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Original Research Article

Nutritional status and its correlates in under five children of labour population in urban slums of Lucknow, Uttar Pradesh, India

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ABSTRACT

Background: Malnutrition has a long-term effect on physical and cognitive development of a child. Addressing nutritional problems of urban poor living in slums is of paramount importance for overall development. Effective measures could be taken if we know their sociodemographic profile, burden of malnutrition and infant feeding practices.
Methods: A prospective cross sectional study was conducted in under five children living in urban slums of Lucknow around Era's Lucknow Medical College and Hospital after taking consent from the parents and approval by institute's ethical committee. The objective of the study was to know the prevalence of malnutrition and assess the feeding practices, immunization status and morbidities in under five children of labour population in urban slums of Lucknow.
Results: 250 children aged 6 months to 5 years were analysed. 34.4%were underweight, 58.8% stunted and 17.6%. Wasted 17.6% infants were exclusively breast fed till 6 months 42.0% fed colostrum. 20.0% children received proper complementary feeding. Education status of mother was significantly associated with the prevalence of underweight children. ($p < 0.05$) Late initiation of breastfeeding in 13.2% infants was significantly associated with underweight (p value <0.05, OR (95% CI=1.58 (0.60-2.72) and stunting OR (95% CI=0.62 (0.29-1.29). 55.6% children were fully immunized and 16% unimmunized. Presence of Morbidities like ARI, diarrhea, worm expulsion, pallor and vitamin A deficiency was high.
Conclusions: Burden of malnutrition and poor feeding practices, poor vaccination coverage makes children in this slum susceptible to illnesses. Prompt measures should be taken to address it.

Keywords: Breastfeeding, Children, Malnutrition, Slums

INTRODUCTION

Nutritional status of under five children is a matter of concern worldwide and malnutrition is a one of the most important public health problems.[1]The process of rapid urbanization has its impact on health and nutrition of children The Urban population is rapidly expanding due to large-scale migration to cities for a better life These are migrant workers and their families, long term and short term immigrants which comprise of labour population living in slums.[2] It is a social class those who do hard physical work for daily wages. Their children carry a health risk due to their epidemiological profile, their exposure to infectious agents and life style related risk factors, and culture based health beliefs.

Under nutrition makes the child susceptible to infection which contributes to child mortality. Women in urban

slums work outside their homes as unskilled labourers and domestic servants.[3] These categories are not protected by labour laws regarding maternity or sick leave, hours of work, etc. thus affecting breastfeeding and child-feeding practices.[3]

Lack of basic amenities like safe drinking water, proper housing, drainage and waste disposal makes this population vulnerable to infections which further compromise the nutrition of those living in the slums. It is projected that more than half of the Indian population will live in urban areas by 2020 and nearly one third of this urban population will be of slum dwellers.[4,5] Impact of malnutrition on slum dwelling children causes poor health status and vulnerability to diseases.[6] Feeding practices including breastfeeding and introduction of timely complementary foods can prevent malnutrition in these children. Their vaccination status should also be known so as to take corrective steps in prevention of communicable diseases. Addressing nutritional problems of urban poor children is therefore of paramount importance for overall development. Owing to migrant nature of this population, malnutrition status and feeding practices and immunization status are not known.

Hence, we planned this study to assess the nutritional status and feeding practices of children under five in labour population in urban slums of Lucknow.

METHODS

Study Design: A prospective cross sectional study. Subjects: The study was conducted in the labor population in urban slums of Lucknow around Era's Lucknow Medical College and Hospital (ELMCH) after taking consent from the parents and approval by institute's ethical committee. Slum areas were selected by using cluster sampling technique. Sample size: 200 children. Using the formula $n = z\alpha^2pq/L^2$. Taking p=prevalence of malnutrition = 43% and by taking type I error α=0.05.

Allowable error in prevalence L=7.5% absolute. Which estimated around 85% power, the minimum sample size comes out to be n = 167+(10% data loss) =185 =200 (in round figures).

Data were collected in a predesigned Proforma by interviewing mothers of children 6 months to 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 birth history, feeding history, immunization status. Mothers were asked to show immunization card to confirm vaccination status if available.

Inclusion criteria:

All children aged between 6 months to 5 years

Exclusion criteria

Not willing to participant and children having any congenital anomaly. Weight of children was measured to the nearest 0.1 Kg, Height of children was measured against a non-stretchable tape fixed to a vertical wall, with the participant standing on a firm/level surface and it was measured to the nearest 0.5 cm. Recumbent length (for children less than 24 months of age) was measured by using an infant measuring board. Indices of nutritional status namely, weight for age, height for age, and weight for height were expressed in standard deviation as per WHO standards Immunization status of the participants were obtained from immunization cards Infant feeding practices were enquired using the 24-hour recall method, except for initiation of breastfeeding and pre-lacteal feeding, for which historic recall was used. Co-Morbidities were also assessed. Ocular examination was conducted to assess Vitamin A deficiency if any. A history of passing worms and/or the presence of pica with or without abdominal pain was taken as the criteria for worm infestation.

