindu street children almost half belong to scheduled caste and scheduled tribes.

Contrary to the prevalent belief most of the street children in the metropolitan cities of India are without family support. Studies indicate that as high as 89.8 per cent live with their parents or other members of their family. The research findings corroborate the report of the UK

committee for UNICEF in the third world countries which states that, contrary to popular belief, most of the children are runaways.

Most of the families of street children are migrants. The socio – economic conditions of these families are very poor. A vast number of children belong to low income group families with an income less than Rs.600 per month.

2.2 Living and working conditions of street children

In India more than half of them live under the open sky and sleep at night, while the rest spend most of the day on the street, but sleep under a roof or some kind of covered shelter at night, perhaps a ramshackle hut or the home of the employer. Most of the street children are habitants of streets for a period of not less than three to six years, though not in one place.

A majority of street children work, almost fifty per cent of the working street children are self employed such as rag pickers, hawkers and shoe shine boys. Almost one third of the street children work in shops and establishments.

Most of the street children work for a long period of time. One in every three, work for 10 to 12 hours a day, while one in every ten has to work for 13 hours a day.

These children are deprived of basic human needs of health and nutrition, shelter, education, training and recreation. Even if

many street children live with their families, their essential needs are hardly met due to extreme conditions of poverty. Studies show that most of the street children do not get adequate food and the quality of the food is very poor. Majority of them suffer form protein deficiency. The living conditions of the street child are appalling. The homes are congested and over crowded with hardly any ventilation or sanitary facilities. The surroundings are unhygienic and dirty.

Most of the street children in India are exposed to dirt, smoke and other environmental hazards. They are constantly exposed to sun, rain and cold. The health condition of street children is generally poor and many suffer from chronic diseases like asthma and dysentery. Though there is government and municipal hospitals in all cities, street children do not have easy access due to the indifferent or hostile treatment meted on them. Majority of street children do not have bathing and toilet facilities. The situation is reported to be dismal in the cities of Bangalore and Hyderabad

The majority of children in five major cities in India do not have recreational facilities. In Bombay, however almost fifty per cent of the street children enjoy facilities of recreation.

2.3 Studies on street children abroad

Ojanuga (1990) studied child abuse and neglect in Kaduna beggar children and reported that weakening traditional forms of welfare

had created under class of beggars, of many whom were children. Lack of comprehensive welfare system in general and more specially protective services for minors, resulted in the neglect of some children who were exploited by poor families for street begging:. Although laws existed to protect minors and prevented street begging by children, they were seldom enforced. This was due to the absence of a government agency solely responsible for child welfare.

Rafferty and Shinn (1991) have reviewed and criticized community based research on the effect of homelessness on children. He observed that homelessness confronted serious threat to the children's ability to succeed and their future well being. Children suffered from health, hunger, behavioural problems, poor nutrition, developmental delays, anxiety, depression, and educational underachievement. Factors that mediated the observed outcomes were inadequate shelter conditions, instability in residences and shelter homes, inadequate services and other barriers in accessing the services that were available.

Fierman *et al* (1991) studied growth delay in homeless children. The study compared the growth of homeless children with National Council for Health Statistics (NCHS) standards and with growth of age matched domiciled children of similar income level. He observed that Home less children had lower height percentiles (h =167), when compared with domiciled children (h = 167) and compared with NCHS standards. The weight, height percentiles of homeless children

did not differ from NCHS standards; however domiciled children had higher weight – heights when compared with the homeless and with NCHS standards. Duration of homeless was not associated with decreased height or weight – height among homeless children. Homeless children in this study exhibited a pattern of stunting with out wasting which was characteristic of poor children experiencing moderate, chronic nutritional stress than domiciled children at similar income level.

Wagher and Menke (1991) reported on "The depression of homeless children" which revealed that homelessness continues to be a social problem that many children experience. The loss of a home and all that was familiar to childhood devastating short and long term effects on child's psychological well being.

Choudary (1992) reported on "street children in Pakistan". According to him "street children were neither delinquents nor hooligans, nor abnormal, they were described as children who for some reasons or the other voluntarily or by compulsion from family spend their time on streets and were engaged in some socioeconomic activities that would supplement their family income. " They were not employed in formal sector and were not receiving regular wages. Majority of the children (63%) belonged to poor and lower middle class families. 44% children had attended primary schools but having dropped out after one or two years and had forgotten what they learnt in the school. Health of

these children was observed to be poor 4% of them were disabled, 25% looked sick, pale and had spots on their skin. 24% of them looked emaciated and weak. 44% looked healthy. None of the children reported any chronic diseases such as tuberculosis or malaria. Few of them were suffering from fever, cough and skin problems.

Jackson and Swane (1992) reported on homeless as a determinant of health have revealed that the home less population in United States are variously estimates at between 3,50,000 and 2.5 million families and children were among the fastest growing segments of this population.

Luna and Rotheram – Borus (1992) reported on street youth and AIDS pandemic revealed that AIDS pandemic was inextricably linked to homelessness and was particularly a devastating threat to the welfare of the worlds disenfranchised youth, as they were continually forced in to multiple HIV related high risk situations and behaviours.

Gamma (1992) states that in Romania, street children were victims of an incoherent irrational birth control policy .Children had left their families unable to stand such a miserable life. Many of these children fled the country side, where lack of money and moral and effective education was more spread than big cities.

Daddas *et al* (1993) studied 117 homeless adolescents in comparison with non homeless youth on self reported incidence of

personal and family problems. The homeless children reported the highest incidence of all behavioural and emotional problems, parental marital discord, over protection and lowest levels of parental care and acceptance.

Hixon (1993) studied social correlations of malnutrition among the Filipino street children. A sample of 150 street children, aged 6 to 18 years was weighed and the interrelationships of nutritional status with social conditions were studied. Two variables showed highest association with low weight for age children using drugs and children in school. These variables were seen as indicative of a range of variation among Filipino street children, in whom those drugs and not in school represented the sector at greatest risk

Carlini (1993) reviewed local literature to evaluate dangerous use of anticholinergic drugs on street children of several Brazilian cities and reported that students of first and second grade were using synthetic compounds as trioxyphenidyl (Artane), benactizime (Asmosterona), dicyclomine (Bentyl) as well as Datura special tea. In several cases the percentage of youngsters indulging in such use was higher than percentage found for cocaine, barbiturates, cough syrups and amphetamine related drugs.

Nzimakwe and Brookes (1994) investigated to determine the health status of institutional street children in a place of safety in Durban. This study determined the health profile of institutionalized

street children for period of 14 days. Interview and health assessments carried out revealed that children's weights and heights were below the standards. Minor health problems were common and some had more serious problems.

According to a study conducted on 550 street children by WHO program (1994) reported on substance abuse in ten (10) cities around the world including Bombay, Alexandria, Cairo, Toronto and Tegucigalpa (Honduras). Regular use of alcohol and other drugs by a significant proportion of street children was reported from all the cities with almost 100% in Montreal and Toronto, the most widely used substances were those that were cheap and easily available – alcohol, tobacco, cannabis (ganja) solvents and pharmaceuticals.

Gross *et al* (1996) studied the nutritional status of school aged children working and living in the streets of Jakarta. The nutritional status of 89 school aged children living and working in the streets of Jakarta and Indonesia was assessed. 79% of the children "on" the street still had regular contact with their families, where as 21% "of" the street children who had only remote or no contact with their families. The distribution of height for age relative to the NCHS reference standard indicated that 52% of the children were stunted (below the third centile of the standard). However, the distribution of weight for height was close to that of the reference population standard and only 7% of the children were wasted (below the third centile standard). Comparison of

the data from these street children living on Jakarta slums shows that street children weigh less and but were taller than their socioeconomic peers.

Ayaya and Esamai (2001) studied health problems of street children in Eldoret, Kenya. A prospective and descriptive study was undertaken to determine the health of street children in Eldoret . Eldoret street children aged 5 – 21 years were selected. Type 1 street children were the "on" the street children who spent most of their time on the streets but went home in the evenings, type 2 were the "of" the street children who spent all their time in the streets and had severe their links with their families and did not have a home to go, type 3 were abandoned children staying in a shelter and type 4 were normal primary school children. 191 children were studied. There were 38, 47, 56 and 50 in types 1, 2, 3 and 4 groups of children respectively. The most common symptom was cough (28.9%) while frequent diagnosis was upper respiratory tract infection (URT 1) (12.1%) followed by skin disease (50.9%) as the leading disease category. Common drug of addiction was cigarette (37.5%), but none of the school children were taking any drug of addiction. The prevalence of disease was 467 per 1000 children. Type 2 street children had the highest prevalence of disease (833 per 1000 children). Shelter children had the least disease prevalence (474 per 1000). Factors determining prevalence of disease were the same in normal children. The malnutrition rate was high 31.1%

and 41.9% of the children were stunted and underweight, respectively. Type 3 children had the highest rate of malnutrition with 51.8% and 64.3% being stunted and underweight respectively.

Street children have a high incidence of childhood diseases. Respiratory and skin diseases were the leading causes of morbidity. Drug abuse was rampant among the street children. Sexually transmitted infections were not prevalent and majority of the shelter children were malnourished.

Wangai and Kaddu (2001) investigated the pattern of glue users in Nairobi streets. The study interviewed 130 street children (6 – 16 years old) to ascertain the pattern of glue usage. 94% started sniffing glue soon after they started living on the streets. 93% obtain glue from shoe makers, waste paper collectors and other children. 64% sniff glue at all hours. Almost all subjects beg and few work collecting and selling waste paper. The children experience different effects from glue sniffing. 90% said that they felt "high", 14% experience dizziness 9% have hallucinations, 77% become energetic, 14% have headaches and 14% experience a dull noise. 92% responded that they craved glue sniffing.

Nahar *et al* (2003) studied the status of street children of Dhaka metropolitan area and their vulnerability to STD/ HIV/ AIDS. The study was conducted to know the socio economic status and demographic back ground of street children and to assess the street

children vulnerability to STD/ HIV / AIDS. The street children of both sexes living with in the Dhaka metropolitan area aged between 5 – 14 years constituted the study population. The results indicated that exploitation, harassment and abuse were the major problem of street children. The street children usually do not visit the clinic / hospital or doctor for health care for poverty and ignorance. They were also addicted to injectable drugs and to other substances. Though less, it was found that the street children were also habituated to professional blood donation. Among them awareness of STD/ HIV / AIDS was very poor.

2.4 Studies on street children in India

Studies undertaken by National Labour Institute (NLI) in 1987 – 88 and others found that waste picking formed the most commonly adopted occupation amongst street children in Bombay, Bangalore and Hyderabad.

Rao (1989) conducted a study in Vijayawada on 256 street children (230 male and 26 females) using a close ended questionnaire. The mean age of children were 10 – 12 years, a significant majority of them were migrants and had moved to Vijayawada to find some live hood as against compulsive poverty at home. Majority of them never went to school while rest discontinued at an early age. Most of them were involved in rag picking and a few indulge in begging and worked for 7 – 9 hours a day to earn an average of 5 – 10 rupees per day.

Sondhi (1989); Subramanyam and Sondhi (1990) conducted a study on child porters in Delhi. The sample consisted of 46 boys in age range of 9 – 14 years. The study revealed that children had left their homes to escape intolerable home situations and unsatisfactory interpersonal relationships with their family members. Children with step parents reported that they were looked up on as economic burden. It was reported that they had no bathing or toilet facilities and faced physical hazards due to tough working and living conditions. It also revealed that those street children were seldom treated by doctors and some of them were found to be suffering from chronic diseases.

Sheshadri (1991) reported on the force of habit in the street children and revealed that one of the most wide spread bad habits was use of tobacco in street children. Another bad habit was taking alcohol, which weakened the mental powers and lessened the general energy of the body. Other bad habits were consuming drugs and smacks.

Rao and Mallick (1992) conducted Situational Analysis of street children in Hyderabad. The sample consisted of 2306 children, of which boys were 1385 and girls were 921. The findings revealed that majority of street children were in the age group of 11 – 15 years and belong to general category (45.2%) rather than other castes like scheduled castes (35.8%) and scheduled Tribes (19%). Regarding health status of street children it was found that most of the children's general health was moderate (93%) and 88.2% were undernourished. 66% of

children appeared to have moderate protein and vitamin deficiency. In 65% cases the age – height ratio was unsatisfactory. Majority (87.7%) did not get any medical facilities when they were ill. Among these who were suffering with chronic diseases 30.8% were suffered for more than 8 years. Almost every child was exposed to various unhealthy pollutions like dirt, smoke and also to sun, cold and rain. They had no proper bath and toilet facilities.

Nangia and Panicker (1992); Nangia (1989) in study in working and street children of Delhi reported that a substantially large number of children were self employed in the form of vendors, News paper hawkers, shoe shining, rag pickers and so on. Their working hours had varied from 2 – 3 hours to 18 hours a day and earned merger incomes. They were exposed to several job hazards such as un hygienic atmosphere, accidents and skin diseases. They usually fell victims to bad habits.

