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A PROSPECTIVE STUDY OF FACTORS AFFECTING NUTRITIONAL AND IMMUNISATION STATUS OF CHILDREN BETWEEN 6MONTHS TO 6 YEARS

Dr Shalaka P Patil | Associate Professor, R K D F Medical College and Research Center Bhopal.

ABSTRACT

Introduction: Healthy nutrition and appropriate immunisation are two cornerstones of health particularly in initial 5 years of life. Since this is the time an individual is most vulnerable to infections malnutrition and incomplete immunisation would increase morbidity and mortality in this age group. Factors like educational status of parents, socioeconomic status, number of children and presence of misconceptions about vaccination are the factors having a profound impact on nutritional and immunisation status of children. We conducted this cross sectional study to find out the nutritional and immunisation status of children aged between 6 months to 6 years in a metropolitan city.

Materials and Methods: This was a cross sectional study in which children aged between 6months to 6 years were included on the basis of a predefined inclusion and exclusion criteria. Parents or caretakers of children were questioned on the basis of a standardized questionnaire. Sociodemographic factors were noted and a detailed immunisation and nutritional history was taken. Weight of the children was measured using an electronic weighing scale. Nutritional status was assessed using National Centre For Health Statistics charts. Malnutrition was classified as per Indian Academy Of Pediatrics (IAP) guidelines. Variables like type of residence, no of live children, educational status of mother and health awareness amongst caregiver and impact of these factors on nutritional and immunisation status of the children was studied. For statistical purposes P <0.05 was taken as significant.

Results: Mild to moderate malnutrition and severe malnutrition was present in 34.6% and 11.5% children residing in slums respectively. Severe malnutrition was seen in 7.7% of children living in chawls. 68.5% children of higher order (3rd or more birth order) were found to have mild to moderate malnutrition. Severe malnutrition was most common in children of uneducated mothers (75%) and increasing educational levels of mother was associated with decreased incidence of malnutrition in children. Out of the studied children 80% were completely immunised and 20% were either completely or partially unimmunised. Out of the unimmunized children 14%, 4% and 2% belonged to children residing in slums, chawls and buildings respectively. 62% of birth order of more than 3 were immunised as compared to 82% fully immunised first born children. Mothers' education and health awareness was found to be positively correlating with immunisation status of children.

Conclusion: Complete immunisation and appropriate feeding practices are the most crucial factors responsible for the health of children especially in initial years of life. Factors like educational status of mother, health awareness amongst caregivers and small family size are the factors having positive impact immunisation and nutritional status of children aged between 6months to 6 years.

KEYWORDS : Immunisation Status, Malnutrition, Maternal Education, Health Awareness.

INTRODUCTION:

Nutritional and immunisation status are 2 of the most crucial factors influencing the health status of children particularly in initial 5 years of life[1]. It's a well-known fact that proper nutrition is essential for the immunity of the children while immunisation is essential for prevention against the diseases carrying high rates of morbidity such as tetanus, measles, diphtheria and pertussis. It's an unfortunate paradox that those children who are most vulnerable for infectious diseases are more likely to be have malnutrition and remain unimmunised during most vulnerable period despite the gigantic immunisation efforts by the state[2]. Though malnourished and unimmunised children are the cause of concern globally the problem is more serious in developing countries of Africa and south East Asia including India. It's important to understand that India is one of the major contributors to under-five deaths due to vaccine preventable disease[3].

It cannot be overemphasized that children who are malnourished and remain completely unimmunised or partially immunised are at a high risk of acquiring infections causing morbidity and mortality and malnutrition is a contributory factor in majority of deaths occurring in children[4]. The seriousness of the problem can be understood by the fact that according to World Health Organization and The United Nations Children's Fund (UNICEF) more than 50% children in India have some or the other degree of malnutrition[5]. Unfortunately the factors such as poverty, illiteracy, migrant population, and children living in slums which predispose a child for malnutrition also are the factor responsible for incomplete immunisation of children. Hence malnutrition and incomplete immunisation both are commonly seen in children belonging to low socio-economic status. The problem of malnutrition and incomplete immunisation further gets compounded by risk factors such as overcrowded homes, unhygienic living conditions and lack of proper sanitation[6].

