Original article

A study on assessment of nutritional and immunization status of under-five children in urban slums of Jamnagar city, Gujarat.

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Abstract:

Background: Malnutrition is very rampant in India. About 47 per cent of under-five children are malnourished. Malnutrition is a leading cause of childhood mortality and morbidity as well as permanent impairment of physical and possibly mental growth of survived children.

Objective: To find out the prevalence of under-nutrition, to identify various demographic and socio-economic risk factors associated with under-nutrition and to assess various aspects of nutritional and immunization status of children aged between 1 and 5 years of age living in urban slums of Jamnagar city.

Design: It is a cross-sectional, population based, descriptive study conducted in urban slums of Jamnagar Municipal corporation area, in August 2008 to October 2010. The study samples were children aged between 1 and 5 years of age. Total sample size was 450.

Sampling Technique: 30 cluster sampling technique (15 children per cluster)

Results and Conclusion: We observed that prevalence of malnutrition was 54% among under-five children, of which half of the children were in grade-I and grade-II. We also observed that prevalence of malnutrition was higher in female children, mothers with low literacy levels, and belonging to lower socio-economic class.

Recommendations: Service delivery component of RCH and other child health programmes needs to be strengthened further, especially in urban slums, to improve nutritional status of under-five children. Raising female literacy will also improve their social status and reduce female child discrimination, and thereby help building malnutrition free India.

Key words: under-five, urban slum, malnutrition, immunization, social class

Introduction:

Children are the most important assets of our country. Childhood and maternal under-nutrition is currently the single leading cause of the global burden of under-nutrition. One in every three malnourished children of the world lives in India.[1] India also contributes to the highest number of deaths among under-fives in South East Asia region and one-fifth of under five deaths worldwide.[2] At least half of Indian infant deaths are related to malnutrition, often associated with infectious diseases, which are mostly vaccine preventable diseases (VPDs).[3] Nutritional problems like Protein Energy Malnutrition (PEM), Anaemia, and Vitamin-A deficiency continues to be major problems in Indian children. These nutritional deficiencies adversely affect the health and development of children and contribute to high level of morbidity and mortality in the developing countries like India.[4] There are many national programmes in India, like RCH programme, IMNCI, ICDS scheme, Mid-day Meal programme etc., but still 47% of children under five years in India are malnourished.[5] This study is an attempt to

find out prevalence of malnutrition and assess the nutritional and immunization status of under-five children of urban slums areas.

Materials and Methods:

The present study is a cross-sectional study conducted in urban slums of Jamnagar Municipal corporation area, from August 2008 to October 2010. The study samples were children aged between 1 and 5 years of age.

Based on the national prevalence of protein energy malnutrition, which was 47%[5], the sample size of the study was calculated using the Epi-info with relative precision of 10% and confidence interval of 95%. Thus, using the formula, $N= (1.96)^2xPQ/e^2$, where N is total sample size required, P is prevalence of protein energy malnutrition (47%), Q is 1-P (53%), and e is relative precision (10% of P).[6] Thus, total sample size would be 433. To make it round-off, we included total 450 children of age 1-5 years.

Sampling Technique

As per the list of urban slum areas of Jamnagar city obtained from Municipal Corporation office, slum areas were selected by using 30 cluster sampling technique. From each cluster 15 children were selected randomly.

The study was carried out by undertaking house to house visits of the area of each cluster. From a random direction in each cluster, study was started by asking the family if there was a child between 1-5 years in the house. Every child between 1-5 years was included in the study till the sample size of 15 was complete in each cluster.

Data were collected in a predesigned and pretested Performa by interviewing mothers of children 1-5 years of age after obtaining signed informed consent from the respondents. In case of working mothers, the family member present in the family at the time of visit was interviewed. Mothers were asked to give details of the immunization status, birth history etc. Mothers were asked to show immunization card to confirm vaccination status. If not available, then verbal information from the mother is collected.