D' lima and Gosalio (1992) studied families of street children in Bombay. The subjects were 2169 street children (1554 boys and 625 girls). Majority belonged to migrant families with poverty, unemployment and natural calamities being the reason for migration. 90% of them belonged to low income group. Their fathers were engaged in casual labour and mothers did house hold work. These children were connected by their families which demanded them to do household work, care of siblings, running errands, fetching water. Thus, the lives of

these children were less mobile, more settled and supported by the family structure economically, occupationally, physically and emotionally. The presence of family was an important source of security and support for the child despite maternal deprivation.

Institute of Psychological and Educational Research (IPER) (1992) conducted survey of street children in Calcutta. Out of the 365 street children surveyed majority (46%) belonged to the age group of 9 – 12 years. Majority of them were unemployed and only few of them were employed. The average income of each child was Rs.70/month. Most of them had migrated from rural areas and were literate. The percentage of undernourished were high i.e., 75% of the children.

A study conducted by the concerned for working children entitled "children the world tries to forget" (1993), Bangalore found that almost all the street children suffered from scabies, chronic dysentery, lung, ear, nose and throat infections. Majority were anaemic and malnourished.

Khanna and Khanna (1996) conducted an analysis of physical and dietary environment and nutritional status of street children. Majority of the 50 Indian children studied were rag pickers and beggars and they started contributing to their families' income at the age of 5 years. Their parents were also picking rags for their living and had

nuclear families consisting of 5 – 7 members, out of which more than 4 were working to earn Rs 300 – 600 per month. They were consuming poor cereal based diet which provided 57%, 37%, 68% and 45% of the recommended dietary allowance (RDA) of energy, protein, carbohydrates and fat respectively. Similarly the intake of minerals and vitamins was deficient being less than half of the RDA. They had grade III protein, energy malnutrition with severe wasting and stunting. Their mothers were using wrong cooking practices. They were not fed colostrums and were not immunized in infancy. Grossly low nutrient intakes coupled with very unsatisfactory living conditions and highly unsatisfactory personal hygiene habits led to the frequent suffering form many diseases. They also had psychological problems. Females were more affected than males thus were more affected.

Manimekalani and.Kunjammal (1999) studied the rag pickers of Pudukottai of TamilNadu . Sample size of 50 workers was selected at random to analyse the socioeconomic background of the street children and identify their problems. The sample included rag pickers, street vendors including lottery ticket seller, eatable sellers etc. The health hazards faced by the respondents were fever and cold which were considered as symptoms of TB, asthma etc. Most of them take only ayurvedic or simple self medical treatment (86%) rather than going to doctors. As the children start earning at the early age, it makes them to addict to smoking, alcoholism and other evil activities which are

disastrous to health. Nearly 40 per cent of them do spend their earnings in watching movies. Nearly 82 per cent of them were interested in continuing their studies and hardly 18 per cent were interested to continue the work.

Ray *et al* (2003) studied nutritional status of pavement dweller children of Calcutta city .A cross-sectional survey concerning the magnitude of PEM and its associated factors among 435 under -5 pavement-dwelling children in Calcutta. Results revealed that 69.43 % were under nourished and 16 % of them were suffering from severe malnutrition (grade III and IV of the Indian Academy of Pediatrics criteria for PEM).The 24-35 month age group had the highest prevalence of malnutrition (82.93 %)followed by the 36-47 and 17-23 month age groups with prevalence of 76.19 % and 74.03%,respectively Prevalence of severe grade malnutrition was noted to be three times higher in females(24.76 %) than males (8.45 %)and among families it increased in direct proportion to birthrate and inverse proportion to birth interval . About 35% and 70 % of the street dweller children (both males and females) had wasting and stunting respectively.

MATERIALS AND METHODS

This section deals with the methods and techniques followed in the study. It is presented under the following divisions.

3.1 Location of the study

3.2 Research design

3.3 Sampling procedures

3.4 Profile of the shelter homes

3.5 Selection and formulation of Research tools

3.6 Collection of the Data

3.7 Analysis of the data

3.1 Location of the study:

In the state of Andhra Pradesh, the Hyderabad and Secunderabad were chosen for the study because, as these are the major cities comprising of high population of street children. Also, the institutions for the street children are more in number and researcher is familiar with the city and local language.

3.2 Research design

In the present study exploratory method was chosen to investigate the nutritional status faced by the institutionalized street children in the city of Hyderabad and Secunderabad.

3.3 Sampling Procedures:

As the street children were scattered all over the city, particularly near public places and they keep on moving from one place

to another, it was really difficult to contact these children when they were on the street. Viewing the practical problems involved in various stages of the study, it was decided to select various shelter homes for conducting the study. Hence sampling procedures followed in the present study were

- Selection of shelter homes
- Selection of sample

Selection of shelter homes

A preliminary survey was conducted in the cities of Hyderabad and Secunderabad to know about voluntary organizations which were running shelter homes for street children.

The investigator approached various voluntary organizations like Society for Integrated Development in Urban and Rural areas (SIDUR), urban rural development society – India (URDES – India) and Forum for street children to get information about location of shelter home, number of children in each shelter home, their age range, timings of visit and other particulars.

Six shelter homes were identified and selected for conducting the study as there were more number of street children in selected shelter homes.

3.4 Profile of shelter homes.

Shelters for street children were found to be of two types i.e. shelter home and Night shelter. The profile of shelter homes has

been clearly indicated in table 1. Shelter homes provide shelter for whole day and night, provide food, education and recreational facilities in order to lead a disciplined life.

In night shelters, a group of street children are provided facilities for an over night stay, a night meal, non formal education, health care, counseling, recreation and vocational training. In night shelters, the children are gradually introduced to structured and disciplined life through constructive living experiences.

All shelter homes selected for the present study were run by voluntary organizations and they cater to the needs of children of school age and adolescent age group (8 – 18 years boys). In each of the shelter homes there was a social worker, teacher and a cook. There were approximately 30 – 60 street children in each shelter home. They were provided with shelter, free meals, non formal education, vocational training like Carpentry, electric wiring, type writing, tailoring, car driving.

The subjects were selected using random sampling process from 6 shelter homes for street children between the age of 9 – 12 years for the present study. Only boys were selected for the present study since there were no shelter homes for street girls in twin cities.

The total sample consisted of 120 street children (boys) foreseeing the dropage in the sample, it was decided to select more number of children for the study hence 140 children were selected.

The details of study sample are presented in Table 2.

3.5 Selection and formulation of research tools

The following techniques were used to collect the data.

- ❖ Interview schedule cum check list
- ❖ Anthropometry
- ❖ Food and Nutrient intake
- ❖ Nutrition assessment schedule (NAS, ICMR) for clinical examination for nutritional deficiencies and morbidity pattern.

Interview schedule cum check list.

Interview schedule cum checklist was made to collect required information about the street children. It comprises various questions regarding general information of street children's present status, work details, personal hygiene and specific information regarding health and nutritional problems, anthropometry, food and nutrient intake dietary pattern etc. The schedule was framed in such a way that most of the questions required either Yes or No responses or choosing from alternatives provided, while the rest were open ended questions. The interview schedule was pretested on 15 children to test the effectiveness of questionnaire. There was a good rapport between the street children and the investigator during the period of study.

Anthropometry :

Nutritional status of street children was assessed using three basic indicators.

- ❖ Anthropometry
- ❖ Food and Nutrient intake

- ❖ Clinical examination and morbidity pattern.

Anthropometry:

Two basic parameters were employed to assess the nutritional status of street children.

- ♦ Body weight
- ♦ Height
- ♦ BMI

Body weight: The body weight of the children was recorded with salter scale balance which is calibrated to the nearest 0.5 kg. The weight of the street children was recorded before the meals. The average of three readings was recorded. While recording weight, care was taken to ensure that subjects had minimal clothing and were asked to look straight with their head and feet parallel to the ground to record the weight accurately with minimal errors.

Height: Height was measured using anthropometric rod of 2 meters length calibrated to the nearest 0.1 centimeters. The street children were measured bare foot and were made to stand erect with feet parallel on a flat floor, heels together, buttocks, shoulders and back of head touching the upright rod and arms hanging at the sides in a natural manner. The head piece of height rod was gently lowered so that it made contact with top of the head and the measurement taken to accuracy of 0.1 cm. The average of three measurements was recorded.

BMI : The body mass index is useful for the assessment of current or short duration forms of malnutrition. With the recorded height and weight, the BMI was calculated using the formula

$$BMI = \frac{\text{Weight (Kg)}}{\text{Height}^2 \text{ (mts)}}$$

Food and Nutrient Intake: Food intake pattern of day shelter and night shelter home were collected by Inventory method (7 day food list method). However, the children in Night shelter had only dinner at the institution. Hence 24 hour recall method was used to assess their food intake.

Inventory method : Information was obtained from the warden / incharge of each shelter home regarding menu pattern for 7 days and number of inmates partaking the meals. Data on recipes used and total raw amounts of each food ingredient used in various types of recipes during the day based on the observations and records maintained by the in charge was also obtained by weighment method.

24 hour recall method: The information about the total quantity of cooked amounts of foods consumed by the night shelter street children was obtained using a set of standardized vessels and the raw amount of foods taken by an individual street child calculated using the formula which is as follows.

$$\text{Amount of raw food consumed= byindividual Child} = \frac{\text{Total raw amount of food used}}{\text{Total cooked amount for each preparation}} \times \text{Individual intake of cooked food}$$

Nutrient intake : The per capita nutrient intake of individuals was calculated using nutritive values of Indian foods (Narsinga Rao *et al* 1990). The nutritive value of each food item was calculated per consumption unit (PCU) per day by using the adult consumption for various groups. The adequacy of foods in quantity was compared with the balanced diet (Gopalan *et al*, 1984).Nutritive value was calculated and nutrient adequacy was measured to know the extent of nutrient security with regard to various nutrients. It was calculated by the following formula.

$$\text{Nutrient adequacy} = \frac{\text{Actual nutrient intake}}{\text{Recommended dietary allowance}} \times 100$$

Clinical examination: clinical examination was carried out using Nutritional assessment schedule (ICMR). A complete thorough and systematic clinical examination of the individual child was carried out with the assistance of a qualified doctor. Morbidity pattern of each individual child was recorded for the last one month. Both nutritional deficiencies and the morbidity pattern were studied.

3.6 Collection of Data:

An interview schedule was used to collect information from the subjects regarding educational status, work details, personal hygiene. Anthropometric measurements, dietary intake, clinical signs and symptoms and morbidity pattern of the street children were recorded.

There was initial resistance from street children to get required information but after establishment of rapport with the assistance and cooperation of social workers / in charge in shelter home, required data could be collected. Children particularly showed interest and cooperated well while recording anthropometric measurements by the investigator.

The collected data was tabulated and compared with available standards.

3.7 Analysis of data :

The data collected through interview schedule cum checklists was analyzed and presented by using frequencies and percentages. The mean values and standard deviations were calculated for each parameter (Height, Weight, BMI) for different age group. Two sample Z test and Correlation was used to test the significance of the data (Snedecor and Cochran 1967).

RESULTS

The results pertaining to the present study i.e. "Nutritional status of Institutionalized street children" based on the objectives are presented under the following sub heads.

4.1. General Information

4.2. Food and Nutrient intake

4.3. Anthropometric measurements

4.4. Clinical symptoms

4.5. Morbidity Pattern

4.1 General Information :

General information regarding the shelters of street children was collected and is presented as profile of street homes in table: 1.

4.1.1. Age :

As seen in the table 3 the street children were selected depending on the age which ranged from 9 – 12 years. In the sample selected, majority (58%) of the children were found to be in the age group of 10 – 12 years and 42% of the children were between 9-10 years of age . Only boys were selected for the study as there were no street homes for street girls in the twin cities.

Table 3 : Distribution of street children according to the age and street homes

Age (yrs)	Shelter home	Night shelter	Total	%Total
9 – 10	25	25	50	41.6
10 -11	20	20	40	33.3
11 – 12	15	15	30	25.0

4.1.2 Educational Status

Educational status of street children is presented in Table 4 which shows that majority of the street children i.e., 68.3% have attended school and subsequently dropped out of school due to lack of interest in studies. Out of 68.3 per cent of street children who have not attended school, 50 per cent have not completed their primary education with X = 2.68; SD 2.65. Majority (71.7%) were not interested to continue their education further.

4.1.3 Occupational status of street children

It is evident from table 5 which shows the occupational status of street children that a greater proportion of night shelter street children were in the occupation of rag picking (86.7%) as those compared to ones who sell combs, pins and are in other minimal jobs. Day shelter home street children are not in any occupation as they are provided with compulsory formal education.

Table 5 : Occupational status of night shelter street children

S.No	Occupational status	Frequency	%
1.	Rag pickers	52	86.7
2.	Self employed	3	5.0
3.	Others	5	8.3

4.2. Food and Nutrient intake of street children

4.2.1 Mean food intake of street children (9-12 years)

Table 6 and 7 represents the food intake of street children in terms of food adequacy. Food adequacy was calculated to assess the adequacy of intake in terms of RDA met bystreet children.

