

Nutritional Status by Using Selected Anthropometric Parameters of Under Five Children from the Selected Urban Slums in Pune City

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Abstract

Original Research Article

India secures a second position worldwide followed by Bangladesh in the year 1998. It accounts that 47% of the children possess a degree of malnutrition as per the estimation given by World Bank. In the world, India shows the highest ratio of underweight children in terms of mortality, productivity and economic growth. The main objective of this study is to assess the nutritional status among fewer than five children and to compare it with the selected demographic variables. The study is supported by modified health belief model. A structured interview schedule was used to determine the demographic data and anthropometric parameters of fewer than five children. Non Experimental uni-variant descriptive design is used, enrolling 100 under five children. The technique used in the study is Non probability convenient sampling technique and it shows that out of 100 under five children 67% are malnourished and 33% are well nourished respectively.

Keywords: Nutritional status, Anthropometric parameters, Malnutrition, Under five children.

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INTRODUCTION

India is one among the fastest growing countries in terms of economics and inhabitants, posing at a population of 1,139.96 million (2009) and growing at 10–14% annually (from 2001–2007). India's Gross Domestic Product growth was 9.0% from 2007 to 2008; since 1947 during Independence period, its economic status has been categorized as a low-income country with major population below the poverty line. This explains that most of the people are still living below the National Poverty Line; malnutrition refers to the situation where there is an unbalanced diet in which some nutrients are in excess, deficient or inadequate. Gender inequality is the most significant reason for malnutrition in India. Due to the low social status of Indian women, their diet often lacks in both quality and quantity. Women who are undernourished are more likely to have unhealthy babies. The knowledge among the Indian mothers regarding feeding their children is insufficient. Thus, new born infants are unable to get adequate amount of nutrition from their mothers.

Need of the Study

Malnutrition is increasing worldwide, which leads to worrying implications for short-term survival and longer-term well-being, economic growth, and socioeconomic inequality. The National Family Health

Survey (NFHS:3, 2005–6) states that approximately 5.2 crores children are undersized (height for age standard deviation [z] score < -2). In comparison, rural children are more malnourished than urban. Furthermore, it describes stunting as 40%, where wasting accounts 17% (weight for height z score < -2 SD) and 33% is low weight for their age (< -2 SD) in urban children under five. In the same survey, 47% of children from Mumbai slum areas were stunted which represents 16% wasted and 36% were underweight as per their age. Where trans-generational, environmental and dietary factors are considered to play an important role. There are questions about the underlying dynamics of nutrition, related to its significant increase in the gross national income per capita and concerns about its inequalities. During a survey conducted in the urban slum area it was found that many under five children were malnourished. Thus, it's important to group these children according to the grades of malnutrition. This will simplify the need to identify children who should receive benefits from the community based nutritional interventional program. Using the child growth standards formulated by WHO in 2006 it is expected that many children will be found to have an unsteady growth. Thus, it is essential to assess the nutritional status of fewer than five children with the use of selected anthropometric parameters.

Problem Statement

Nutritional status by using selected anthropometric parameters in selected urban slum areas in Pune City. Objectives of study are, to assess nutritional status among fewer than five children and to correlate nutritional status with the selected demographic variables.

REVIEW OF LITERATURE

Section I: Literature Review Related To Nutritional Status of Children

Thomas R *et al.* [1] has conducted a study to assess the Nutritional Status of Tribal Children and Adolescents in Rural South India. The main objective of the study was to investigate the prevalence of malnutrition using anthropometric measures in a cohort of tribal students attending a school in rural south India. Children attending the school were 3 meals a day were offered. Analysis of anthropometric data obtained aimed to determine the nutritional effect of the food provided. The assessment was done of nutritional status of 409 students by comparing anthropometric measurements to reference values.

It was found that the prevalence of thinness of new students was 39.4 %. 59.5 % and that of old was 52.9 %. 59.4 % of students were classified as stunted. 73.8 % of 'new' students and 52.9 % of 'old' students demonstrated stunting (P 0.091). Significantly (P 0.010) it was noted that more 'new' female students had stunted growth. Thus, the acute and chronic measures of malnutrition were highest among the adolescent students attending the school.