Each child was subjected to anthropometric and clinical examination. Nutritional status of children was measured by Gomez classification.[7] Socio-economic status was measured by Modified Prasad's Classification.[8]

Data were entered and analyzed using Microsoft Excel spreadsheet for Windows 7.

Results:

The study found that the prevalence of malnutrition was 54%, of which half of them belonged to grade-I and grade-II. Majority of children (74.45%) were Hindus, while 23.55% were Muslims. Majority of deliveries (72.44%) were conducted in a hospital, whereas only 27.56% children were born at home. About half of children belonged to nuclear family and half to joint family. The details about the demographic variables were given in Table No.1 and 2.

Discussion:

In our study, age distribution of under-five children were almost equal in different age group (Table-1), each age group catered about one-fourth of the children. About 54.22% children were males and 45.78% were females.

Mishra et al in 2001 also observed almost equal distribution of children in different age groups.[9] It was 17.50% in age group in 0-1 year , 19.23% in 1-2 years, 18.65% in 2-3 years, 22.89% in 3-4 years and 21.73% in 4-5 years.

A study conducted in 2003 by Anita Khokhar and S. Singh[10] found in their study a higher percentage of male children (58.6%) than females (41.4%). Awasthi. S and Pande.VK (1997)[11] also found in their study a higher percentage of male children (51.70%) than females (48.30%)[11]. Same observation was noted by Bhalla et al in the year 1997.[12]

This study found that about 74.45% children were Hindu, while 23.55% were

Muslims. Yadav RJ and Singh.P (1999)[13] had similar observations. They found that 91.80% of children were Hindu, 7.50% Muslims and 0.50% other religions (Sikh, Christian). Anita Khokhar and S. Singh (2003) also found in their study found 91% of children to be Hindu, 5.2% Muslims and 3.8% to other religions. [10]

In this study, overall literacy status of mother was 57.33%. Out of them, 37.56% were educated up to primary schooling, 17.11% had completed their secondary schooling. Only 12 (2.66%) mothers were educated to higher secondary or higher level.

Different level of literacy amongst mothers in various studies and present study is because of different geographical locations. Yadav R.J and Singh.P (1999)[13] in their study had a higher level of illiterate mothers i.e. 56.40% but also had a higher percentage of mothers (27.30%) having secondary or higher level of education. Biswas et al (1999)[14] also had a higher percentage of illiterate mothers i.e.63.49%. Kadam et al (2001)[15] had a similar percentage of mothers (48.51%) being illiterate.

Majority of mothers in this study, i.e. 85.78% were housewives. Mothers working as labourer and agricultural work were 8.44% and 0.22% respectively. Only 5.56% mothers were serving either government or private sector. Almost similar observation was seen in a study by Hussain TM (1994)[16] who found 88% of mothers to be housewives. Deb SK (1998)[17] also found 48.27% of mothers being housewives.

Socio-economic status is one of the important determinant of health and well being of children. Majority of families (42.89%) belonged to socio-economic class IV, followed by socio-economic class-III (28.44%) and Class V (17.43%). Biswas et al (1999)[14] had similar observations who found maximum number of children i.e. 39.54% from social class IV followed by 27.35% and 25.28% from social class V and III respectively. Hassan et al (2001)[18] in their study also found higher percentage of children belonging to lower socio-economic classes.

Out of 450 children, 338 (75.11%) were fully immunized, 60 (13.33%) were partially immunized and 52 (11.56%) were not immunized at all. Yadav RJ and Singh P (1999)[13] found 60.8% of children being fully immunized. Bhatia et al (2004)[19] in slums of Chandigarh found 58.66% of children being fully immunized 30.70% were partially immunized and 27.7% unimmunized.

The study revealed prevalence of malnutrition which was 54% among children between 1 and 5 years of age. Of them, majority of them were in malnutrition grade-I (26.22%), followed by grade-II (21.33%) and grade-III (6.45%). It was also observed that prevalence of malnutrition was higher in female children compared to male children. This difference was found statistically significant.

