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# Prevalence of protein energy malnutrition among Aganwadi children's of Hubli, Karnataka

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## Abstract

Anganwadi Centres (AWCs) have been established by Government. of India under ICDS Scheme (1975) with the objective to improve the nutritional and health status of children in the age group (0-6 years). Only a few studies have been done to study the nutritional status of Anganwadi children. To access the prevalence of Protein Energy Malnutrition (PEM) in Anganwadi children's in urban pocket and to know socio-demographic correlates of PEM. The cross sectional study was done on 680 children's from 30 Anganwadi centre's of Hubli District, Karnataka. Prevalence of PEM is 49.1% and 29.4% of children are of grade I severity. Prevalence is more in Hindu, 50.5% compared to Muslims, 47.4% and it was observed that prevalence is more in joint family,53.1% than nuclear family, 44.8% and the difference is statistically significant. The study demonstrate high prevalence of PEM, may be due to less coverage and poor utilization of services from these Anganwadi centres. ICDS program needs to be accelerated and extended to reach these areas.

Key Words: PEM, Prevalence, Anganawadi centres (AWCs), Hubli.

## Introduction

Malnutrition continues to be a major public health problem in most of the developing countries. Eighteen per cent of the under-five children in developing countries are estimated to be underweight in 2010. Nine per cent are severely underweight. The high prevalence of underweight in South Asia stands out in comparison to other regions of the world (http://www.childinfo.org/malnutrition_status.html). Globally more than one third of child deaths are attributable to under-nutrition (http://www.childinfo.org/malnutrition.html). The Global Community has designated halving the prevalence of underweight children by 2015 as a key indicator of progress towards millennium development goal (MDG) (Park 1991)

Malnutrition is a widely prevalent problem in India and one of astonishing magnitude. According to the 2005-06 National Family Health Survey 3 (NFHS-3), 20 % of Indian children under five years old were wasted and 48% were stunted. Importantly, with 43 per cent of children underweight rates of child underweight in India are twice higher than the average figure in sub-Saharan Africa 22% (National Family Survey, 2005).

Nutrition of these Children between 1 to 6 years of age is of prime importance as they are most vulnerable to deficiencies or malnutrition.

ICDS (Integrated Child Development Services) initiated in India and is the India's most ambitious multi-dimensional welfare program to reach millions of children and mothers who are caught in the grip of malnutrition, diseases, illiteracy, ignorance and poverty. Anganwadi centers (AWCs) have been established under this program with one of the objective to improve the nutritional and health status of children in the age group 0-6 years. Only a few studies have been done to study the nutritional status of anganwadi children. Hence the present study is undertaken in an attempt to assess the nutritional status of children between 1-6 years of age enrolled in anganwadi children.

## Materials and methodology

A cross sectional study for a period of one month from 6th June to 5th July 2012 was done on 680 children from 30 Anganwadi centres (AWCs) in Hubli urban area, Dharwad district, Karnataka state. Children both male and female between 1 to 6 years of age were considered for the study. The initial criteria was that the children in the age group of 1 to 6 year (both male and female) enrolled in AWCs attending anganwadi on the day of visit.

*Sampling Method*

Cluster sample method was used in the present study. Anganawadi centres were taken as cluster. Out of 236 AWCs in Hubli, 30 were selected by simple random sampling. All children attending anganawadi on the day of visit were included in study sample. Total 680 children were examined.

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*Methods of collection of data*

• Permission from Dharwad CDPO was taken before starting the study. Anganawadi workers were informed about the visit one day before. The purpose of the study and procedure were explained to them.
• Data was collected by, clinical examination, anthropometry and individual health record maintained in the Anganwadi centres.