The intake of cereals and fats and oils by the children of both shelter home and night shelter were adequately met i.e., 91% and 89% and 67% and 61% respectively when compared with RDA in the age group of 9-10 years. How ever lower consumption was observed in case of pulses (62 % and 52 %), green leafy vegetables (62% and 43 %), milk and milk products (60% and 51%), other vegetables (81% and 89%), fruits (70% and 65%) and sugar and jaggery (68 and 76%) respectively.

It is seen in table 7 that cereal and pulse intake of shelter home and night shelter street children of 10 – 12 years age were met by 86% and 85% and 75% and 66% respectively. With regard to all other

food items except fats and oils and sugar and jaggery the intakes were found to be lower.

It is evident from the table 6 and 7 that the diets of night shelter street children in general were inadequate in cereals, pulses, green leafy vegetables and milk and milk products. How ever, consumption of fats and oils and sugar and jaggery was adequate in night shelter street children compared to RDA.

4.2.2. Mean Nutrient Intake of street children (9-12 years)

It is evident from the table 8, that the mean intake was nearly adequate in case of calories (90%), proteins (72%),calcium (78%), β-carotene (78 %), Riboflavin (81%) in the diets of the street children of 9 – 10 years age belonging to shelter homes. How ever the intake of iron (50%), vitamin-C (50%), Thiamin (76%) and Niacin (50%) was found to be lower than recommended RDA.

Table 8 indicates that the intake of energy (87%), proteins (62%), calcium (70%), β-carotene (64%), Riboflavin (62%) was marginally deficient with regard to the night shelter street children of 9-10 years age. The intake of iron, vitamin C and niacin was 38%, 37% and 38% lower when compared to the RDA respectively.

It is evident from table 9, that the calorie and protein intakes of shelter home and night shelter street children of 10 – 12 years age were met by 63 to 85 per cent. With regard to calcium 72% and 68%

and iron 54% and 41% of the RDA was met respectively. The other nutrients i.e., β-carotene and vitamin C intakes were met by75% and 68%and 64% and 58% respectively in both the shelters. With regard to B complex vitamins, the thiamin intake was met by 81% and 73% respectively followed by riboflavin and niacin i.e., 76% and 69% and 66% and 59% respectively in both shelter home and night shelter street children of 10 -12 years age. How ever the intake of fat was found to be adequate when compared to RDA in both shelter home and night shelter street children in all the age groups.

4.3. Anthropometric measurements of street children

The body weight, standing height, weight for age status (IAP classification) and BMI were assessed in all the street children. The means were compared with 50^{th} percentile of NCHS and results were presented in table 10 to 13.

4.3.1. Classification of street children based on NCHS standards

The mean anthropometric measurements i.e. weight and height of street children of shelter home and night shelter are given in table 10.

In both shelter home and night shelter street children the mean weights were found to be lower when compared with NCHS standards. The mean weights of night shelter children how ever were

still lower when compared with NCHS standards in all age groups and much lower in the age group of 10 – 11 years ($p < 0.01$).

The mean heights of both shelter home and night shelter street children were lower than the standards in all age groups as seen in table 10. The mean height of the shelter home street children were significantly higher ($p<0.01$) than night shelter street children in the age group i.e., 9 – 10 years.

4.3.2. Classification of street children based on IAP standards

The details in table 12 are pertaining to the classification of street children based on weight for age as normal or malnourished as per the Indian Academy of Pediatrics standards (1972).

It is evident from table 12 that, the per cent of normal children in both shelter home and night shelter street children were 50 and 26.6 per cent respectively. The per cent children suffering from very severe and severe grade malnutrition (body weight < 50% and 50-60%) was found to be less in shelter home by 3.3% and 5.0% compared to night shelter street children where the incidence was higher i.e. 5.0% and 8.3% respectively. Majority (45-65%) of the street children of both shelters were suffering from mild to moderate grades of malnutrition.

4.3.3. Classification of street children based on BMI

It is evident from table 13 that majority i.e., 56.6% and 41.6% of both shelter home and night shelter street children respectively fell in the normal category followed by chronic energy deficiency(CED) – I (18.3% and 23.3%) , CED-III (15.0% and 18.3%) and CED - II (8.33 %). Negligible per cent i.e., (1.6 %) were found to be over weight in both shelter home and night shelter street children.

4.4. Clinical signs and symptoms observed in street children

Clinical signs and symptoms observed in the street children is presented in table 14.

The clinical examination of the street children indicated that the majority of street children of both shelter home and night shelter home had cheilosis or glossitis (26.6% and 45.0%), anaemia (25.0% and 61.6%) followed by angular stomatitis (3.3% and 26.6%) respectively in both the groups. Mottled enamel was observed to the extent in the range of 1.7% - 10% in all the age groups of street children surveyed.

4.5. Morbidity pattern observed in street children

Personal hygiene of street children was very poor due to inadequate toilet and bath facilities at the street homes

It is observed from table 15 that incidence of common morbid conditions of scabies (skin infections), upper respiratory tract infections eye and ear infections, fevers and diarrhea was found among

the street children of night shelter higher when compared to shelter home street children where the per cent incidence of the morbidity was low.

Table 16 : Correlation between BMI, Height, and weight of street children in shelter home and night shelters

Variable	r-value
BMI	0.962**
Height	0.519**
Weight	0.730**

** Significant at 1% level.

Table 16 shows the relationship between the BMI, height and weight of street children residing in shelter homes and night shelters. It is evident from the table 16 that a positive correlation is clearly seen between BMI, height and weight of street children which is statistically significant.

Table 4 : Educational status of street children

S.No	Educational status	Frequency	%
1.	Attended school	82	68.3
	Not attended the school	38	31.7
	Reasons for not attending school		
	a) Lack of interest	16	42
	b) Parents death	6	16
	c) Parents expect to work	16	42
2.	Level of education		
	Primary school (up to 5^{th} class)	60	73.2
	Middle school (6^{th} and 7^{th})	22	26.8
3.	Reasons for discontinuation		
	a) Not interested	56	68.3
	b) Death of parents	14	17.1
	c) Family conflicts	12	14.6
4.	Interest in continuation		
	a) No	86	71.7
	b) Yes	34	28.3

Table 6 : Mean food intake of street children (9 – 10 years) in shelter homes and Night shelters

Food groups (gms)	Shelter Category SH n = 60	NS n = 60	RDA	% RDA met SH n = 60	NS n = 60
Cereals	227.2 ± 27	223.4 ± 29.8	250	91	89
Pulses	43.3 ± 5.7	36.5 ± 3.7	70	62	52
Green leafy Vegetables	46.2 ± 7.8	32.4 ± 5.81	75	62	43
Other Vegetables	40.4 ± 4.06	39.9 ± 3.73	50	81	80
Fruits	24.7 ± 3.3	32.4 ± 3.86	50	70	65
Milk	150 ± 20.4	127 ± 36.7	250	60	51
Fats & oil	20.2 ± 2.08	18 ± 3.13	30	67	61
Sugar & Jaggery	33.9 ± 9.4	38.2 ± 10.5	50	68	76

SH : Shelter home NS : Night Shelter

Table 8: Per cent adequacy of Nutrients in the diets of street children (9 – 10 years) as compared to RDA

Nutrients	Shelter Category		RDA	% RDA met	
	SH	NS		SH	NS
	n = 60	n = 60		n = 60	n = 60
Calories (K.cal)	1752 ± 207.7	1703.4 ± 227.3	1950	90	87
Proteins (gm)	29.6 ± 3.52	25.5 ± 3.41	41	72	62
Fat (gm)	21.9 ± 2.53	21.04 ± 2.8	25	88	84
Calcium (mg)	313.2 ± 37.2	278.8 ± 37.2	400	78	70
Iron (mg)	12.9 ± 1.54	9.9 ± 1.32	26	50	38
β – Carotene (μg)	1868 ± 222.02	1534.7 ± 204.8	2400	78	64
Vitamin – C(mg)	19.8 ± 2.35	14.8 ± 1.98	40	50	37
Thiamine (mg)	0.75 ± 0.09	0.5 ± 0.08	1.0	76	58
Riboflavin (mg)	0.9 ± 0.12	0.7 ± 0.10	1.2	81	62
Niacin(mg)	6.49 ± 0.77	4.9 ± 0.6	13	50	38

SH : Shelter home NS : Night Shelter

Table 7 : Mean food intake of street children (10 – 12 years) residing in shelter homes and night shelters .

Food groups (gms)	Shelter Category SH n = 60	Shelter Category NS n = 60	RDA	% RDA met SH n = 60	% RDA met NS n = 60
Cereals	27.8 ± 19.57	273.3 ± 10.89	320	86	85
Pulses	52.3 ± 2.41	45.9 ± 3.07	70	75	66
Green leafy Vegetables	78.4 ± 10.9	74.0 ± 18.5	100	78	74
Other Vegetables	62.1 ± 6.16	60.1 ± 7.25	75	83	80
Fruits	39.5 ± 2.82	35.6 ± 1.42	50	79	71
Milk	175 ± 20.55	142 ± 13.2	250	70	57
Fats & oil	22.9 ± 1.78	21.4 ± 1.74	35	66	60
Sugar & Jaggery	39.3 ± 4.23	31.2 ± 13.02	50	79	63

SH : Shelter home NS : Night Shelter

Table 9: Percent adequacy of nutrients in the diets of street children (10 – 12 years) as compared to RDA

Nutrients	Shelter Category		RDA	% RDA met	
	SH	NS		SH	NS
	n = 60	n = 60		n = 60	n = 60
Calories (K.cal)	1872.1 ± 133.23	1778.7 ± 70.6	2190	85	81
Proteins (gm)	37.6 ± 2.67	33.81 ± 1.35	54	70	63
Fat (gm)	18.84 ± 1.33	18.1 ± 0.71	22	86	82
Calcium (mg)	431.5 ± 30.7	408 ± 16.18	600	72	68
Iron (mg)	18.4 ± 1.31	13.94 ± 0.70	34	54	41
β – Carotene (µg)	1803.3 ± 128.39	1624.7 ± 64.56	2400	75	68
Vitamin – C(mg)	25.7 ± 1.83	23.16 ± 0.92	40	64	58
Thiamine (mg)	0.88 ± 0.06	0.8 ± 0.03	1.1	81	73
Riboflavin (mg)	0.98 ± 0.07	0.89 ± 0.04	1.3	76	69
Niacin(mg)	9.8 ± 0.70	8.9 ± 0.32	15	66	59

SH : Shelter home NS : Night Shelter

Table 10: Mean ± standard deviation for anthropometry of institutionalized street children.

Age (years)	Shelter	Frequency (n = 120)	Body weight (kg)		Height(cm)	
			Mean	s.d	Mean	s.d
9 - 10	SH	25	22.7	3.7	128.4	9.1**
	NS	25	22.1	4.14**	130.3	7.8
10 – 11	SH	20	26.3	4.39	137.1	6.39
	NS	20	24.4	4.66	137.09	5.01
11 – 12	SH	15	32.7	2.60	142.6	7.9
	NS	15	30.4	4.90**	41.4	6.1

SH – Shelter home

NS – Night shelter.

** Significant at 1 per cent level

Tale 11 : Comparison of various anthropometric measurements of street children with NCHS standards.

Age	Shelter	Frequency	Body weight (kg)			Height(cm)		
(years)		(n = 120)	Mean	NCHS std	Percent std	Mean	NCHS std	Percent std
9 - 10	SH	25	22.7	28.1	80.8	128.4	134.8	97.3
	NS	25	22.1	28.1	78.6	130.3	134.8	98.7
10 – 11	SH	20	26.3	31.4	83.8	137.1	140	97.9
	NS	20	24.4	31.4	77.7	137.09	140	97.9
11 – 12	SH	15	32.7	37.5	87.2	142.6	146	97.7
	NS	15	30.4	37.5	81.1	141.4	146	96.8

SH – Shelter home

NS – Night shelter.

