Original Research Article

Prevalence of undernutrition among 1-5 year children in urban Ballari- A cross-sectional study

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ABSTRACT

Background: The growth and development of child is a strong reflection of country's growth and development. Being most vulnerable segment of the society the preschoolers are at greatest risk of malnutrition for it is their growing period that demands high intake of protein and calories.

Objectives: To find out the prevalence of undernutrition among 1-5 years children in Urban Ballari.

Materials and Methods: This is a cross-sectional study conducted from January 2018 to June 2018 which included 700 children in the age group of 1-5 years residing in Ballari urban.

Results: Of total 700 study subjects, boys constituted 49.7% and girls 50.3%. The overall prevalence of under nutrition among the study subjects based on weight for age parameter was found to be 40.6%. (Normal- 59.4%, Moderate under nutrition- 22%, Severe under nutrition - 18.6%). Prevalence of stunting and wasting was 43.2% and 23.9% respectively.

Conclusion: The result of the study is indicative of high prevalence of undernutrition among children in the age group of 1-5 years in Ballari City.

1. Introduction

"Children of today are citizens of tomorrow", that is why it is very important to ensure proper health facilities as well as adequate nutritional intake for the children. The child population constitutes one of the most important sections of the society. According to 2011 census 13.1% of population in India is between 0-6years of age.[1] The growth and development of child is a strong reflection of country's growth and development. Being most vulnerable segment of the society the preschoolers are at greatest risk of malnutrition for it is their growing period that demands high intake of protein and calories.[2]

Undernutrition starts as early as during conception. Because of extensive maternal undernutrition (underweight, poor weight gain during pregnancy, nutritional anaemia and vitamin deficiencies), about 22% of the infants are born with low birth-weight (<2500 g), as compared to less than 10% in the developed countries. Both clinical and sub-clinical undernutrition are widely prevalent even during early childhood and adolescence.[3]

Malnutrition is still the major problem in our Country, 43% of the children under 5 years of age are underweight, 48% are stunted and 20% are wasted.[4] In Karnataka 35.4% of children under age five are stunted, about one in six (19.5%) are wasted, 32.9% are underweight, which takes into account both chronic and acute under-nutrition.[5]

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Like any other underdeveloped Districts of Karnataka as far as Health indicators are concerned, Ballari is also one of the underdeveloped District located in North Karnataka. Hence an attempt is being made to know the prevalence and determinants of under-nutrition (underweight, stunting and wasting) among children in the age group of 1-5 years in urban Ballari.

2. Objectives

To find out the prevalence of undernutrition among 1-5 years children in Urban Ballari.

3. Materials and Methods

This is a cross-sectional study conducted from January 2018 to June 2018 which included 700 children in the age group of 1-5 years residing in Ballari urban. The sample size was calculated by using the formula $N = z^2pq/d^2$, taking prevalence of under-weight which was 38% according to NFHS data in Karnataka state,[6] with a relative precision of 10% of p, the sample size calculated is worked out to be 620, considering 10% design effect, the final total sample size was 620+62=682≈700. Stratified Random Sampling technique was used where in out of 35 wards in Ballari city, 20 children in each ward were obtained by dividing sample size by no of wards (700/35=20 in each ward). A house to house survey was conducted until desired sample of 20 children was achieved in each ward. After taking an informed consent data was collected by personal interview of their parents using pretested semi structured questionnaire followed by anthropometric measurements (height, weight, MUAC) using calibrated equipments.

All the collected data was entered in data base and analyzed using SPSS software version 20. Descriptive statistics like percentages, mean, standard deviation were used to describe the data. Weight for age, Height for age, Weight for height was expressed in standard deviation units (Z scores) from reference median, as recommended by WHO.[7]

4. Results

4.1. Socio-demographic profile of the study subjects

A cross-sectional study conducted in urban wards of Ballari city which included 700 study subjects in the age group of 1-5 years. Among them about 35.3% belonged to 1-2yrs, 23.3% belonged to 2-3yrs age group, 23% belonged to 3-4yrs age group and 18.4% were in the age group of 4-5yrs. Of total study subjects, boys constituted 49.7% and girls 50.3%. There is no much difference in proportion of boys and girls. Majority of the study subjects were Hindus (71.6%) by religion. Family structure revealed that 58.1% of children belong to nuclear type of family and remaining 41.9% belong to joint family. (Table 1)

Table 1: Socio-demographic profile of the study subjects (N=700)

Variable	Frequency	Percent
Age in years		
1-2 Yrs	247	35.3
2-3 Yrs	163	23.3
3-4 Yrs	161	23.0
4-5 Yrs	129	18.4
Sex		
Boys	348	49.7
Girls	352	50.3
Religion		
Hindu	501	71.6
Muslim	175	25.0
Christian	18	2.6
Others	6	0.8
Type of family		
Nuclear	407	58.1
Joint	293	41.9

Table 2: Socio-demographic profile of the study subjects (N=700)