**Table 1: Distribution of study subjects according to Socio-demographic profile.**

| | | FREQUENCY | PERCENTAGES |
|---|---|---|---|
| **Age in months** | 12-24 | 114 | 16.76 |
| | 25-36 | 162 | 23.82 |
| | 37-48 | 210 | 30.88 |
| | 49-60 | 157 | 23.08 |
| | 61-72 | 37 | 5.44 |
| **Sex** | Male | 300 | 44.1 |
| | Female | 380 | 55.9 |
| **Religion** | Hindu | 426 | 62.64 |
| | Muslim | 251 | 36.91 |
| | Others | 3 | 0.44 |
| **SES** | Class III | 69 | 10.14 |
| | Class IV | 247 | 36.32 |
| | Class V | 364 | 53.52 |
| **Mother's literacy** | Illiterate | 210 | 30.88 |
| | Primary | 42 | 6.17 |
| | Middle | 189 | 27.79 |
| | High school | 197 | 28.97 |
| | Sec. And above | 42 | 6.17 |
| **Literacy of father** | Illiterate | 178 | 26.17 |
| | Primary | 38 | 5.58 |
| | Middle | 146 | 21.47 |
| | High school | 241 | 35.44 |
| | Sec. And above | 77 | 11.32 |
| **Mother's occupation** | Labourer | 43 | 6.32 |
| | House wife | 624 | 91.76 |
| | Private employee | 0 | 0 |
| | Govt. employee | 6 | 0.88 |
| | Self - employee | 7 | 1.02 |
| **Father's occupation** | Labourer | 384 | 56.47 |
| | Self – employee | 201 | 29.55 |
| | Private employee | 69 | 10.14 |
| | Govt. employee | 26 | 3.82 |
| **Type of family** | Joint | 352 | 51.76 |
| | Nuclear | 328 | 48.23 |

All the anganwadi children present on the day of visit were included in the study. Socio- demographic details were collected from individual health record maintained in the center. Nutritional status of the children was assessed by clinical examination and anthropometric measurement like weight. Examination was conducted in day light. Weight was measured using salter weighing scale.

Expected weight = Age in months + 8/6.

Height was measured using measuring tape. Indian Academy of Pediatrics (IAP) classification was used to grade malnutrition. Socio-economic status of family was determined by using the modified B.G. Prasad's classification 2011 (Prasad 2011).

*Statistical Analysis*

Data was entered into Excel sheet for analysis. Chi square test and fisher exact test for categorical data was used as tests of significance. $P<0.05$ was considered as statistically significant for tests of significance.

## Results

Table 1 shows the demographic profile of study subjects. The children age ranged from 12-72 months with a mean age of 40.5 ± 13.65. The majority were females (55.91%) than males (44.1%). 62.64% of children were Hindus and (36.91%) Muslims. 53.52% of study subjects were in class V SES (Socio Economical Status), and 36.32% class IV. 30.88% of mother education of children were illiterate, 28.97% were high school. 35.44% of father education were high school, 26.17% were illiterate. 91.7% of mother occupation were housewife. 56.47% of father occupation were laborers, 29.55% were self employee.

Table 2 shows prevalence of PEM (Protein Energy Malnutrition). Overall prevalence of the study is 49.1%, among 29.4% is grade I and 16.2% is grade II.

**Table 2: Showing Prevalence of PEM.**

| | | Frequency | Percentage |
|---|---|---|---|
| **Prevalence of PEM** | Normal | 346 | 50.9 |
| | Grade I | 200 | 29.4 |
| | Grade II | 110 | 16.2 |
| | Grade III | 20 | 2.9 |
| | Grade IV | 4 | 0.6 |

Table 3 shows prevalence and socio-demographic correlates of PEM. Prevalence is more among age group of 3rd (86%) and 4th (82%) year of age. Highest prevalence among females than males both shows statistically significant. Prevalence is more in Hindu religion (50.5%) than in Muslim religion (47.4%), and is more in Joint family (53.1%) than Nuclear family (44.8%), and both are statistically significant ($X2=3.500$, $p<0.05$, $X2=4.689$, $p<0.05$). It is also observed that PEM is more in children whose mother and father were illiterate (51%, 51.7%), and is more in children's whose mother and father were laborer by occupation (62.8%, 51.8%).

## Discussion

In present study the prevalence of PEM among Anganwadi children is 49.1%. The similar type of study performed by Girish et al (2012), the prevalence of PEM was found to be 40.1% and in Verma et.al (2007) PEM was 48.7%, Harisankar et.al (2004), PEM was 26.83%.

In present study majority of were females (55.9%) as compared to males (44.1%). Verma et al (2006) also reported higher prevalence of in females (58.28%) than in males (40.72%).

