Research Article

EFFECT OF MATERNAL FACTORS ON NUTRITIONAL STATUS OF UNDER FIVE CHILDREN IN URBAN SLUMS OF DISTRICT DEHRADUN

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ABSTRACT

Background: Nutrition is a critical part of health and development. Factors responsible for the higher prevalence of malnutrition in South Asian countries including India comprise LBW, maternal health problems, delay in introduction of complementary feeds, faulty child care and other poor environmental conditions which are again more prevalent in slums. Adequate nutrition is the keystone of survival, health, and development not only of current generations but also of the ones to come.
Objectives: To study the pattern of nutritional status and identify the different maternal variables affecting the nutritional status of the under five children of urban slums of District Dehradun.
Methods: The cross sectional study was carried out in two urban slums of District Dehradun, Uttarakhand. Mothers of under five children were interviewed by using pre-designed and pre-tested questionnaire. Nutritional status of the children was assessed by anthropometric measurements.
Results: Out of the 381 under five children surveyed, 200(52.4) were undernourished. Nearly 161(42.3), 74 (19.4) and 93(24.4) children were Underweight, Wasted and Stunted respectively and under nutrition was more prevalent among boys 114(61.0). Prevalence of under nutrition was more where mother's age was less than 18 years. Children of educated mothers were better nourished as compared to illiterate ones and who neither consume extra meal during antenatal period nor EBF their children. Malnutrition was slightly higher amongst those children whose calorie intake was <75% of RDA and more than half (52.1%) of the anemic children were found to be undernourished.
Conclusions: The prevalence of undernourished children was high and maternal factors viz. maternal age, literacy, nutritional intake and anemia lay a significant role in the nutritional status of the children.

INTRODUCTION

God's most beautiful creation is the children. Healthy childhood nurtures the society and in turns the whole country. Childhood is a time span which lays the foundation for the emotional, social, cognitive and linguistic development. Sound health determines the behavior and learning ability of the child. Healthy childhood boosts up immune response, increases the longevity and lowers the risk of communicable or non-communicablediseases. (1) The effect of nutrition on the growing children can never be underrated. In developing country like India, malnutrition remains the top most priority issue and biggest contributor to the child mortality. The gross malnutrition in the form of stunted growth or underweight children has been found to be prevalent in almost 1/3rd of the developing countries; whereas micronutrient deficiency accounts for more than 30% of the cases.(2)

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The spectrum of causes of malnourishment is more complex. The surveys conducted by NFHS i.e. National Family Health Surveys suggest a wider range of combination of complex factors.(3) The whole issue presents itself as a never ending vicious circle.Nutritional status of a child doesn't limit itself with the child alone, it also ask for our accountability towards mothers health, which is closely related to her standard of living and herown nutritional status as a child.(4).In order to exterminate the malnourishment from the childhood of our coming generation, we need to study the root cause so that we would be able to wipe out this problem from all levels of humanity. The present study is an endeavor to find out the associations of malnourishment in UNDER FIVE children who are dwelling in urban slums of Dehradun.

MATERIALS AND METHODS

The present study was conductedin the SheeshamJhadi and Chandreshwar Nagar urban slums, a field practice area of the Department of Community Medicine, Himalayan Institute of

Medical Sciences, Dehradun. The study design was cross-sectional, which included 381 children in the age group of 0-5 years. House to house survey was conducted, and subsequently, data was collected after taking verbal consent from the participants. Factors related to maternal health were asked in a pre-structured questionnaire, and the nutritional status of their children was assessed. For assessment of nutritional status a child who was either wasted, stunted or underweight or a combination of any of these was considered as Undernourished (<-2 Z score) and a child who was neither wasted, stunted nor underweight as Well nourished (-2< Z score < + 2).P value <0.05 was considered significant.

RESULTS

The study group of 381 children comprised of 49% male child and 51% female children. 284 children belonged to nuclear families, and 226 children belonged to low socio-economic status.
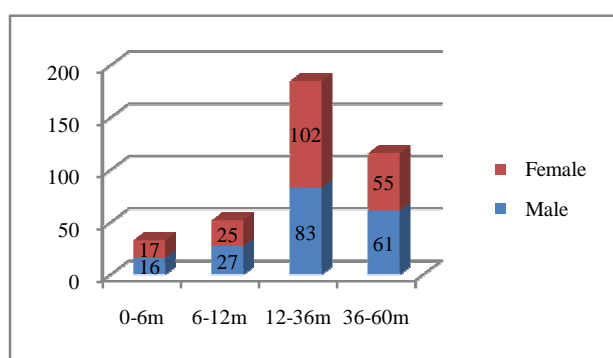
Table 1 Demographic profile of the study group as per age
Age&Gender