Table 12 : Per cent distribution of street children (9-12years) according to IAP classification

S.No	Degree of malnutrition	Range (%)	Shelter home		Night shelter	
			No	%	No	%
1.	Normal	> 80	30	50	16	26.
2.	Grade I (Mild)	80 – 70	22	36.6	15	25
3.	Grade II (Moderate)	70 – 60	5	8.33	24	40
4.	Grade III (Severe)	60 – 50	3	5.0	5	8.3
5.	Grade IV (Very severe)	≤ 50	2	3.3	3	5.0

Ref : Indian Academy of Pediatrics (1972)

Table 13 : Classification of street children as per their BMI

S.No	BMI	Range(%)	Shelter home		Night shelter	
			No	Mean ± sd	No	Mean ± sd
1	CED - III	<16.0	9 (15)	12.6 ± 1.1	11 (18.3)	15.3 ± 0.39
2.	CED- II	16.0 – 17.0	5 (8.3)	16.1 ± 0.09	9 (15)	16.6 ± 0.23
3.	CED - I	17.0 – 18.5	11 (18.3)	17.4 ± 0.19	14 (23.3)	18.1 ± 0.23
4.	Normal	18.5 – 25.0	34 (56.7)	20.05 ± 0.97	25 (41.7)	23.1 ± 0.70
5.	Overweight	25.0 - 30	1 (1.7)	27.3	1 (1.7)	25.5

Ref : James et al (1988)

CED : Chronic Energy Deficiency

* Figures in parenthesis indicate percentages

Table 14 : Clinical signs and symptoms of nutritional deficiencies observed among institutionalized street children

Clinical signs	Age groups in years						% prevalence	
	9 – 10		10 – 11		11 – 12			
	SH	NS	SH	NS	SH	NS	SH	NS
	n = 25	n = 25	n = 20	n = 20	n = 15	n = 15	n = 60	n = 60
Night blindness	-	1 (4)	-	-	-	-	-	1 (1.7)
Angular stomatitis	2 (8)	11 (44)	-	2 (10)	-	3 (20)	2 (3.3)	16 (26.7)
Other B complex deficiencies (cheilosis)	10 (40)	12 (48)	4 (20)	9 (45)	2 (13.3)	6 (40)	16 (26.7)	27 (45)
Anaemia	4 (16)	20 (80)	8 (40)	12 (60)	3 (20)	5 (33.3)	15 (25)	37 (61.6)
Mottled enamel	1 (4)	4 (16)	-	-	-	2 (13.3)	1 (1.7)	6 (10)

* Values in parenthesis indicate percentages.

SH- shelter home

NS – Night shelter.

Table 15 : Morbidity pattern observed among the institutionalized street children

Signs	Age groups in years						% prevalence	
	9 – 10		10 – 11		11- 12			
	SH	NS	SH	NS	SH	NS	SH	NS
	n = 25	n = 25	n = 20	n = 20	n = 15	n = 15	n = 60	n = 60
Skin infections	22	25	10	12	4	11	36	48
	(88)	(100)	(50)	(60)	(26.7)	(73.3)	(60)	(80)
Eye infections	14	21	2	12	1	5	17	38
	(56)	(84)	(10)	(60)	(6.7)	(33.3)	(28.3)	(63.3)
Ear infections	13	18	3	7	2	6	18	31
	(52)	(72)	(15)	(35)	(13.3)	(40)	(30)	(51.6)
Upper respiratory infections	11	23	5	9	2	9	18	41
	(44)	(92)	(25)	(45)	(13.3)	(60)	(30)	(68.3)
Fevers	9	19	8	16	3	11	20	46
	(36)	(76)	(40)	(80)	(20)	(73.3)	(33.3)	(76.7)
Diarrhea	2	16	-	9	2	12	4	37
	(8)	(64)		(45)	(13.3)	(80)	(6.7)	(61.7)
Other diseases	-	5	-	4	-	2	-	11
		(20)		(20)		(13.3)		(18.3)

* Values in parenthesis indicate percentages SH – shelter home NS – night shelter