**Table 3: Showing prevalence and its socio-demographic correlates of Protein Energy Malnutrition (PEM)**

| | | Frequency | Percentage | $X^2$ & p- value |
|---|---|---|---|---|
| **Age (in months)*** | 12-24 | 64 | 57.9 | $X^2 = 15.3$ P = 0.004 |
| | 25-36 | 75 | 46.2 | |
| | 37-48 | 86 | 40.9 | |
| | 49-60 | 82 | 52.2 | |
| | 60-72 | 25 | 67.5 | |
| **Sex*** | Male | 135 | 45 | $X^2$ =3.64 P = 0.056 |
| | Female | 199 | 52.4 | |
| **Religion*** | Hindu | 215 | 50.5 | $X^2 = 3.5$ P = 0.05 |
| | Muslim | 119 | 47.4 | |
| | Others | 0 | 0 | |
| **SES** | Class III | 29 | 42 | $X^2 = 2.05$ P = 0.359 |
| | Class IV | 119 | 48.2 | |
| | Class V | 186 | 51.1 | |
| **Mother's literacy** | Illiterate | 107 | 51 | $X^2 = 1.63$ P = 0.803 |
| | Primary | 18 | 42.9 | |
| | Middle | 94 | 49.7 | |
| | High school | 97 | 49.2 | |
| | Sec. And above | 18 | 42.9 | |
| **Literacy of father** | Illiterate | 92 | 51.7 | $X^2 = 1.76$ P = 0.780 |
| | Primary | 18 | 47.4 | |
| | Middle | 75 | 51.4 | |
| | High school | 115 | 47.7 | |
| | Sec. And above | 34 | 44.2 | |
| **Mother's occupation** | Labourer | 27 | 62.8 | $X^2$ =3.56 P =0.24 |
| | House wife | 300 | 48.1 | |
| | Govt. Employee | 3 | 50 | |
| | Self employee | 4 | 57.1 | |
| **Father's occupation** | Labourer | 199 | 51.8 | $X^2 = 3.84$ P = 0.279 |
| | Self-employee | 96 | 47.8 | |
| | Private employee | 29 | 42 | |
| | Govt. employee | 10 | 38.5 | |
| **Type of family*** | Joint | 187 | 53.1 | $X^2 = 4.69$ P = 0.03 |
| | Nuclear | 147 | 44.8 | |

***** Statistically significant at $p<0.05$

In present study majority of them belong to 37-48 month age group with grade I severity. Harisankar et.al (2004) reported that the prevalence of PEM is higher in age group of 37-72 months with grade I severity. It is also observed that prevalence of PEM is higher in children whose mothers were illiterate 51% and in children whose father's were labourer by occupation 51.8%. Verma et.al (2007) reported similar prevalence of PEM is higher in children whose mothers were illiterate (70%) and in children whose father's were laborer by occupation (61.18%).

## Limitations and bias

The nutritional status of children is often the result of many interrelated factors. Hence a comprehensive nutritional survey is required to obtain precise information on prevalence and geographic distribution of nutritional problems in a community.

The assessment of nutritional status involves various techniques, like clinical examination, anthropometric measurements, biochemical evaluation, functional assessment, assessment of dietary intake, vital statistics, and assessment of ecological factors. However, due to constraints like time, cost, facility, etc. The present study was restricted to clinical examination and anthropometric measurements.

## Conclusion

Overall prevalence of PEM was 49.1% in the study, the present study shows the increase in prevalence compared to other similar studies, may be due less coverage of Anganwadi centre in study area and poor utilization of services by people from these Anganwadi centres. Study provides data for improvement of services and programs for betterment of health and nutritional status of children.

## Recommendations

The study recommends ICDS needs be strengthened to function more efficiently in averting malnutrition among children. Food acceptable, palatable and liked by children needs to be assessed and the same should be provided. There is need to educate and emphasize the parents of children to provide nutritious locally available and low cost food items.

As causes of malnutrition in children are multi factorial improvement in one aspect does not reflect the desired change. The need of hour is adequate, timely, multi factorial and integrated approach by all departments and people for the improvement of nutritional status of children.

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