Statistical analysis

Data were analyzed using SPSS (version 17.0, IBM, Inc) software package. Frequency, percentage, mean, standard deviation and median were used to present the data, Categorical data was analyzed by chi square test; p-values <0.05 were considered statistical significant.

RESULTS

A total of 250 children aged between 6 months to 5 years were enrolled in the study. Mean age was 30.46±15.93months and male: female ratio was 1.17:1. 250 (100%) families belonged to lower socio-economic status as per the modified kuppuswamy scale. About mother's education 131 (52.4%) were illiterate, 75 (30%) had primary schooling, 38 (15.2%) had higher secondary and 6 (2.4%) were graduate mothers. 212 (84.8%) mothers were laborers and 38(15.2%) were housewives. All fathers 250 (100%) worked as laborers and in 212 (84.8%) both parents were labourers. Nutritional status of children was assessed. 86 (34.4%) were underweight, stunting was present in 147 (58.8%) and wasting in 44(17.6%) study subjects. Wasting was present in 27.5% children and 39.2% were underweight in the age group 13-24 months. Stunting was found to be most prevalent (71.1 %) in the age 25-36 months' group. Education status of mother was significantly associated with the prevalence of underweight children. (p <0.05) (Table 1). Among male children 54.8% were stunted, and 17.8% wasted. The difference between male and female was statistically significant. (p <0.05 X2=0.780 and 9.153). Breastfeeding practices were assessed. 44 (17.6%) infants were exclusively breast fed till 6 months and the rest 206 (82.4%) were mixed fed. Only 105 (42.0%) infants were fed colostrum as of time of initiation of breast feeding 33(13.2%) was within 1 hour, and 86.8 were breastfed

after one hour 45. Only 50(20.0%) children were fed according to proper complementary feeding guidelines. Infant feeding practices were analyzed for their risk on under nutrition using odds ratios along with their respective 95% confidence intervals (Table 2). Late initiation of breastfeeding was significantly associated with underweight (p value<0.05, OR (95% CI=1.58 (0.60-2.72), stunting OR (95% CI=0.62 (0.29-1.29).

Table 1: Nutritional status of children in relation to socio-demographic characteristics.

Characteristic	N	Underweight	Stunting	Wasting
Age (in months)		Frequency (%)	Frequency (%)	Frequency (%)
6 – 12	55	19(34.5)	20(36.4)	8(14.5)
13 – 24	51	20(39.2)	30(58.8)	14(27.5)
25 – 36	45	14(31.1)	32(71.1)	8(17.7)
37 – 48	58	22(37.9)	36(62.1)	6(10.3)
49 – 60	41	11(26.8)	28(68.3)	8(19.5)
Statistical values		X2 =12.241 P value= 0.269	X2=17.368 P value=0.019	X2=9.861 P value=0.453
Sex				
Male	135	44(32.5)	74(54.8)	24(17.8)
Female	115	42(36.5)	73(63.5)	20(17.4)
Statistical values		X2 =2.527 P value= 0.283	X2=0.780 P value=0.677	X2=9.153 P value=0.210
Educational status of mothers				
Illiterate	131	44(33.6)	78(59.5)	21(16)
Primary	75	26(34.7)	43(57.3)	11(14.7)
Higher secondary	38	15(39.5)	22(57.9)	10(26.3)
Graduate	6	1(16.7)	4(66.7)	2(33.33)
Statistical values		X2 =3.305 P value= 0.004	X2=2.387 P value=0.881	X2=10.219 P value=0.116

*= value shows in mean ± Standard deviation.

Table 2: Showing distribution between infant feeding practices and nutritional status of children.