Figure 1 : Distribution of street children according to their age

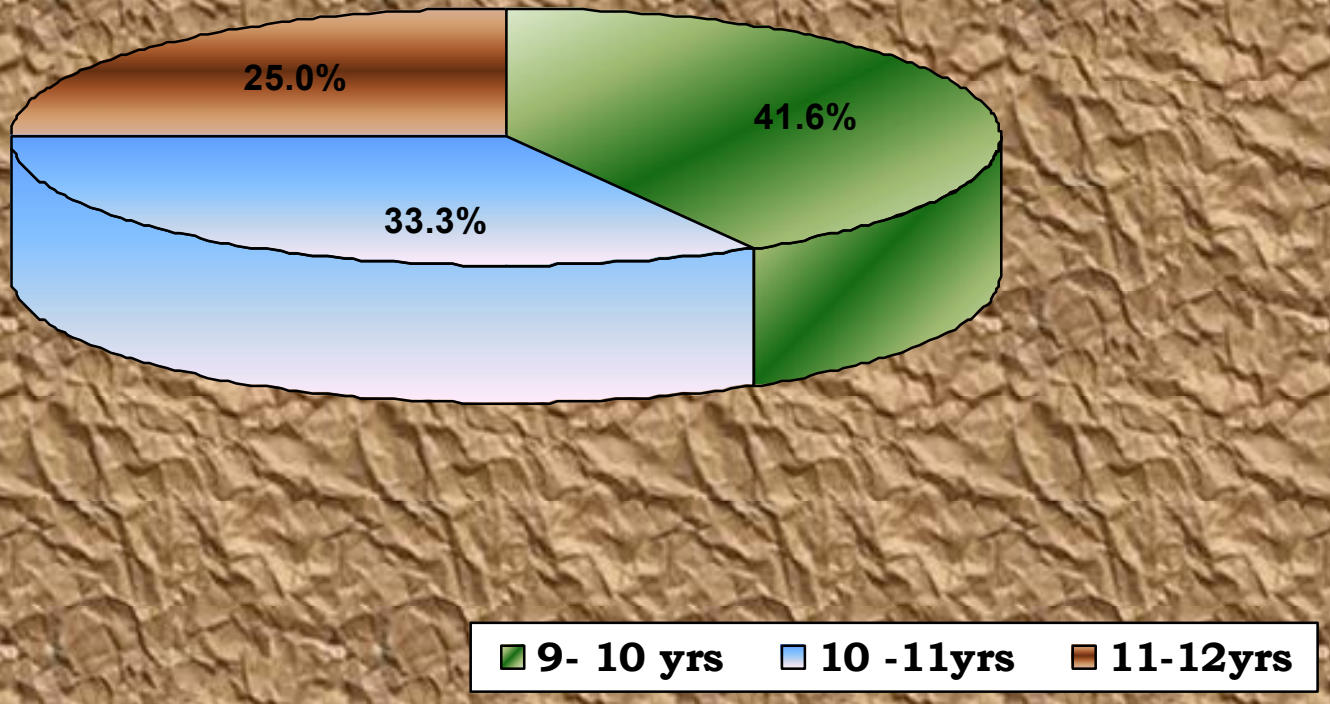


Figure 2 : Educational status of streetchildren

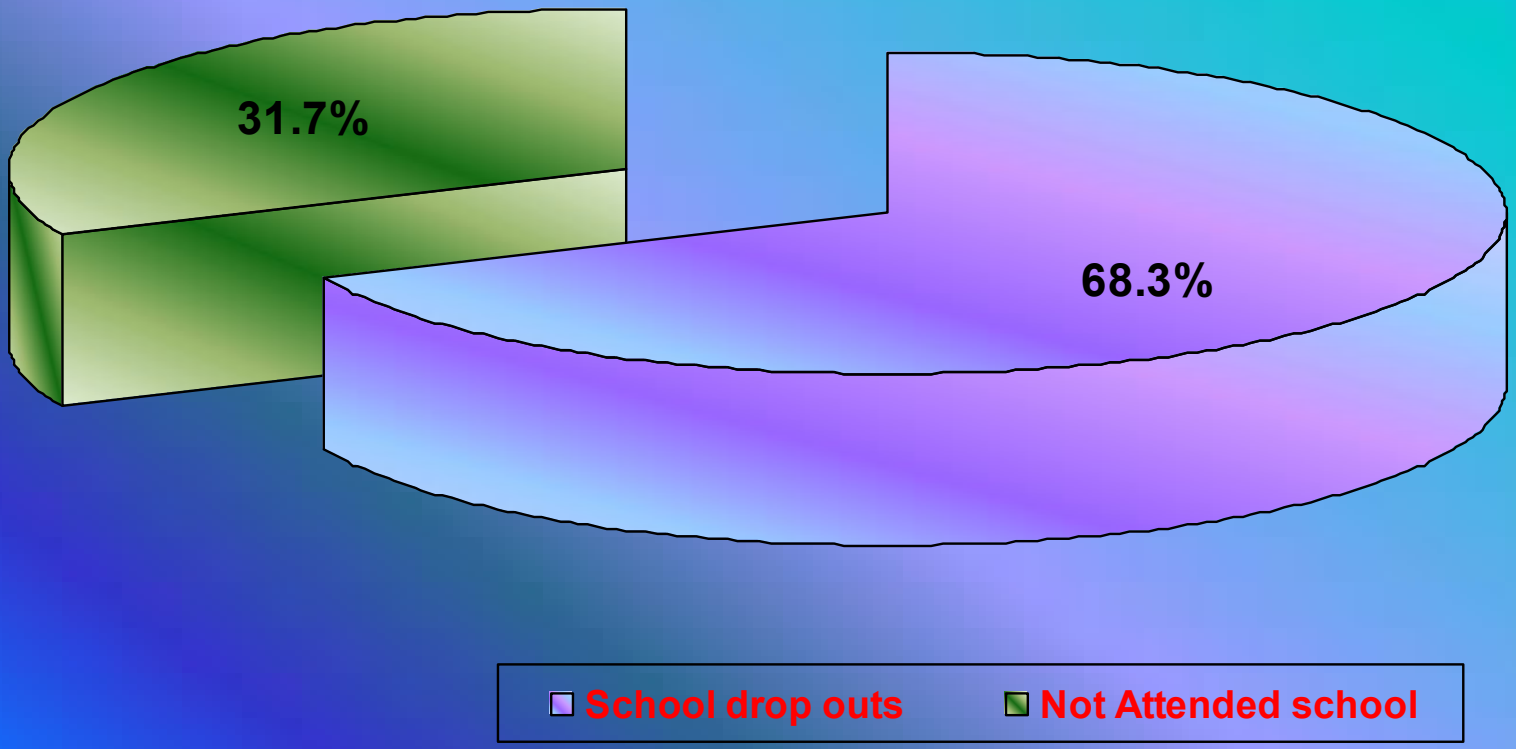


Figure 3 : Occupational status of night shelter street children

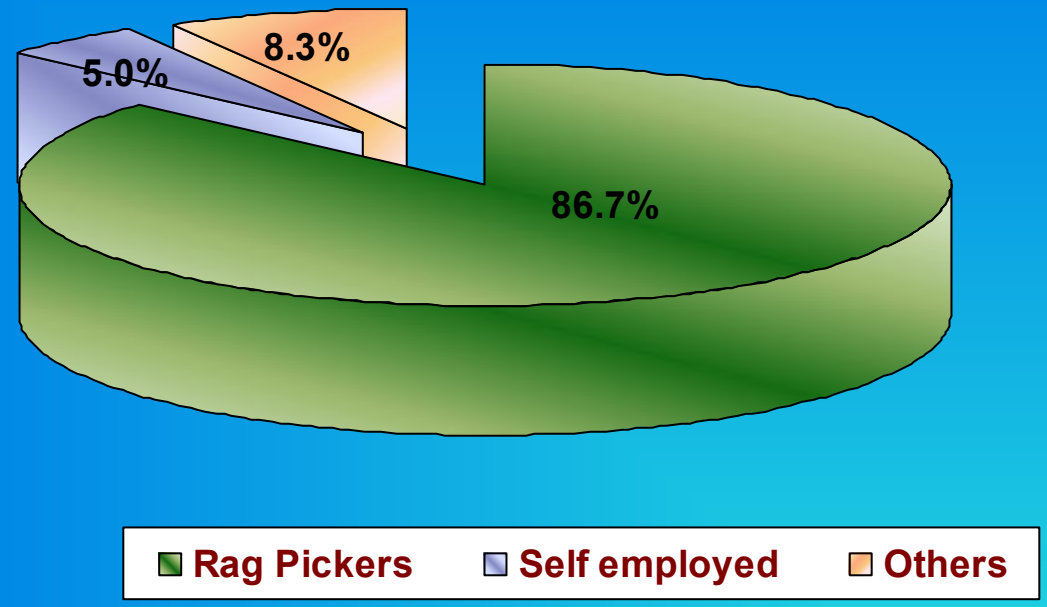


Figure 10 : Classification of street children based on weight for age

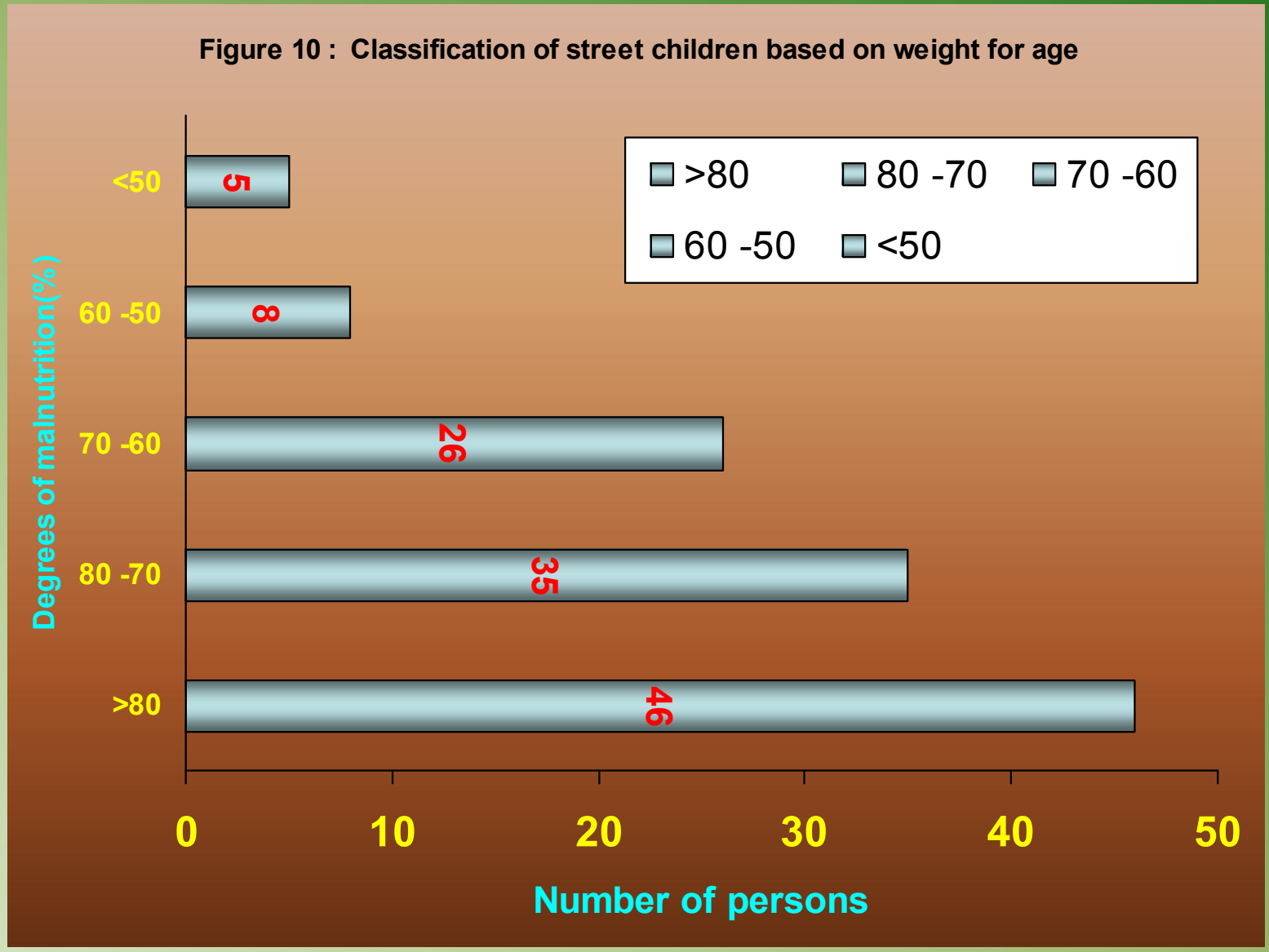


Figure 8 : Comparision of heights of street children with NCHS standards

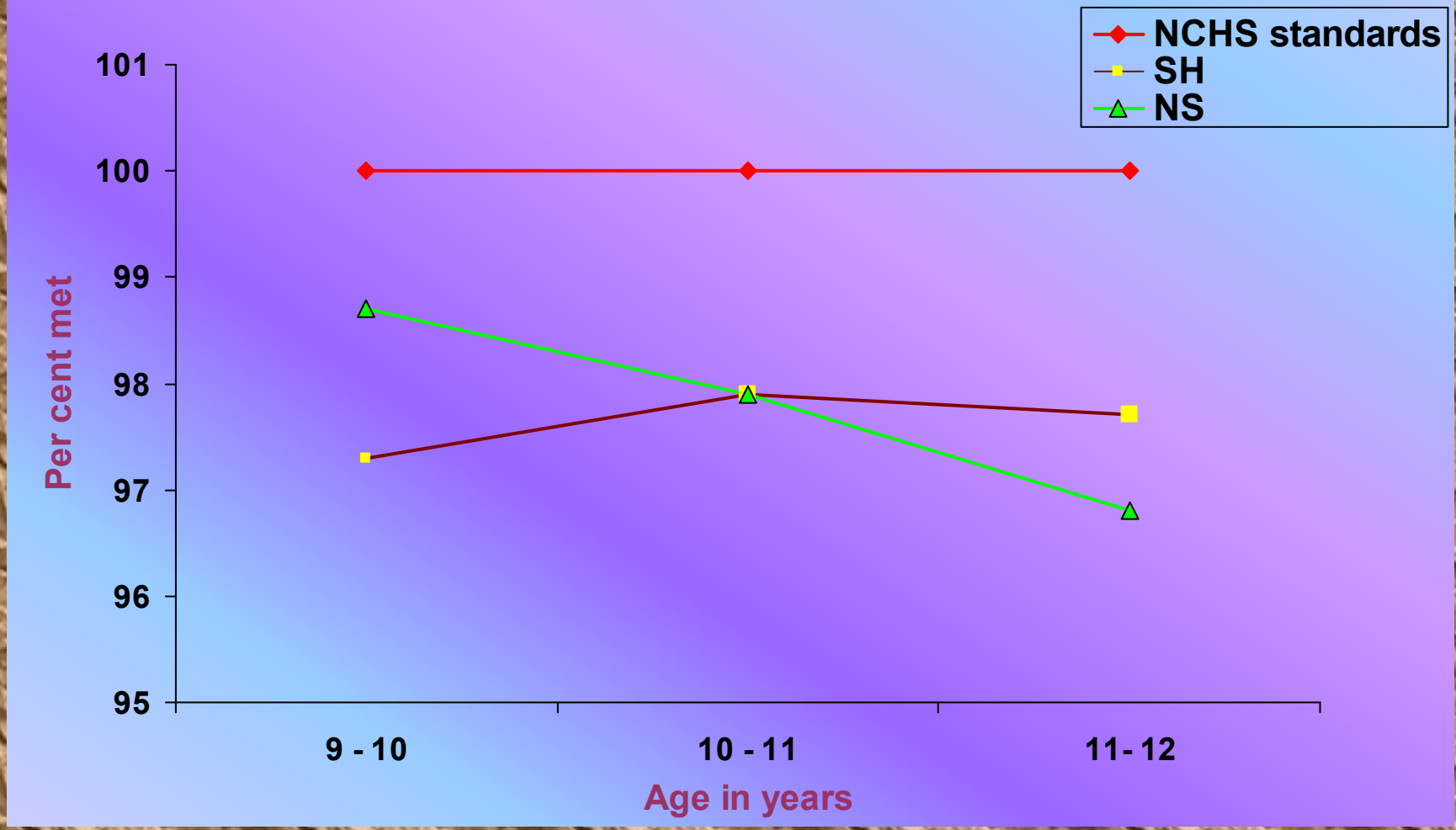


Figure 9 : Comparision of weights of street children with NCHS standards

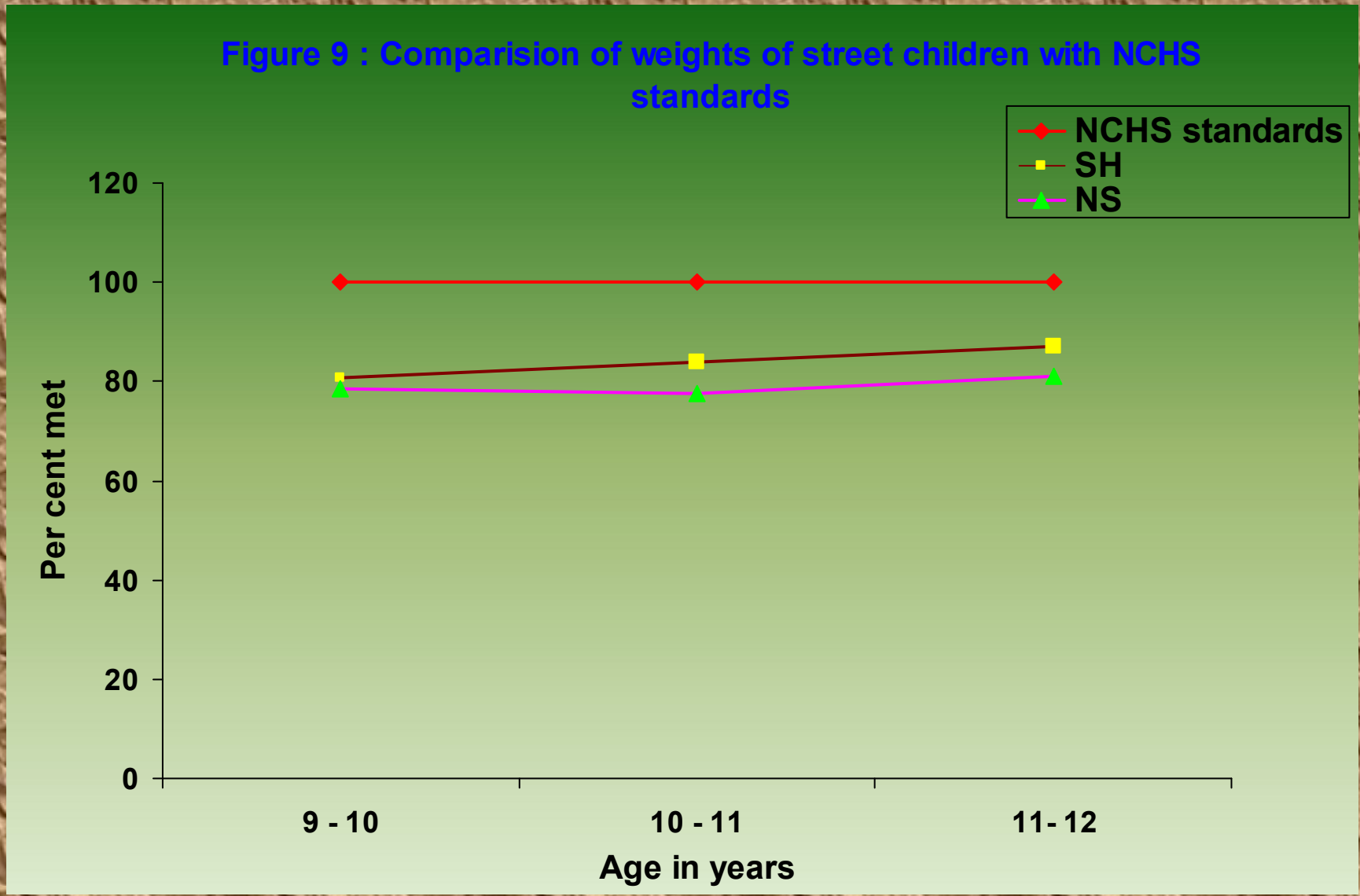


Figure 4 : Percent adequacy of food consumed by street children (9-10yrs) as compared to RDA

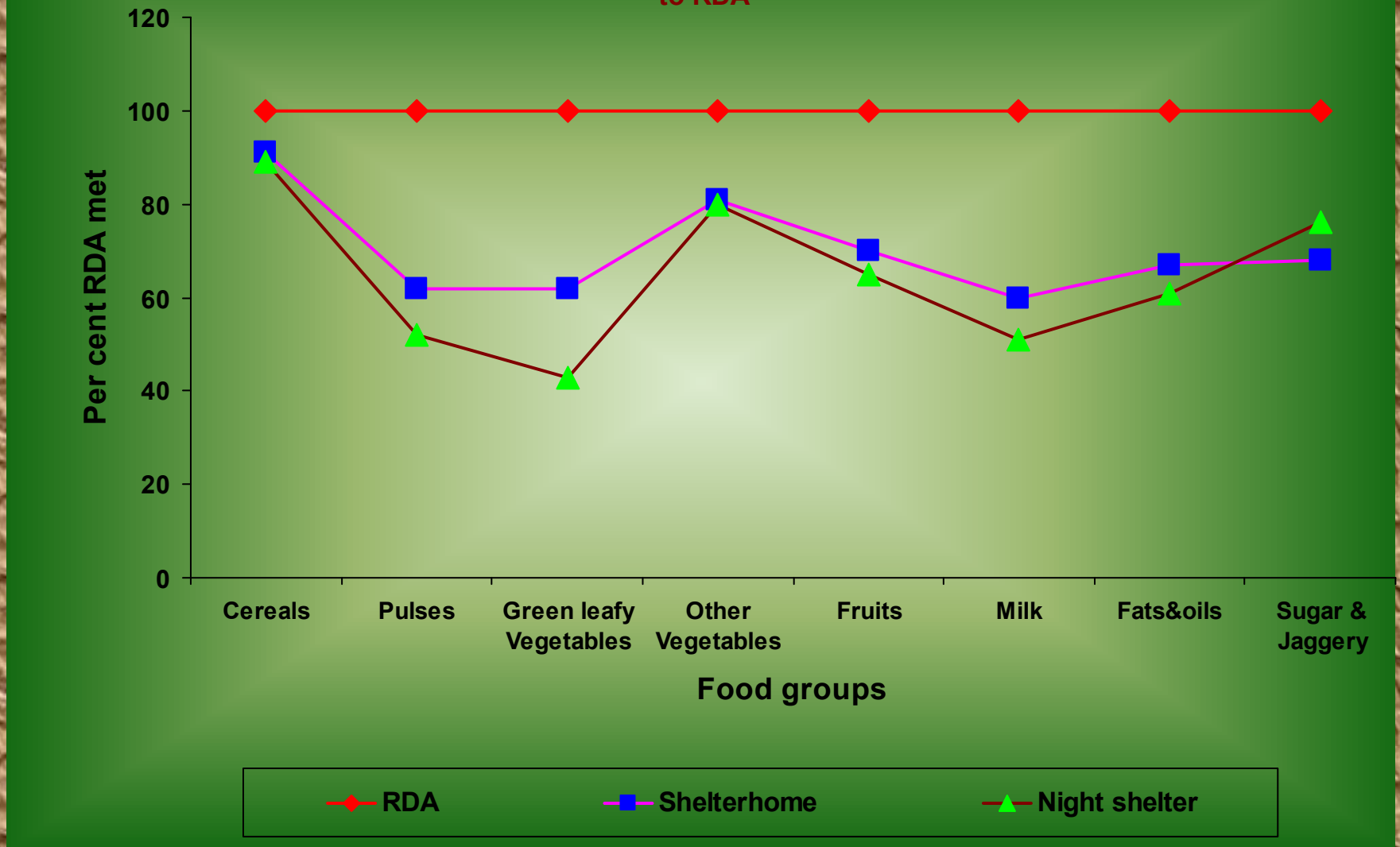


Figure 5 : Percent adeqaucy of food consumed by street children (10-12yrs) as compared to RDA