It is important to comprehend that it's not only the scarcity of food which is responsible for malnutrition but also behavioral and educational factors play a large role in the selection, preparation and distribution of food within the family. Moreover women and female children in many families remain neglected and are last to eat making them more vulnerable for various nutritional deficiencies[7]. Community based nutrition and counseling interventions that focus on behavioral changes and interventions that are integrated into primary health care system yield the best nutritional health amongst children. Increasing Public health expenditure is an important measure to decrease the burden of diseases associated with malnutrition and ensuring universal immunisation will drastically reduce the burden of vaccine preventable diseases thereby increasing the productivity of the nation[8].

It's a misconception that malnutrition and incomplete immunisation is more common in rural population. Many studies have reported that even in urban areas there are pockets where malnutrition is rampant[9]. Even in metropolitan cities children belonging to underprivileged communities and those living in slums or on streets are most vulnerable[10]. It is once again important to note that about one third of the urban population in India lives in slums. With this background we conducted this study to determine immunisation and nutritional status of the children between the age group of 6 months to 6 years.

RESULTS:

In this prospective study 50 children between the age group of 6 months to 6 years were included. Out of the 50 studied children there were 27 males and 23 females with a M: F ratio of 1:0.85.
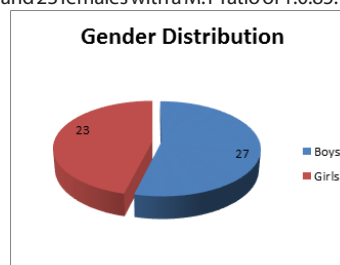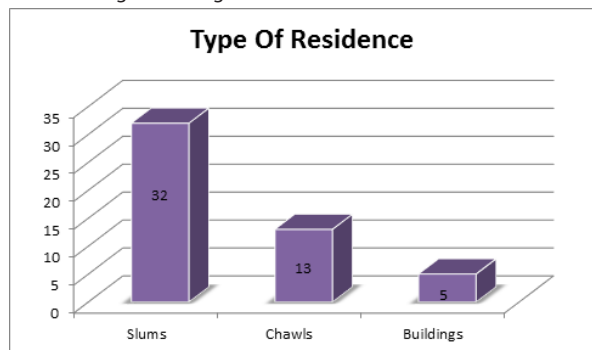

FIGURE 1: Gender Distribution of the studied cases.

The analysis of age groups of the patients showed that the most common age group was 6 months to 1 years of age (32%) followed by 1 to 2 years (22%) and 4 to 5 years (16%). The mean age of the studied cases was found to be 26.98 +/- 18.59.

TABLE 1: Age Groups Of The Studied Children.

Age	No of cases	Percentage
6 months-12 months	16	32 %
1 yrs- 2yrs	11	22%
2 yrs-3 yrs	6	12%
3yrs- 4 yrs	6	12%
4 yrs- 5 yrs	8	16%
5 yrs- 6 yrs	3	6%
Total	50	100%
Mean Age = 26.98 +/- 18.59.		

Out of 50 studied children majority of the children were living in slums (64%) followed by chawls (26%) remaining 5 (10%) children were residing in buildings.
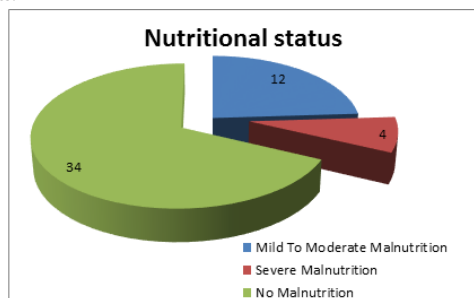

FIGURE 2 : Type Of Residence In Studied Cases.

The distribution of the cases on the basis of religion showed that out of 50 children 16 (32%) were Muslims followed by scheduled casts (24%), Hindus (22%), Other Backward class (12%) and scheduled Tribes (10%).
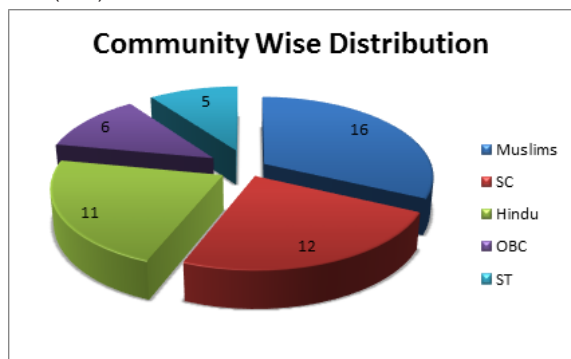
FIGURE 3: Community Wise Distribution Of The Studied Cases.