Table 2 Nutritional Status of Children according to age

Child age in Months	Nutritional Status			
	Undernourished	Underweight	Wasting	Stunting
0 to 6	14(42.5)	13(39.3)	8(24.2)	1(3.0)
6 to 12	18(34.7)	17(32.7)	10(19.2)	0(0.0)
12 to 36	101(54.6)	83(44.9)	43(23.2)	51(27.5)
36 to 60	67(60.3)	48(43.2)	13(11.7)	41(37.0)
Total	200(52.4)	161(42.3)	74(19.4)	93(24.4)
p value	< 0.05	> 0.05	> 0.05	P<0.00

(*Figures in parenthesis indicates percentage)

Table 3 Gender wise distribution of malnourished children

Gender	Undernourished	Nutritional Status		
		Underweight	Wasting	Stunting
Male	114(61.0)	96(51.3)	54(28.9)	52(27.8)
Female	86(44.3)	65(33.5)	20(10.3)	41(21.1)
Total	200(52.5)	161(42.3)	74(19.4)	94(24.6)
p value	< .001	<.000	<.000	>0.05

Table 4 Nutritional Status of Study Population According to Age of Mother at Time of Index Child

Age of mother at time of index child	Gender	Nutritional status			p value
		Well-nourished	Undernourished	Total	
Less than 18	Male	0(0.00)	4(100.0)	4(30.8)	
	Female	3(33.3)	6(66.7)	9(69.2)	p>0.05
	Total	3(23.1)	10(76.9)	13(3.4)	
19 to 25	Male	49(39.5)	75(60.5)	124(49.6)	
	Female	74(58.7)	52(41.3)	126(50.4)	p<0.0002
	Total	123(49.2)	127(50.8)	250(65.7)	
26 to 30	Male	22(4 3.1)	29(56.9)	51(58.0)	
	Female	21(56.8)	16(43.2)	37(42.0)	p>0.05
	Total	43(48.9)	45(51.1)	88(23.0)	
More than 31	Male	2(25.0)	6(75.0)	8(26.7)	
	Female	10(45.5)	12(54.5)	22(73.3)	p>0.05
	Total	12(40.0)	18(60.0)	30(7.9)	
Total	Male	73(39.0)	114(61.0)	187(49.1)	
	Female	108(55.7)	86(44.3)	194(50.9)	p <0.001
	Total	181(47.5)	200(52.5)	381	

(*Figures in parenthesis indicates percentage)

The maximum prevalence of undernourishment was seen when the mother's age was either less than 18 or more than 31 at the time of delivery (76.9% & 60.0% respectively). The results were found to be statistically significant.

Table 5 Nutritional Status of Study Population on the scale of Literacy Status of Mother

Literacy status of Mother	Nutritional Status		Total
	Well-nourished	Undernourished	
Illiterate	62(39.2)	96(60.8)	158(41.5)
Junior High School	58(50.4)	57(49.6)	115(30.2)
High School & Intermediate	44(53.7)	38(46.3)	82(21.5)
Graduate & Post Graduate	17(65.4)	9(34.6)	26(6.8)
Total	181(47.5)	200(52.5)	381

A positive correlation was seen between prevalence of illiteracy amongst the mothers and malnourishment in the study group. Majority of the illiterate mothers (60.8%) had underweight children as compared to graduate and above mothers in whom, the proportion of undernourished children was found to be only (34.6%).

Table 6 Nutritional Status of Study Population According to Extra Meal Consumed by Mother During Antenatal Period

Sex of child	Extra meal during Antenatal period	Nutritional Status		Total
		Well Nourished	Undernourished	
Male	Yes	52(42.6)	70(57.4)	122(65.2)
	No	21(32.3)	44(67.7)	65(34.8)
	Total	73(39.0)	114(61.0)	187
Female	Yes	76(58.9)	53(41.1)	129(66.5)
	No	32(49.2)	33(50.8)	65(33.5)
	Total	108(55.7)	86(44.3)	194
Total	Yes	128(51.0)	123(49.0)	251(65.9)
	No	53(40.8)	77(59.2)	130(34.1)
	Total	181(47.5)	200(52.5)	381

(*Figures in parenthesis indicates percentage)

It was observed that that mother who had not consumed extra meal during their antenatal period had given birth to (59.2%) of undernourished children. Male children were found to be more undernourished 67.7% as compared to female children 50.8%.

Table 7 Nutritional Status of Study Population According to Duration of Exclusive Breast Feeding Practices in Children

Age in months	Nutritional Status		Total	Z test (P value)
	Well nourished	Undernourished		
< 6 months	59(56.2)	46 (43.8)	105(27.6)	
Upto 6 months	78 (51.3)	74 (48.7)	152(39.9)	P < 0.05
>6 months	30(28.9)	74(71.1)	104(27.3)	
**Not Applicable	14(70.0)	6(30.0)	20(5.2)	
Total	181(47.5)	200(52.5)	381	

(*Figures in parenthesis indicate percentage)
**Age less than sixmonths, EBF continued

It was observed that children whowere exclusively breastfed for six months were found to be better nourished (51.3%) in contrast to those who exclusively breastfed for more than six months i.e. (28.9%). Statistical association was found to be highly significant.