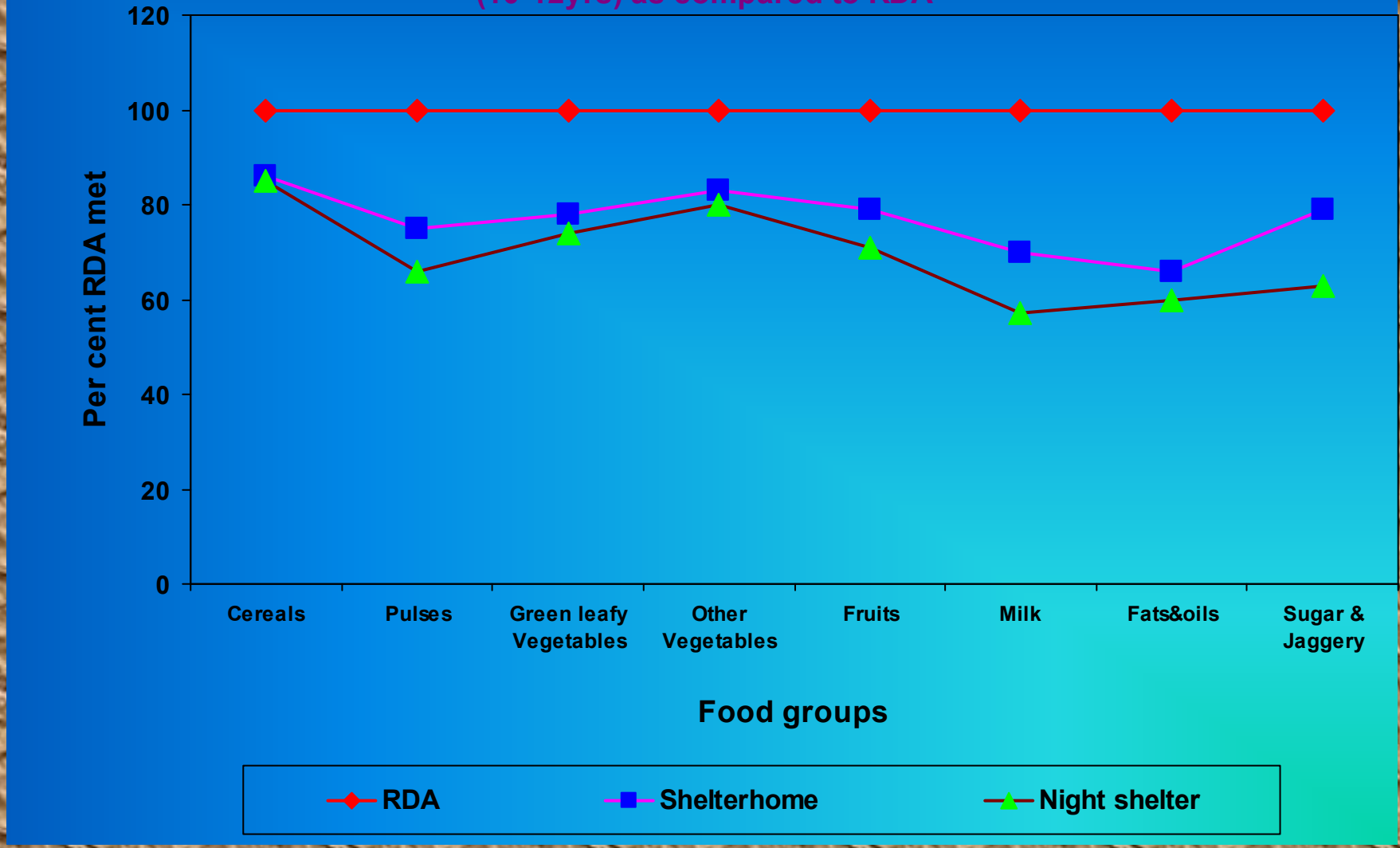


Figure 7 : Per cent adequacy of Nutrients in the diets of street children (10-12yrs)

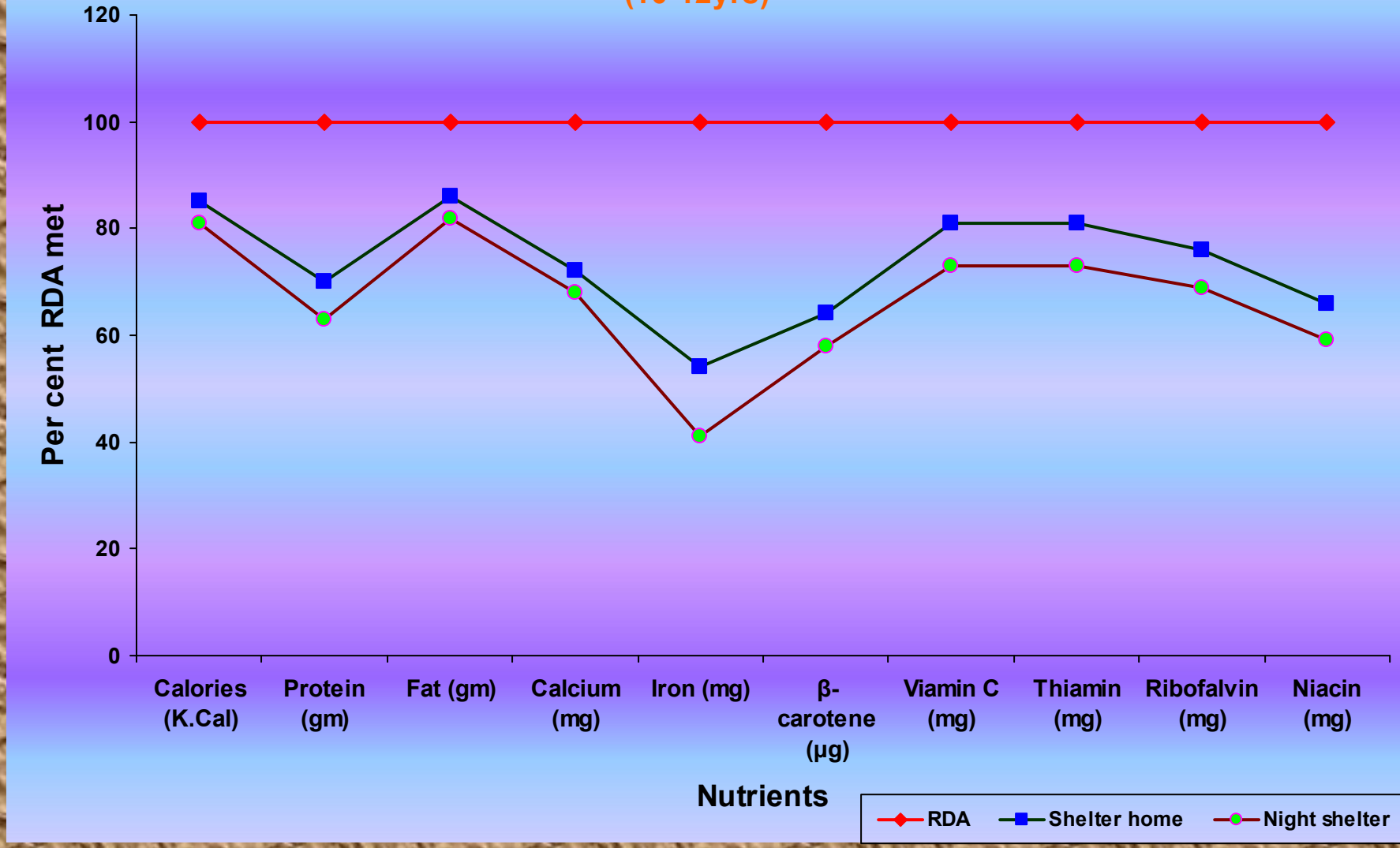


Figure 6 : Per cent adequacy of Nutrients in the diets of street children (9-10yrs)