Amrutha *et al.* [2]. A study aimed to evaluate the nutritional status of infants in Ramanathapuram district of Tamil Nadu. The present study comprised a community based cross sectional study conducted in 7 talukas. A total of 2800 infants (<1 yr of age) comprising of 1400 male and female infants respectively were randomly selected from 7 talukas. Anthropometric parameters such as weight, crown heel length, head circumference, arm circumference and chest circumference were measured using standardised procedures. Clinical examinations for the manifestation of micronutrient deficiency signs were performed. Biochemical estimations of serum haemoglobin, vitamin A and urinary iodine were estimated for 5% of the infants.

A result shows that Low birth weight was observed among 33.5% of the infants, with 1.6% weighing <1500 g. being underweight (35.4%), stunting (29.6%) and wasting (18.9%) were also observed among the infants. Different forms of clinical signs and symptoms of micronutrient deficiencies were observed among 21.3% and 27.4% of the male and female infants. Sub-clinical deficiency of hemoglobin, vitamin A and iodine were observed among 67.1%, 52.1% and 32.9 % of the infants, respectively.

Section I: Literature Review Related To Effectiveness of Anthropometric Parameters

Haifa Tawfeek *et al.* [3] Anthropometric measurements were obtained in 3,616 children of under five years of age. Among those children, 24% were diagnosed as moderately undernourished and 6% as severely undernourished by mid upper arm circumference measurements. The anthropometric indices used to identify malnutrition were weight for age, weight for height and height for age Z scores. Each of the anthropometric index was categorized as mild (-1 to -2 SID), moderate (-2 to -3 SID), or severe (< -3 SD) [14 According to weight-for-height, only 11% were diagnosed as moderately undernourished and 3% as severely undernourished. The inconsistency between the results of these two measurements can be minimized by establishing a new cut-off level for mid-upper-arm circumference for defining malnutrition in our population.

Khan A Z *et al.* [4] Anthropometric parameters were measured of 1012 rural school-going children, selected randomly. There were 776 males and 236 females in the age group of 5-15 years. The parameters of weight and height were recorded for every child. Age and sex break-up was studied and compared with the Indian Council of Medical Research standard. The comparison made separately for boys and girls showed that the values for both sex in all age groups were less in comparison to the standards given by Indian Council of Medical Research. The majority (83.6%) of the children belonged to the middle and low social class according to the modified Prasad's classification. Physical growth, in terms of weight and height, is considered an important parameter reflecting the pattern of growth and development in a community, this nutritional deficiency results in relative stunting of growth.

MATERIALS AND METHODS

Research Approach

The main aim of this study is to assess nutritional status by using selected anthropometric parameters of under five children in order to achieve the objectives of this study, the method adopted was descriptive approach. Research design adopted is Non experimental uni-variant descriptive design in urban slum areas of Pune city. Study was conducted from august 2019 to nov.2019 on 100 samples less than five years of children residing in urban slums. Samples were selected by Non Probability convenient sampling.

DATA ANALYSIS & RESULTS

The collected data is tabulated, analyzed, organized and presented under the following headings:

Section I: Analysis of demographic data of the mothers of under five children. This section includes distribution

of subjects in relation to demographic data using frequency and percentage.

Section II: Analysis of data related to nutritional status of under five children.

Section III: Analysis of data to find the association of nutritional status of under five children with selected demographic variables.

Section i: analysis of demographic data

The analysis of the collected data was done with the help of inferential and descriptive statistics. The data is then processed by using Chi square. A 'p' value less than 0.05 was considered as significant. Descriptive statistics in the form of calculation of mean and standard deviation was utilized to analyze the demographic variables.

Table-4.1.1: Socio-demographic data of mother

Parameters		No of cases	Percentage (n=100)
Age of mother (Yrs)	< 20	5	5
	21 – 30	88	88
	31 – 40	5	5
	>40	2	2
Under five children	1 – 2	97	97
	3 – 4	3	3
Education	Primary	45	45
	Secondary	35	35
	Higher secondary	13	13
	Graduate & above	7	7
Occupation	Employed	42	42
	Housewife	58	58
Type of family	Joint	38	38
	Nuclear	62	62
Monthly income	<5000	27	27
	5001 – 10000	49	49
	10001 – 15000	7	7
	>15000	17	17