Characteristic		Total N(%)	Underweight N (%)	Stunting N (%)
Initiation of BF				
Within 1 hour	33(13.2)	13(39.4)	16(48.7)	7(21.2)
After 1 hour	217(86.8)	73(33.7)	131(60.4)	73(33.6)
Statistical values		OR (95% CI) =1.58 (0.60-2.72) P value=0.04	OR (95% CI) =0.62 (0.29-1.29) P value=0.029	OR (95% CI) =0.53 (0.22-1.28) P value=0.16
Colostrums feeding				
Yes	105(42)	32(30.5)	60(57.1)	16(15.2)
No	145(58)	54(37.2)	87(60.0)	28(19.3)
Statistical values		OR (95% CI) =0.739 (0.43-1.26) Pvalue=0.26	OR (95% CI) =0.89 (0.53-1.47) P value=0.02	OR (95% CI)=0.75 (0.38-1.47)P value=0.40
EBF (till 6 months)				
Yes	44 (17.6)	11 (25.0)	22 (50.0)	6(13.6)
No	206 (82.4)	75(36.4)	125(60.7)	38(18.4)
Statistical values		OR (95% CI) =0.58 (0.28-1.22) P value=0.15	OR (95% CI) =0.65 (0.34-1.25) P value=0.19	OR (95%CI) =0.69 (0.28-1.77)P value=0.45
Proper CF				
Yes	50(20)	24(40)	27(54)	8(16)
No	200(80)	62(31)	120(60)	36(18)
Statistical values		OR (95% CI) =2.05(1.1-3.9) P value=0.03	OR (95% CI) =0.8(0.4-1.5) P value=0.77	OR (95% CI) =0.9(0.38-2.01) P value=0.15

BF=Breastfeeding, EBF=Exclusive Breastfeeding, CF=Complementary Feeding, OR=Odd Ratio, CI=Confidence Interval.

Absence of colostrum feeding was associated with stunting p value <0.05 CI 0.89 (0.53-1.47). 31% chidren were underweight who did not receive proper complementary feeding. Improper complementary feeding was found significant risk factor for malnutrition (Table 2).

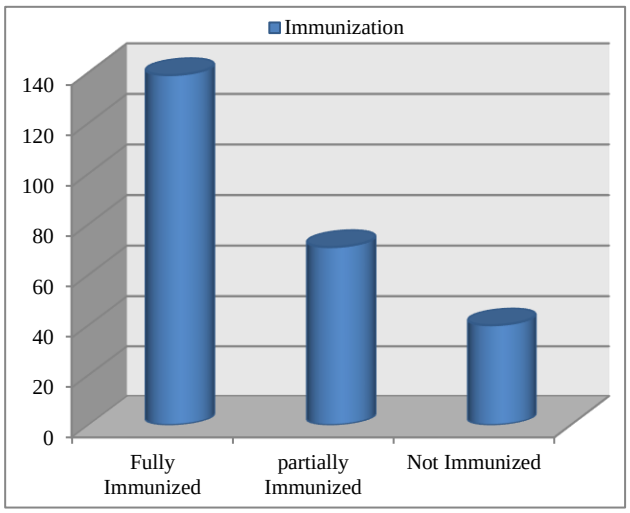
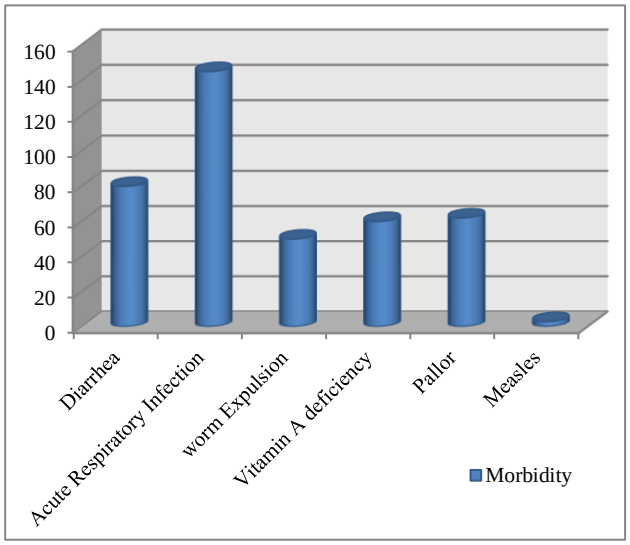


Figure 1: Bar graph showing distribution of immunization.



Diarrhea-80 (32%), Acute Respiratory Infection-145 (58%), Worm Expulsion-50 (20%), Vitamin A deficiency-60 (24%), Pallor -62(24.8%), Measles-3 (1.2%)

Figure 2: Bar graph showing distribution of morbidities.

139 (55.6%) children were fully immunized, 71 (28.4%) partially immunized, and 40(16%) were unimmunized (Figure 1). 190 (76%) were aware about vaccination and 60 (24 %) were not aware 111 (44.4 %) parents had immunization card of their children and 139 (55.6 %) were without immunization card. Distribution of morbidities at different age groups (Figure 2). 58% children had Acute respiratory infection, 32%, had Diarrhea, in 20% worm expulsion was present, Pallor 24.8% and 24% had vitamin A deficiency.