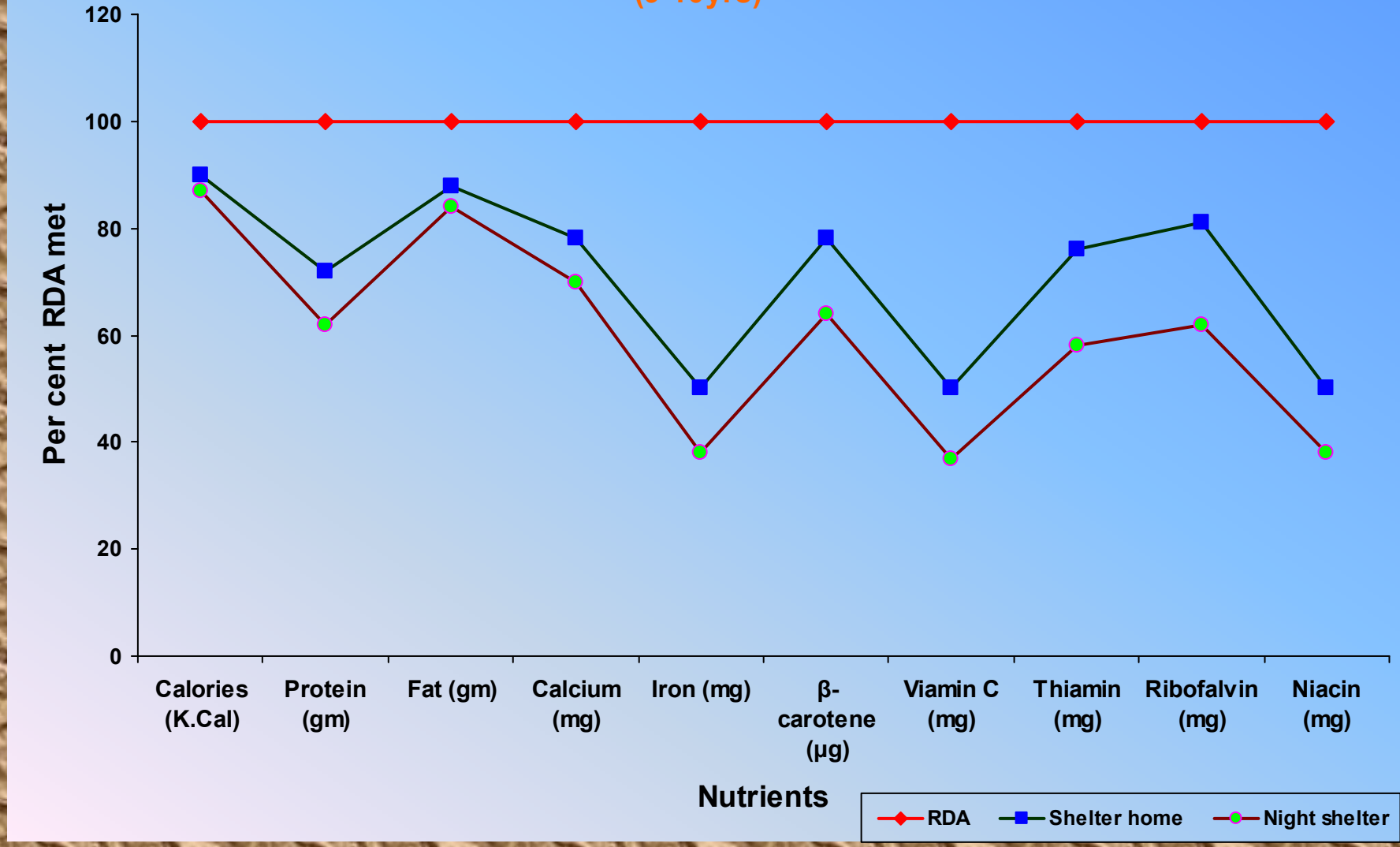
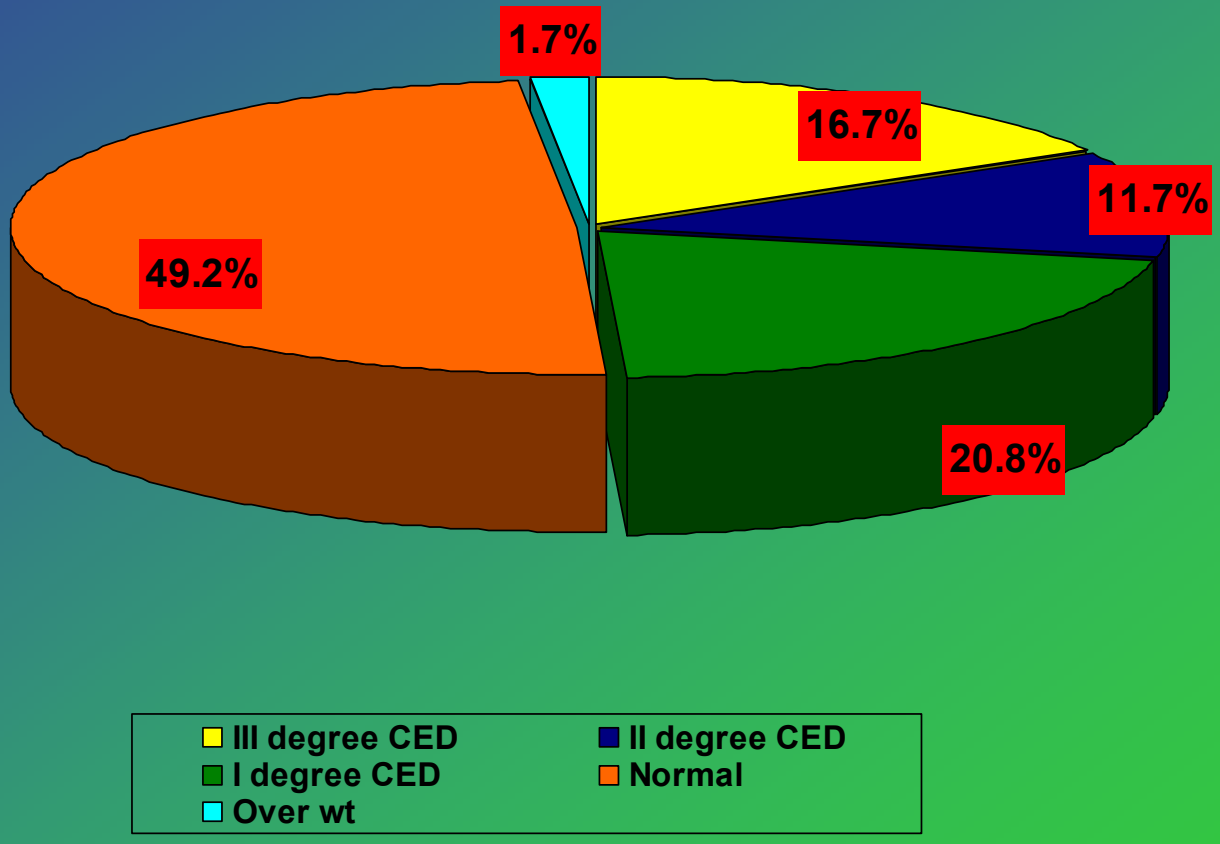


Figure 11 : Classifications of street children based on BMI



DISCUSSION

A total of 120 street children between the age group of 9-12 years in each of three shelter homes and three night shelter homes were studied for their nutritional status. The results drawn from the investigation have been presented under the following subheads.

5.1 General Information

5.2 Food and Nutrient intake

5.3 Anthropometric measurements

5.4 Clinical symptoms

5.5 Morbidity pattern

5.1 General Information

The educational status of street children is poor(Table 4 and Figure 2) as majority of street children attended school and subsequently dropped out of the school before completing primary education, and they were said to be not interested in continuing their education at present.

Occupational status of night shelter Street children shows that majority of street children were rag pickers which is clearly illustrated in Figure 3 and Table 5. Rag picking was the most common occupation of street children which allowed children a freedom which was rarely found in other occupations. The reasons for their interest in the occupation of rag picking might be there was no employer, no

discipline, no regularity involved in rag picking. Also, they do not require any skill or capital for doing rag picking and were sure of earning some income at the end of the day. Hence majority of street children chose rag picking as their occupation. This is in accordance with several other studies conducted in different parts of India (Agarwal 1989, Rao 1989, ICCW 1991, Pallipuram 1991, Subramanyam 1991) that most of the street children were earning their livelihood through rag picking. Similar findings were also observed by Guruswamy (1995) in a study where in majority (44.8%) of street children in Hyderabad were involved in rag picking followed by Bangalore (23.8%), Madras (9.6%), Delhi (8.3%) and Bombay (6.0%).

5.2 Food and Nutrient intake of street children

5.2.1 Mean food intake of street children (9-12 years)

The consumption of cereals which are the main sources of energy and which forms the bulk of diet for street children was adequately met by 91% and 85% (9-10 years) and 86% and 85% (10-12 years) in both shelter home and night shelter street children respectively. The maximum portion of energy in Indian diets is mainly provided by the cereals. As rice is the staple food, it is consumed in large quantities particularly by lower income groups, hence its requirement was adequately met. This is in contradictory with the study conducted by Khanna and Khanna 1996)in which the results indicated poor cereal consumption

Mean intake of pulses of street children were found to be below the RDA by 38% and 48 %(9-10 years) and 25% and 34% (10-12 years) in both shelter home and night shelter respectively. It was observed that inspite of pulse being consumed in all the three meals; the RDA was not met adequately because the recipe that was consumed was a liquid sambhar or rasam which contained only small quantity of dhal.

It was observed from Table 6 and 7 that the intake of other vegetables was found to be adequate in both shelter home street children and night shelter street children in all the age groups. The commonly consumed vegetables were brinjal, gourds, potato and tomatoes during the period of investigation. The types of vegetables consumed seem to vary depending on the seasonal availability. The consumption of fruits was affected due to lack of provision, lack of availability and poor purchasing power of street homes. Only low cost fruits such as banana and guava were consumed by street children at the time of the survey.

Mean intakes of green leafy vegetables and milk and milk products were found to be lower when compared to RDA in street children of both shelter home and night shelter in both the age groups. Green leafy vegetables were consumed in combination with dhal and hence quantity consumed in total was less (Table 6 and 7and Figures 4 and 5). The intake of milk and milk products was in the form of thin curds and buttermilk in case of shelter home street children while only buttermilk was found to be served at night shelter homes indicating the low intake of milk and milk products.

Consumption of sugar and jaggery was adequate in both shelter home and night shelter street children in both the age groups. The consumption of fats and oils met 67% and 61 %(9-10 years) and 66% and 60%(10-12years)of RDA in both shelter home and night shelter home street children in all the age groups.

5.2.2. Mean nutrient intake of street children (9-12 yrs)

It is a well known fact that nutrient intake is a reflection of food intake. The higher the intake of quality foods, higher is the nutrient intake.

The intake of calories was adequately met and was more than 80% when compared with the RDA in both shelter home and night shelter street children in both the age groups. This can be attributed to adequate intake of cereals Table 8 and 9 andFigure 6 and 7)which are the main sources of energy and also adequate intake of fats and oils and sugar and jaggery which might have reflected the calorie intake at high levels.

Table 8 and 9 indicate low intake of protein among the majority of the street children of both shelter home and night shelter inall the age groups. Protein in the diets is generally derived from pulses and milk and milk products. Since the intake of these major sources of food was low, the intake of protein was low. Meat, poultry and egg which form the rich animal sources of protein were very rarely provided by the street homes.

` The intake of fat among the street children of both shelter home and night shelters was satisfactory in both the age groups. The findings in Table 8 and 9 revealed that street children of both shelter home and night shelter had inadequate intake of iron. Green leafy vegetables are inexpensive sources of several nutrients including iron but however the consumption of green leafy vegetables was low resulting in poor intake of iron.

The intake of calcium was inadequate when compared to RDA in case of street children of both shelter home and night shelter of all the age groups. Since the rich source of calcium i.e., the milk and milk products was found to be low (Table 8 and 9)in the diets of street children and was provided in the form of thin curd and butter milk which consequently resulted in the low intake of nutrient as reflected in the dietary consumption.

Intake of β-carotene was lower when compared with the RDA. However, children were not found to have clinical symptoms of vitamin A deficiency. Sub clinical deficiency of vitamin-A might be existing and serum retinol would have given a true picture.Intake of vitamin C was found to be inadequate when compared to RDA. Low consumption of citrus fruits as affected by availability,seasonality and lack of purchasing power of street homes resulted in low intake of nutrient.

It is observed from Table 8 and 9 that street children of shelter home and night shelter had lower intake of thiamin. The reasons

for this is that the cooks in the shelters due to lack of proper knowledge regarding the nutrient, poor cooking practices like washing the rice thoroughly in water and cooking by the draining method may have resulted lower intake of nutrients. Since the intake of cereals i.e., rice was adequate it should have reflected in adequate intake of thiamin. But however low intake of thiamin was observed which could be attributed to faulty cooking practices. Riboflavin intake of street children of both shelter home and night shelter of both the age groups was inadequate when compared with RDA. As the intake of whole grain cereals and milk and milk products was low, which are the rich sources of riboflavin, the intake was found to be inadequate.

The niacin intake of street children of both shelter home and night shelter was low. The low intake of niacin might be due to insufficient intake of niacin rich foods like whole cereals and pulses and nuts.. This is in accordance with the study of Khanna G and Khanna P which indicated that intake of minerals and vitamins was deficient.

5.3. Anthropometric measurements

5.3.1. Classification of street children based on NCHS standards

The results presented in table 11 and figure 8 indicates that height of street children was close to the normal when compared to NCHS standards. The per cent standard height of all street children in all the age group of 9 – 10 years, 10 – 11 years and 11 – 12 years was in the range of 97 – 99 per cent which indicates normal linear growth.

Measurement of growth is an important and widely used method for assessment of nutritional status of communities (Gopalan, 1989). Weight for age gives a good indication of the growth at different stages of life. The cut off points are given above and below which an individual can be said to be normal, over or undernourished. Height gives an indication of linear growth over a period of time. Measurement of height reflects linear and skeletal development which is an indicator for long term nutritional status. Diets chronically inadequate in calories and proteins lead to malnutrition and nutritional dwarfism (Jellife, 1960). During childhood there is continuous growth and this can be used to measure anthropometry which is the data that is useful in assessing the nutritional status of street children.

The per cent standard weight of the street children of all age groups was between 78 and 87 per cent which is not on par with the NCHS standards which is clearly illustrated in figure 9.Similar findings were observed by Fierman *et al* (1991) and Gross *et al* (1996) in their studies where the heights and weights of street children were found to be lower when compared with NCHS standards.

Though the calories intake is adequate but still, it is not reflected in the weight which is low when compared with the NCHS standards. This could be attributed to higher levels of energy expenditure and due to frequent infections.

5.3.2. Classification of street children based on IAP

Majority (38.3%) of the street children are normal when classified according to weight for age in shelter home and night shelter(Table 12) .

The results in Table 12 and Figure 10 revealed that 30.8% of the street children were suffering with grade I malnutrition in both shelter home and night shelter. This might be because of low food intake and also fresh enrollment of children into street homes whose intake of food would have been low before joining the shelter homes. It might also be due to frequent infections and illnesses.

Street children having grade II malnutrition were found to be higher in number in night shelter home than in shelter home(Figure 10). Grade III malnutrition was also observed to be higher in street children of night shelter than in shelter home. This is in accordance with several studies conducted by Ray *et al* (2003), Ayaya and Esamia (2001),Khanna and Khanna (1996),Rao and Mallick (1992)and IPER (1992)who have indicated that most of the street children were undernourished and were suffering from mild to severe malnutrition(grade I –IV of the Indian Academy of Pediatrics criteria for PEM).

5.3.3. Classification of street children based on BMI

Body mass index indicates muscle and fat composition of the body. Body mass index was calculated for both shelter home street children and night shelter street children. The results from table 13 and

figure 11 indicates that 41.7% of shelter home street children and 56.7% of night shelter street children were suffering from various grades of chronic energy deficiency.