MAJOR FINDINGS OF STUDY

Section I: Analysis of the demographic data of mothers of under five children

- Illustrates mothers belonging to the less than or equal to 20 are 5%; the maximum i.e.88% belongs to the age group between 21 – 30 years. And 5% belongs to the age group 31- 40 years while only 2% mothers belong to more than 40 years
- Majority (97%) of the families have 1-2 under five children and 3% of the families have 3-4 under five children.
- Majority of mothers (45%) have studied up to primary; 35% have studied up to secondary while

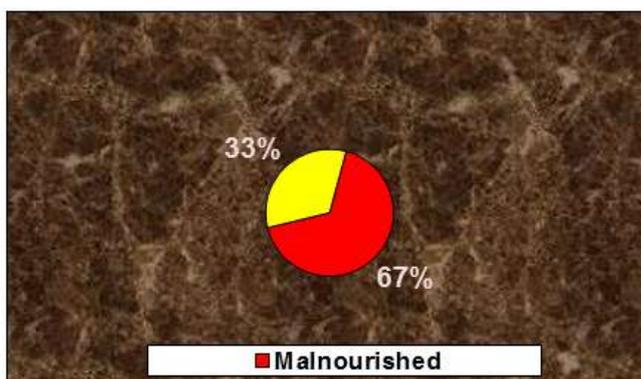
13% have higher secondary education. Only 7% have acquired graduation and above

- Majority of the mothers i.e. 58% are housewives while 42% are employed.
- Most of mothers (62%) are from nuclear family and 38% are from joint family.
- The family income of 49% mothers is Rs. 5001-10000, 27% have a monthly family income of less than Rs. 5000. Whereas 17 % mothers have a monthly family income of more than Rs.15000/-; only 7% have a family income of more than Rs.10001 - 15000.

Section ii: analysis of data related to the nutritional status of fewer than five children

Table-4.2 (a): Nutritional status wise distribution of children in study group

Nutritional status	No. of children	Percentage
No. of malnourished children	67	67
No. of non – malnourished children	33	33
Total	100	100

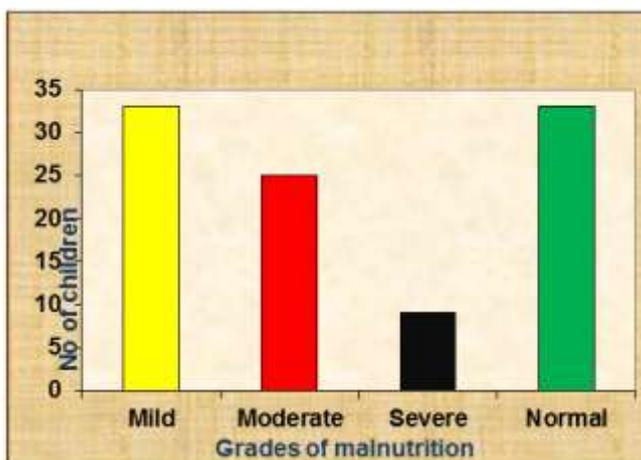


Graph-4.2 (a): Pie diagram shows the distribution of under five children based on their nutritional status (n=10)

Graph 4.2 (b) States that out of 100 under five children 67 % children are malnourished and 33% children are non malnourished.

Table-4.2 (b): Distribution of fewer than five children based on grades of malnutrition

Grades of malnutrition	No. of children	Percentage
Mild	33	33
Moderate	25	25
Severe	9	9
Normal	33	33
Total	100	100



Graph-4.2 (b): Bar diagram shows grades of malnutrition among under five children (n=100)

Graph 4.2 (b) Shows the grades of malnutrition; 33% children are having mild malnutrition, 25% children are having moderate malnutrition and 9% children are having severe malnutrition

Section iii: the association of nutritional status of fewer than five children with selected demographic variables.

Table-4.3 (a): Association between age and nutritional status in study group

Age (Yrs)	Nutritional status		Total
	Malnourished	Non- malnourished	
<20	4	1	5
21 – 30	59	29	88
>30	4	3	7
Total	67	33	100

Chi-square = 0.75, P>0.05

Graph 4.3 (a) shows there is a significant association between nutritional status of the fewer than five children and age of mother at 0.05 level of significance.