Dwivedi et al in 1992[20] and Ray et al in 1996[21] also observed higher prevalence of malnutrition among female children compared to male children. Bhalani KD and Kotecha PV (2002)[22] found prevalence of malnutrition to be 41.00% in grade I, 20.00% in grade II and 02.00% in grade III in their study.

Conclusion:

We observed that prevalence of malnutrition was 54% among children aged between 1 and 5 years of urban slum areas of Jamnagar city. Majority of children were in grade-I and II. We also observed that prevalence of malnutrition was higher in female children, mothers with low literacy levels and belonging to lower socio-economic class.

Table . 1. Demographic Characteristics Study Participants and their association with malnutrition.

Demographic Variable	Malnutrition Present No. (%)	Total No. (%)	Chi-square value (p-value)
Age Group			
1-2 years	74 (61.58)	121 (26.89)	Chi square =3.54 p>0.05
2-3 years	58 (51.33)	113 (25.11)	
3-4 years	63 (52.50)	120 (26.67)	
4-5 years	48 (50.00)	96 (21.33)	
Total	243 (54.00)	450 (100)	
Sex			
Male	117 (47.95)	244 (54.22)	Chi-square =7.32 P<0.05
Female	126 (61.16)	206 (45.78)	
Total	243 (54.00)	450 (100)	
Literacy Status of Mother			
Illiterate	109 (56.77)	192 (42.67)	Chi-square =13.92 P<0.05
Primary	101 (59.76)	169 (37.56)	
Secondary	30 (38.96)	77 (17.11)	
Higher Secondary	3 (25.00)	12 (2.66)	
Graduate and above	0 (0.00)	0 (0.00)	
Total	243 (54.00)	450 (100)	

Figure 1. Distribution of under-five children according to their nutritional status.

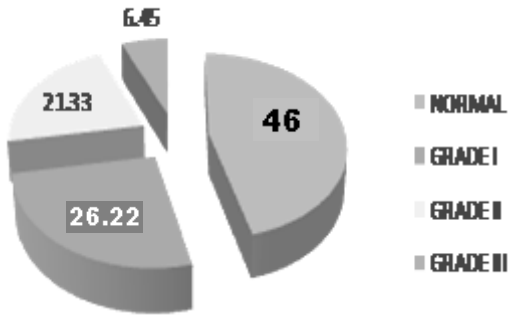

Table 2. Demographic characteristics of Study Participants and their association with malnutrition.

Demographic Variable	Malnutrition Present No. (%)	Total No. (%)	Chi-square (p-value)
Occupation of Mother			Chi-square =4.79 p>0.05
House wife	212 (54.92)	386 (85.78)	
Service	9 (36.00)	25 (5.56)	
Laborer	22 (57.89)	38 (8.44)	
Agriculture	0 (0.00)	1 (0.22)	
Total	243 (54.00)	450 (100)	
Socio-economic Status			Chi-square =14.29 P<0.05
Class-I	1 (25.00)	4 (0.89)	
Class-II	14 (29.79)	47 (10.45)	
Class-III	71 (55.47)	128 (28.44)	
Class-IV	111 (57.51)	193 (42.89)	
Class-V	46 (58.97)	78 (17.33)	
Total	243 (54.00)	450 (100)	
Immunization Status			
Fully Immunized	184 (54.44)	338 (75.11)	Chi-square = 0.48 P>0.05
Partially Immunized	30 (50.00)	60 (13.33)	
Unimmunized	29 (55.77)	52 (11.56)	
Total	243 (54.00)	450 (100)	

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"Natural forces within us are the true healers of disease."
"To do nothing is sometimes a good remedy."
"It's far more important to know what person the disease has than what disease the person has"

Hippocrates

" The inferior doctor treats actual sickness, The mediocre doctor attends to impending sickness but The superior doctor prevents sickness."

Chinese Proverb