Table 8 Nutritional Status of Study Population According to Initiation of Complementary Feeding in Children

Initiation of Complementary Feeding	Nutritional Status		Total
	Well-nourished	Undernourished	
< 6 months	55(50.5)	54(49.5)	109(28.6)
6 -9 months	63(51.2)	60(48.8)	123(32.3)
>9 months	63(42.3)	86(57.7)	149(39.1)
Total	181(47.5)	200(52.5)	381

(*Figures in parenthesis indicates percentage)

It was observed that when complementary feeding was started before six months and after nine months of age 49.5% and 57.7% children respectively were found to be under nourished in comparison to 48.8% children in whom it was started between six to nine months.

DISCUSSION

The modern medicine focuses more on treating the disease rather than the root cause. When we look into the epidemiological parameters, it becomes utmost important to go into the depth of causation of disease. There never exist one root cause; the etiology and subsequent pathogenesis are all Multifactorial which makes it real important to understand the causation.

In the present study, the authors found that there existed adirect correlation between maternal age and the prevalence of malnourishment in Under five children. The prevalence was found to be 76.9 % and 60.0% respectively when the maternal age was either less than 18 years or more than 31 years. The similar findings were noted by Acharya D *et al.*, where in more than the half the children (57.75%) born by mother less than 18 years of age were underweight. The incidence of malnourishment again rose to 75% when mothers were more than 35 years of age.(5)

Kumar A *et al.* also observed raised prevalence of underweight and wasting amongst Under five children when the maternal age was below 20 years.(6).

Rikimaru T *et al.* tooobserved similar correlation between mother's age and prevalence of malnourishment. (7)

Educational status of the mother too influences prevalence of under- nutrition to a great extent.

Mittal A *et al.* found a direct correlation between the prevalence of illiteracy amongst mothers and under nourishment amongst children. The prevalence was found to be (60.9%) where mothers were illiterate and(21.2%) where mother had education more than high school. (8)

These findings were seconded by a study author Pandey A *et al.*who reported the prevalence of underweight and stunting among children of illiterate mothers (55.2% and 55.8 %) when comparedwith children of mothers having above primary education respectively (41.0% and 42.9 %)(9)

Similar were the findings of NFHS 3 data which confirmed that, the percentage of children who were underweight were almost three times as high for children whose mothers had no education than for children whose mothers have completed at least 12 years of education (10).

In the present study extra meal during pregnancy was taken by 65.9% mothers; subsequently majority of the children (51.0%) were found to be well nourished.This was in accordance with Betebo *et al.*(2017) who concluded that the risk of being wasted was 1.66 times higher among mothers of children who had not consumed extra food during pregnancy than those mothers of children who had consumed extra food during pregnancy.(11)

In the present study we also concluded that only (51.3%) children were well nourished (exclusively breast fed for six months) in comparison to (28.9%) children who were exclusively breast fed for more than six months. Luthra M *et al* at Dehradun (2009) found that 44.8% children who did not receive EBF were under nourished as compared to 32.2 % of those who received EBF (12). NiraulaS *et al* too concluded that the incidence of low weight in exclusively breast fed children was much lower(20%) than those who were not.(13)

In the present study the maximum number of undernourished (57.7%) children was those in whom complimentary feeding was initiated after 9 months of age group in comparison to 48.8% when initiated within 6-9 months of age.

CONCLUSION

Developing countries have come a long way towards excellence yet a large number of Under Five children remain malnourished. The motive of the study is to understand the problem; correlate with different parameters to find out the significance and work together to improve the present situation. There exist a dire need to educate the mothers about timely weaning and weaning foods (at low cost) which are easily available in the local market. Effect of mother's age on prevalence of under nutrition clearly favors the promotion of delaying marriage of females and further delaying the birth of the first child. The work in this field can be handled by local leaders, NGOs with much more effectiveness. Better nutritional profile of under-fives of educated mothers indicates that right to have education and to achieve 100% literacy will help in promoting the nutritional status of children as educated mothers are more aware of the health services available and also the acceptance to utilize the same is better among them.

Educated mothers are more conscious about their child's health and they tend to look after their children in a better way. Literate mothers can easily introduce new feeding practices scientifically, which helps to improve the nutritional status of their children.

Strengthening of Anganwadis and balwadis can evolve into new era of healthy childhood which can not only contribute by teaching mothers about taking care of the child but also byproviding meals which complement the child's diet, thus improving their nutritional status.

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