Table-4.3 (b): Association between less than five children and nutritional status in study group

No. of under five children	Nutritional status		Total
	Malnourished	Non- Malnourished	
1 – 2	65	32	97
3 – 4	2	1	3
Total	67	33	100

Chi-square = 0, P>0.05

Graph 4.3 (b) shows there is no association between nutritional status of fewer than five children and the number of fewer than five children in the family at 0.05 level of significance.

Table-4.3 (c): The association between education and the nutritional status

Education	Nutritional status		Total
	Malnourished	Non- malnourished	
Primary	30	15	45
Secondary	24	11	35
Higher secondary	7	6	13
Graduate & above	6	1	7
Total	67	33	100

Chi-square = 2.17, P>0.05

Table 4.3 (c) shows there is a significant association between the nutritional status of under five children and education of mother at 0.05 level of significance.

Table-4.3 (d): Association between occupation and nutritional status

Occupation	Nutritional status		Total
	Malnourished	Non – Malnourished	
Employee	29	13	42
Housewife	38	20	58
Total	67	33	100

Chi-square = 0.14, P>0.05

Table 4.3 (d) shows there is a significant association between the nutritional status of under five children and occupation of mother at 0.05 level of significance.

Table-4.3 (e): The association between the type of family and their nutritional status

Type of family	Nutritional status		Total
	Malnourished	Non- Malnourished	
Joint	26	12	38
Nuclear	41	21	62
Total	67	33	100

Chi-square = 0.06, P>0.05

Table 4.3 (e) shows there is a significant association between nutritional status of the under five children and the type of family at 0.05 level of significance

Table-4.3 (f): Association between total family income and nutritional status

Total family income	Nutritional status		Total
	Malnourished	Non- Malnourished	
<5000	17	10	27
5001 – 10000	35	14	49
10001 – 15000	4	3	7
>15000	11	6	17
Total	67	33	100

Chi-square = 0.98, P>0.05

Table 4.3 (f) states that there is significant association between nutritional status of under five children and their total family income at 0.05 level of significance.

Table-4.3 (g): Association between age of child and their nutritional status

Age of child	Nutritional status		Total
	Malnourished	Non- Malnourished	
<1	11	2	13
1 – 3	46	20	66
>3	10	11	21
Total	67	33	100

Chi-square = 5.61, P>0.05

Table 4.3 (g): shows there is a significant association between nutritional status of the under five children and their age at 0.05 level of significance.

Table-4.3 (h): Association between gender of child and their nutritional status

Sex of child	Nutritional status		Total
	Malnourished	Non- Malnourished	
Male	34	20	54
Female	33	13	46
Total	67	33	100

Chi-square = 0.87, P>0.05

Table 4.3 (h) shows there is a significant association between the nutritional status of fewer than five children and their gender at 0.05 level of significance.

Table-4.3 (i): Association between birth weight and nutritional status

Birth weight	Nutritional status		Total
	Malnourished	Non - Malnourished	
<1.5	13	8	21
1.5 – 2.5	40	18	58
2.5 – 3.5	11	5	16
>3.5	3	2	5
Total	67	33	100

Chi-square = 0.48, P>0.05

Table 4.3 (i) shows there is a significant association between the nutritional status of under five children and their birth weight at 0.05 level of significance.

LIMITATION OF THE STUDY

- The study is limited to the under five children.
- Non Probability convenient sampling technique is used.
- Only a certain parameter is used to assess the nutritional status of the children.

CONCLUSION

The study concludes that fewer than five children residing in selected urban slums are not maintaining proper nutritional status. The data analysis is done with the help of inferential and descriptive statistics. The data is further processed by using Chi square. A 'p' value less than 0.05 was considered as significant. Descriptive statistics in the form of calculation of mean and standard deviation was utilized to analyze the demographic variables. Among 100 under five children 67% of children are malnourished and 33% children are well nourished. Among 100 under five children 33% of children are come in grades of mild malnutrition, 25% are come under moderate malnutrition, 9% are come under severe malnutrition and 33% are come under normal nutritional status.

There is a considerable association between nutritional status of the under five children at 0.05 level of significance with selected demographic variables i.e. age of the mother, education of mother, occupation of mother, type of family, total family income, age of the child, gender and birth weight. Health care workers need to give more attention to children to get community based nutritional interventional program.

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