The majority of street children of shelter home were found to be normal as per the BMI classification compared with the night shelter street children .Chronic energy deficiency (CED)-I(41.6%),CED-II(23.3%) and CED-III(33.3%) was observed in both shelter home and night shelter in all the age groups. It was observed in Table 13 that negligible percentage i.e.1.7% of street children were over weight while none of the street children were obese. BMI indicates muscle and fat componenets of the body.However,few street children were over weight which can be attributed to the genetic makeup of an individual.

The poor nutritional status of night shelter street children may be due to the provision of only one meal by night shelter home and the other meals were taken outside which was not consistent and regular. It could also be attributed to type of occupation in which they are involved.

5.4. Clinical signs and symptoms observed in street Children

The common nutritional deficiency symptoms observed in street children were angular stomatitis,. cheilosis and glossitis, anaemia and mottled enamel(Table 14) indicating deficiency of vitamins and minerals.. As earlier discussed poor consumption of fruits, vegetables, whole grain cereals and pulses is low(Table 6 and 7) couldbe the reason

for this.. Night blindness was found in night shelter children as their diets were deficient in Vitamin-A.. Similar findings were observed by Rao and Mallick (1992) in a study where in 66% of the street children were found to have moderate protein and vitamin deficiency.

5.5. Morbidity pattern in street children

As seen in Table 15 the incidence of skin infections such as scabies, eczema, eye and ear infections, respiratory tract infections, fevers, diarrhea, dental caries were found to be prevalent in street children in both shelter home and night shelter. It is observed that the incidence of morbidity was generally high in all the age groups of both the shelter home and night shelter home.

Results of the study showed that majority of street children maintained poor personal hygiene and this definitely affected their health status which was evident from high incidence of skin infections and frequent illnesses. Similar findings were reported by Subramanyam and Sondhi (1990), Subramanyam (1991), Rao and Mallik (1992) that street children do not have adequate toilet and bath facilities to maintain their personal hygiene and were found to be more prone to frequent infections.

During the period of survey, it was observed that doctors were visiting shelter homes regularly to examine sick children and provided them with medicines and proper health care free of cost. Most of the children were irregular in staying in shelter homes especially in

night shelters. This makes them unable to avail the services of the doctor.

Correlation between BMI, Height and weight of street children

There was found to be a positive and significant correlation between BMI, height and weight of the street children in both shelter home and night shelter in all the age groups(Table 16). From the results it is clear that with increase in height and weight there was an increase in BMI. Street children with normal height and weight indicated normal level of BMI. Nutritional status is affected by food and nutrient intake, where as this depends on factors such as surrounding environment and other socio economic variables. Street children of shelter home when compared to night shelter street children had access to healthy and quality foods which in turn improved their nutritional status. Therefore increase in BMI was observed with increase in height and weight in all the age groups of shelter home street children unlike the night shelter street children.

The study has clearly revealed that the diets of the children are inadequate both in quantity and quality in terms of all the protective foods and nutrients. Their health status was also poor as evident by the morbidity incidence and their growth was affected which was evident from the lower weight for age of the children when compared with the standards, indicating the deplorable health and nutritional condition of street children.

Life on streets holds its own share of hardships which have an equally deleterious impact on the child's development. Thus, there is an immediate need to intervene in their lives, not only to counter act these harmful influences but also to improve the health and nutritional status to make them potential member of the society.

Limitations of the study

Health and nutritional status of the street children before their admission in to street homes was not known which might have enabled realistic comparison and impact of institutionalization on health and nutritional status of street children.

Suggestions for future Research

1. Similar studies could be continued on sample with different age groups
2. Similar studies could be conducted on problems of girl street children
3. Since the season has an effect on health and nutritional status, the study can be extended to three seasons.
4. Studies should be conducted to know the effect of institutionalization on nutritional status of street children.

SUMMARY

The term street children is applied to those who are engaged in multifarious activities on streets of big cities. Street children are a phenomenon, not only of developing countries but also in developed countries. According to UNICEF (1998) estimates 100 million children work on the streets of the cities of world. Though no record exists, an estimated 40,000 to 50,000 children are said to live in the streets of Hyderabad and Secunderabad(Krishnan,1995).

Once on the streets, these children face many problems which affect their overall development. They might be suffering from health and nutritional problems in addition to other social and emotional problems. Literature available on critical analysis on health and nutrition aspects of the children is scanty. Children are nations important asset and early years of childhood are the most significant for the development of intelligence, aptitude and personality. Hence an analysis on the health and nutrition situation of street children is necessary.

The present study therefore was undertaken with following objectives.

1. To collect general information using a structured schedule
2. To assess the food and nutrient intake using inventory method
3. To find height and weight using standard equipment

4. To conduct the clinical examination for any nutritional deficiencies among subjects to find the morbidity status of the street children
5. To compare the nutritional status of day shelter home street children and night shelter street children.

The present study was conducted on 120 street children in the age range of 9 – 12 years (boys) selected randomly from various shelter homes run by different voluntary organizations in city of Hyderabad and Secunderabad of Andhra Pradesh. Shelters for street children were found to be of two types i.e. shelter home and night shelter. Shelter homes provide shelter for whole day and night, provide food, education and recreational facilities while in night shelter; they are provided with an overnight stay, a night meal, non formal education, health care and counseling.

Nutritional status of street children was assessed using anthropometry, food and nutrient intake and clinical examination for nutritional deficiencies and morbidity pattern. A pretested interview schedule was used to obtain general particulars of the street children of shelter homes. The weights of children was recorded with Salter scale balance which is calibrated to the nearest 0.5 kg. Height was measured using anthropometry rod of 2 meters length calibrated to the nearest 0.1 cms. Food intake of street children was assessed by inventory method and 24 hour recall method. The clinical

examination for nutritional deficiencies of street children was done with the assistance of qualified medical doctor. Morbidity pattern for the last one month was recorded.

The data collected was statistically analyzed using percentage, mean, standard deviation, two sample Z test and correlation. The findings of the study are highlighted below.

1. Majority (58.3%) of the street children were in the age group of 10 – 12 years in both shelter home and night shelter.
2. Majority (68.3%)of street children were primary school drop outs and their main occupation was rag picking (night shelter street children)
3. The mean heights and weights of the both shelter home and night shelter street children fell below the 50^{th} percentile of NCHS standards. The mean weights of street children in all age groups were significantly lower ($p < 0.01$) when compared with NCHS standards.
4. The diets of all the street children were inadequate in all the nutrients and especially the proactive nutrients. The calorie intake me 80 % of the RDA in all street children. The intake of other nutrients i.e. proteins, calcium, iron, β-Carotene, vitamin C, thiamin riboflavin and niacin were found to be less (20 – 60 %) as compared with RDA. Their diets were deficient in pulses, green leafy vegetables, milk and milk

products and millets when compared with balanced diets (Gopalan *et al* 1984). Hygienic conditions were observed to be very poor in the street homes.

5. The nutritional status of street children according to Indian Academy of Pediatrics (weight for age status) showed that 38 per cent of street children were normal and majority of (45 – 65%) of street children were suffering from mild to moderate malnutrition. As per BMI 56.6 and 41.6 per cent of both shelter and night shelter street children were normal while 43 and 56 per cent were found to be suffering from different grades of chronic energy deficiency. Negligible per cent (1.7%) were found to be over weight in both shelter home and nights shelter street children.
6. Nutritional deficiency signs like angular stomatitis and anaemia, cheilosis, bleeding gums were prevalent among the street children. Mottled enamel was also observed in the street children. Vitamin A deficiency as manifested by night blindness was observed in 1.7 per cent of night shelter street children.
7. The prevalence of morbidity was found to be higher in children of younger age group i.e. 9 – 10 years as compared to older children. The incidence of scabies, fever, diarrhoea and

infections (eye, ear) was observed in the street children of both shelters.

The study has indicated that the diets of both shelter home and night shelter street children are deficient in quantity and quality as compared to RDA which is also reflected in anthropometry. Hence, there is a need for intervention program to improve the quality of diets, and the living environment of the street children.

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Appendix I : General information on street children homes

Pace of the survey: Date:

1. Name of the institution :
2. Location / Address of the institution :
3. Distance from the city (Kms) :
4. Year of establishment :
5. Building
    a) Own
    b) Rented
    c) Any other
6. Category of Institution :
    a) State government
    b) Central government
    c) Private
7. Sponsoring agencies
8. Approximate financial support
9. a) Individual donations if any : yes / No

    b) If yes approximate amount :
10. Staff pattern
11. Total number of inmates : Males: Females :
12. Nativity of imamates (specify)
13. Admission procedure (specify) : Referred / own

14. Availability of physical facilities

i) Rooms : Total number of rooms

a) Independent rooms

b) Common rooms Total no. of occupants

ii) Kitchen / dining room : Yes / No

iii) Library : Yes / No

iv) Sanitary facilities :

a) Bath rooms : Common / special

b) Water closet : Common / special

V) Furniture

a) Cots / beds : Yes / No

b) Tables / chairs : Yes / No

c) Others : Yes / No

15. Recreation / Entertainment facilities: Television /Radio/ News paper/ Reading books / others

16. General activities of the institution :

17. Availability of Media & health facilities: Doctor/ MPHW

a) Frequency of visits

b) Medical aid Free / Charged

18. General observations:

a) Environmental situation : Clean/ dirty

b) Ventilation : Good / bad

c) Living Space : Adequate / Inadequate

Appendix II : Schedule of Individual child

1. Name of the child :
2. Age of the child
3. Personal status of the child : Self employed / worker under a employer / student / Rag picker / Beggars
4. Personal Information
   a) At what age did you leave your family?
   b) Since how long are you staying in streets?
   c) Did any one encourage you to stay in night shelter / Shelter home? Yes/ No. If yes who are they : Friends / others
   d) Since how long you are staying in Night shelter / shelter home? 0 – 6 months / 6 moths – 1 year / 1 – 5 years / 5 -10 years / more than 10 years.
5. Eduaction.
   a) Did you ever attend school? If not what were reasons for not attending the school?
   b) Parents expect to work and earn
   c) Death of parents
   d) Not interested
   e) Any other

   If yes, up to what standard did you study?

f) Why did you leave schools there after? Give reasons.

i. Not interested
ii. Family conflict
iii. Parent expect to work
iv. Migration
v. Failed in school
vi. Others

6. Work details

i) Are you working?
ii) If yes, specify the nature of the work?
iii) How many hours do you work a day?
iv) How much do you earn 1 day?

7. Personal Hygiene

i) Do you adequate toilet & bath facilities? Yes / No

ii) Do you have your bath daily? Yes / No

iii] If no, how often do you bath?

Iv] Do you brush your teeth daily? Yes / No

v] Do you walk bare foot? Yes / No

vi] Do you wash your hands before and after eating the food? Yes / No

8. Eating Habits:

i) Do you have regular meals? Yes / No

ii) If yes how many meals do you have per day?

iii) Dou you accept poor quality food / leftover food Yes/No

iv) Do you eat fruits ? Yes/ No

If no what are the reasons for not eating fruits?

a) Costly b) Not interested c) Not good for health

d) Any other

Nutritional Assessment schedule

S.No: Date:

Name: Age:

Address: Sex:

District: Place:

Clinical examination

1. General Appearance : Normal built / Thin built / Sickly.
2. Hair : Normal/ lack of lustre/ dry pigmented / thin & sparse / easily pluckable / flag sign.
3. Face : Diffuse pigmentation/ naso labial dyssebacea/ moon face/ normal
4. Eyes : Conjunctiva – normal/dry/wrinkled / bitot spots
   Cornea – normal/dryness/ hazy or opaque
5. Lips : Normal/ Angular stomatitis / cheilosis
6. Tongue : Normal/ Pale & Flabby / Red & raw/ Fissured/ geographic
7. Teeth : Mottled enamel / caries / attrition
8. Gums : Normal / spongy / bleeding
9. Glands : Normal/ Thyroid/ Parotid enlargements

10. Skin : Normal / dry or scaly/ follicular hyperkeratosis
11. Nails : Koilonychias / Normal
12. Oedema : In deputed parts / Absent

13. Rachitic changes : Knock knees or bowlegs/ epiphysis enlargement/ beading of ribs/ pigeon chest
14. Internal systems : Mental confusion / sensory loss / muscle wasting / loss of position sense / Normal
15. Anthropometry
    a) Weight (Kg)
    b) Height (cms)

Diet survey Method : 24 hour recall method

Meal pattern	Name of Food Prepared	Name of food stuff used	Quantity used	Total cooked	Individual consumption	Left over

Clinical Morbidity of the children (for the last one month)

S.No	Name of the child	Age	Type of illness	Frequency of occurrence	Type of treatment Medical/ Habitual	clinical symptoms of nutritional deficiency Observed

Diet survey Method : Inventory Method

Days	Break fast ( )		Lunch ( )		Tea & Snacks ( )		Dinner ( )		Others ( )	
	Ingredients	Quantity (gm/ml)	Ingredients	Quantity (gm/ml)	Ingredients	Quantity (gm/ml)	Ingredients	Quantity (gm/ml)	Ingredients	Quantity (gm/ml)