Out of the 50 studied children 34 (68%) children were not having any degree of malnutrition while mild to moderate malnutrition was seen in 12 (24%) patients and severe malnutrition was seen in 4 (8%) patients.
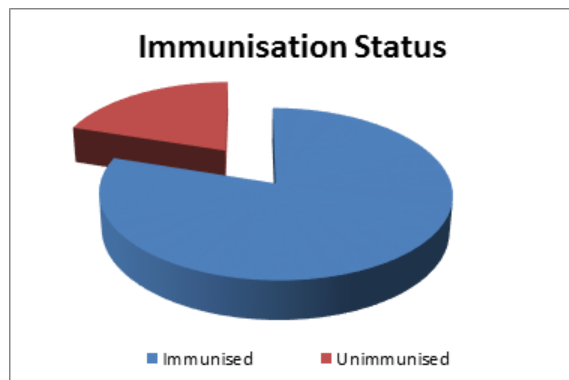

FIGURE 4 : Nutritional Status Of The Studied Cases

The study of prevalence of malnutrition in the cases on the basis of type of residence showed that out of 32 (64%) children living in slums 11 (22 %) children had mild to moderate malnutrition while 3 (6 %) children had severe malnutrition. While amongst children living in chawls 1 (2 %) children had mild to moderate malnutrition while severe malnutrition was present in 1 (2 %) child. 11 (22%) children living in chawls were not having any malnutrition. Out of 5 (10%) children living in residential buildings no child was found to have malnutrition of any degree. Incidence of malnutrition in children living in slums and buildings/chawls was found to be statistically significant (P=0.026). The analysis of order of birth and malnutrition showed that out of 28 (56%) patient who were 1st by order of birth 4 (8%) children had mild to moderate and 1 (2%) child had severe malnutrition. Some or the other degree of malnutrition was present in 5 (10%), 3 (6%) and 3 (6%) in children who were 2nd, 3r and 4th by order of birth. The difference was found to be statistically significant (P=0.030). 10 (20%) of malnourished children belonged to uneducated mothers while 6 (12%) of malnourished children belonged to educated mother. The difference was found to be statistically significant (P=0.008). Finally the analysis of children on the basis of whether their mothers have seen NRHM ads or not showed that out of 28 (56%) who had seen NRHM ad 6 (12%) children were found to have some degree of malnutrition while in children of 22 (44%) women who have not seen NRHM ad 10 (20%) were found to have some degree of malnutrition.

TABLE 2 : Factors Influencing Nutritional Status.

Factors		Malnutrition			P Value
		Mild To Moderate	Severe	Absent	
Type of Residence	Slums	11	3	18	P= 0.026 (Statistically significant)
	Chawls	1	1	11	
	Buildings	0	0	5	
	Total	12	4	34	
Order Of Birth	1st	4	1	23	P= 0.030 (Statistically significant)
	2nd	2	3	4	
	3rd	3	0	6	
	4th	3	0	1	
	Total	12	4	34	
Maternal Education	Uneducated	8	2	7	P= 0.008 (Statistically significant)
	Primary education	2	1	11	
	Secondary Education	2	1	12	
	Graduate	0	0	4	
	Total	12	4	34	
Mother and NRHM ad	Seen	4	2	22	P= 0.1256 (Not Significant)
	Not seen	8	2	12	
		12	4	34	

Analysis of immunisation status of the studied cases showed that out of 50 studied children 40 (80%) were completely immunized while 10 (20%) were either completely unimmunized or partially immunised.

FIGURE 5 : Immunisation Status Of The Studied Cases.

The study of immunisation status in the children on the basis of type of residence showed that out of 32 (64%) children living in slums 25 (50%) were immunized appropriately 7 (14%) were either completely or partially unimmunised. While amongst children living in chawls 2 (4 %) children were unimmunized and 11 (22%) were completely immunized. had mild to moderate malnutrition while severe malnutrition was present in 1 (2 %) child. Out of 5 (10%) children living in residential buildings 1 (2%) child was found to be unimmunized. The analysis of order of birth and immunisation status showed that out of 28 (56%) patient who were 1st by order of birth 5 (10%) children were unimmunized. 1 (2%), 2 (4%) and 2 (4%) were found to be unimmunized in children who were 2nd, 3r and 4th by order of birth. 5 (10%) of unimmunized children belonged to uneducated mothers while 5 (10%) of malnourished children belonged to mother having some form of education. Finally the analysis of children on the basis of whether their mothers have seen NRHM ads or not showed that out of 28 (56%) who had seen NRHM ad 3 (6%) children were found to be unimmunized while out of 22 (44%) who have not seen NRHM ad 7 (14%) were found to be unimmunized.