DISCUSSION

The present study which was conducted in urban slums all the families belonged to lower socio economic class. 52.4% mothers were illiterate. This is comparable to the other studies conducted in urban slums where 42% mothers and 49% were illiterate.[7,8] Underweight children was found to be significantly associated with education status of mother in our study similar to IASDS study.[9] This may be due to better childcare practices adopted by educated mothers than those by uneducated mothers

In our study 6% fathers and 2.4% mothers were graduates which reflects lack of job opportunities make them work as labourers. The prevalence of underweight, wasting and stunting in our study were 34.4%, 17.6% and 58.8% respectively. These figures were comparable with the findings among tribal preschool children in Jabalpur.[10] Underweight and stunting which is an indicator of chronic malnutrition was higher in our study as compared to the NFH-3 data and other studies.[3,11,12,13] Though wasting in our study was 1 was comparable with some studies.[3,4] These differences could be due to methodology used for assessment of nutritional status. Moreover, migrant nature of the population, low socioeconomic status also explains the variations.

According to IYCF guidelines initiation of breast feeding should begin immediately after birth, preferably within one hour.[15] In our study, initiation of breastfeeding within 1hr was only 13.2% which comparable to other studies.[1619] 86.8% were breastfed after the first 24hrs which are comparable with findings of NFHS-3.[3,20,21]

Practice of late initiation of breastfeeding may be due to mother's illiteracy and other social factors which needs to be addressed. Exclusive breastfeeding practice in the current study was only 17.6%. Findings indicate that the practice of exclusively breastfeeding as recommended by the WHO and IYCF is far away and more efforts has to be made for increasing the exclusive breast feeding in the urban slums.

Present study reports 58% mothers discarding colostrum which was higher as compared to other studies.[22-24] But colostrum feeding marginally increased in our study subjects than an earlier study done in U.P.[25] These variations owe to different types of customs prevalent in India and suggest change in attitude and feeding practices. Only 20% proper complementary feeding was reported in our study which is comparable to other studies.[2,26] Prevalence of underweight and wasting were

highest in the 13 to 24 months' age group in our study, perhaps due to the lack of introduction of timely complementary feeding and increased morbidities like acute respiratory infections and diarrhea in this age group. This is also explained by the poor breast feeding practices in our study.

Immunization status

Immunization has been one of the most significant, cost-effective and public health interventions to prevent communicable diseases. In the present study, only 55.6% children were fully immunized, 8.4% partially immunized, and 16% did not receive any immunization. A study in 2007 done in urban slums of Lucknow showed 44.1% children were fully immunized, 32% partially immunized, and 23.9% did not receive any immunization.[27] This highlights the immunization coverage has marginally increased in a span of 8 years and the percentage of partially immunized children were comparable. This reflects that outreach vaccination services should improve in the slum areas. Inspite of awareness among parents regarding vaccination being 76% coverage was poor. The immunization cards were available only with 44.4% of our study subjects as compared to 74.4% and 31.38% in other studies.[28,29] The immunization cards were found in a higher percentage of the completely-immunized children compared to the partially-immunized and non-immunized children. Our study highlights the need for emphasizing the importance of record-keeping during immunization visits and importance of house-to-house visits and outreach sessions to increase immunization coverage amongst the vulnerable sections.

In the present study morbidities like Diarrhea (32%), acute respiratory infections ARI (58%), vitamin A deficiencies (24%) and Pallor (24.8%), among children were similar to the findings that have been reported in NFHS-3 and other studies.[30,3] Worm expulsion in our study was 20% which is comparable to other study 2 in periurban slums of Kolkata. Poor environmental sanitation and unhygienic personal habits appear to predispose them to the risk of infections. In addition to adverse cultural practice relating to breast feeding and complementary feeding were some other contributory factors This necessitates the use of health education to these peoples regarding health facilities, vaccination, healthy toilet facilities and educating them about the use of ORS. The overall prevalence of VAD was found to be 24% in our study which is much higher than that reported in other studies.[32,33] Present study we found the common disorder of VAD was night blindness in 17.6% followed by Bitot's spots in 13.6%, conjuntival xerosis in 6.8% and corneal xerosis in 4.4%.

Surveys conducted in various countries of South-eastern Asia have shown VAD ranging from 0.2 % to 15 % in school aged children33 implying that diets of slum pre-school children in India were grossly deficient in vitamin A. Our study also stresses the need of routine vitamin A supplementation along with need for awareness of vitamin A rich food.

CONCLUSION

Our study assesses the burden of malnutrition and other morbidities in children of urban slums owing to socio-demographic conditions, poor feeding practices and low vaccination coverage.

This highlights the need to develop migrant-sensitive outreach healthcare services in urban slums

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