Variable	Frequency	Percent
Both parents working		
Yes	100	14.3
No	600	85.7
Mother Education		
Illiterate	56	8.0
Primary	66	9.4
Secondary	122	17.4
10th and above	456	65.2
Mother Occupation		
Unskilled	37	5.4
Semiskilled	7	1.0
Skilled	50	7.1
Business	8	1.1
HW/NW	598	85.4
SES Classification		
Upper (Class I)	12	1.7
Upper middle (Class II)	91	13.0
Lower middle (Class III)	272	38.9
Upper lower (Class IV)	325	46.4

Socio-demographic profile of the study subjects revealed 14.3% of children had working parents. Majority 65.2% of mothers had studied 10th standard. Majority of the mothers were housewives/not working (85.4%). Socio Economic Status of the study subjects was revealed nearly 46.4% of the families belonged to Upper lower class (Class IV) and about 38.9% of the families belonged to Lower middle class (Class III), while the upper middle class constituted only 13% and the upper class was only 1.7%. (Table 2)

Prevalence of under nutrition among the study subjects was found to be 40.6%. Moderate under nutrition was observed in 22% of the study subjects. Severe under nutrition was observed in 18.6% of the study subjects. Normal nutritional status was observed in 59.4%. (Table 3)

Table 3: Prevalence of undernutrition based on weight for age-WHO Standards (n=700)

Anthropometric parameter	Frequency	Percentage
Normal	416	59.4
Moderate	154	22.0
Severe	130	18.6
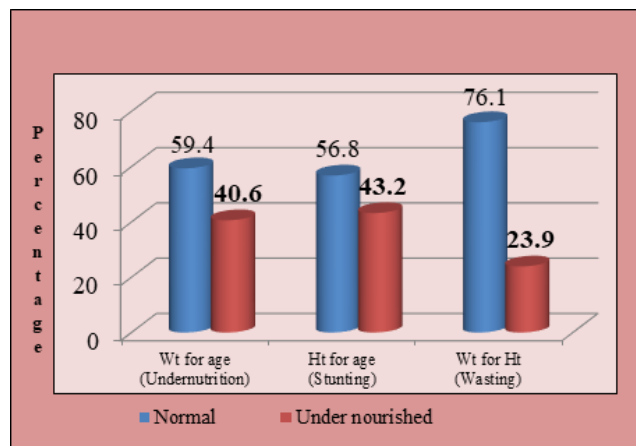
Fig. 1: Nutritional status of children based on WHO standards

Prevalence of under nutrition among the children was 40.6% and 59.4% of the children were normal weight for age. Similarly prevalence of stunting was 43.2% and 56.8% had normal height for age. However 76.1% of the children had normal weight for height and prevalence of wasting was 23.9% among the children. (Figure 1)

5. Discussion

In the present study the prevalence of undernutrition among the study subjects(40.6%) was higher than the state average (32.9%), the prevalence of stunting (43.2%) and wasting (23.9%) was also higher when compared to state average (35.4% and 19.5% respectively) as established by NFHS-5 Karnataka State report.[5]

In other studies done in Maharastra by Purohit et al. and Karnataka by Nayak K R et al also reported a slightly lower prevalence of undernutrition, stunting and wasting 38%, 40%, 16% and 37%, 38.2% and 23.7% respectively compared to the present study.[8,9]

While a very low prevalence of undernutrition (21.4%), stunting(31.2%) and wasting(13.8%) was reported in a study conducted by Vikas Gupta et al in 2014 in Rohtak, Haryana and another cross-sectional study done in Karnataka in 2010 in 11 anganwadi centres of Kakati-A sub centre, under Primary Health Centre Vantamuri of Belgaum district also showed a lower prevalence of underweight, stunting and wasting to be 26.55%, 31.38% and 7.59% respectively.[10,11] Similar low prevalence of undernutrition was also reported in a cross sectional study done by S.

Bisai et al. in a city of West Bengal found that the overall prevalence of underweight, stunting and wasting among the under five children to be 33.9%, 26.1% and 19.4% respectively.[12]

Another study done by Meshram et al. in Surat region, Gujarat, India reported a higher prevalence of undernutrition, stunting and wasting to be 44%, 39% and 22.5% respectively compared to the present study.[13] Very high prevalence of undernutrition 63.16% was reported by Shreyaswi et al. in their study done in Mangalore.[14] Similar higher prevalence was reported by few other studies done in rural Bangalore by Bobby Joseph et al which found that about 70% of the children were malnourished, similarly a study done by in a city of Rajasthan found the overall prevalence of underweight, stunting and wasting among the under five children to be 66%, 42% and 30% respectively.[15]

This difference in the prevalence of undernutrition in our study and in other studies may be due to difference in geographical location, difference in the dietary pattern or may be due to difference in methodology of selecting the study subjects.

6. Conclusions

The result of the study was indicative of high prevalence of undernutrition among children in the age group of 1-5 years residing in urban wards of Ballari City. Unlike in rural areas, undernutrition is also prevalent in urban areas. Arranging awareness programmes at schools or anganwadies for parents so that they are made aware about their child's nutritional status along with direct intervention strategies with nutrient dense food formulation is need of the hour.

7. Source of Funding

8. Conflicts of Interest

None declared.

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