TABLE 3: Factors Influencing Immunisation Status.

Factors		Immunisation status		P Value
		Unimmunised/ Partially Immunised	Immunised	
Type of Residence	Slums	7	25	P= 0.73 (Not Significant)
	Chawls	2	11	
	Buildings	1	4	
	Total	10	40	
Order Of Birth	1st	5	23	P= 0.730 (Not Significant)
	2nd	1	8	
	3rd	2	7	
	4th	2	2	
	Total	10	40	
Maternal Education	Uneducated	5	12	P= 0.27 (Not Significant)
	Primary education	3	11	
	Secondary Education	2	13	
	Graduate	0	4	
	Total	10	40	
Mother and NRHM ad	Seen	3	25	P=0.08 (Not Significant)
	Not seen	7	15	
	Total	10	40	

DISCUSSION:

In this study out of the 50 children aged between 6 months to 6 years 12 (24%) children had mild to moderate malnutrition while 4 (8%) children were found to have severe malnutrition. Overall malnutrition was found to be present in 16 (32%) children. The study of immunisation in the children showed that out of 50 cases 10 (20%) children were either completely unimmunised or partially immunised.

Amongst the studied cases 14 (28%) children having malnutrition were found to be residing in various slums. The relationship between living in slums and risk of malnutrition has been extensively studied by many researchers. In a large study Sushmita Das et[11] al conducted a study in which the authors used two linked datasets one based on institutional birth weight records for 17318 infants and one based on follow-up of a subsample of 1941 children under five. Mean birth weight was 2736 g (SD 530 g), with a low birth weight (<2500 g) proportion of 22%. 21% of infants had low weight for age standard deviation (z) scores at birth (<−2 SD). At follow-up, 35% of young children had low weight for age, 17% low weight for height, and 47% low height for age. On the basis of the findings the authors concluded that children living in slums are at risk of developing stunting due to chronic malnutrition. Similar

relationship between slum dwelling and risk of malnutrition was reported by authors like Swaminathan[12] et al and Ghosh et al[13].

In our study we found a statistically significant difference in between order of birth and risk of malnutrition and children of high birth order were found to have more risk of malnutrition as compared to 1st or 2nd child. Similar conclusions were drawn by Rahman[14] who conducted an observational study of 4,120 surviving, lastborn singleton children who were younger than 36 months at the time of the survey. Logistic regression was used to assess the association between birth order and child nutritional status. Results indicated 38.1% children were stunted and 8.2% children were fifth or higher order birth. Order of birth was found to be one of the significant predictors of child being stunted. Third order, fourth order, and fifth or higher order children were 24%, 30%, and 72%, respectively, more likely to be stunted after adjusting for all other variables. The authors concluded that reducing birth rates which limit number of births and birth order as well may reduce child malnutrition in Bangladesh. Similar relationship between birth order and malnutrition was also reported by Jahanihashemi H et al[15]. IN our study maternal education was another statistically significant factor determining the nutritional status of the children under the age of 6 years. In a similar study Aisha Iftikhar et al[16] the authors examined total 340 children (170 cases and 170 controls) with age range of six months to five years along with their mothers were included. Anthropometric measurements were plotted against WHO growth Charts. 170 wasted (<-2 SD) were matched with 170 controls (≥ -2 SD). Maternal education, employment and family size were compared between the cases and control. The authors found that maternal education has definite and significant effect on nutritional status of children. Similar association between maternal education and nutritional status of the children was reported by Amir I et al[17] and Ali SS et al[18].

IN our study immunisation of status was not found to be affected statistically significantly by factors such as type of residence, maternal education, order of birth or awareness levels of mother. This may be due to the fact that immunisation is actively pursued by various health agencies and they are less likely to let the child remain unimmunised. Various studies have confirmed or contradicted the findings of our study. Money MK[19] et al in their study of measles immunisation in slums found that the children living in slums are less likely to get properly immunised as compared to children not living in slums. In our study educational status or order of birth also was not found to have a significant effect on immunisation status of children under age of 6 years. Similarly M.M Angadi[20] et al also reported that immunisation statuses of the children were not significantly associated with their genders. The authors further found that that immunisation status was not significantly associated with other factors such maternal education and socio-economic status.

CONCLUSION:

Complete immunisation and appropriate feeding practices are essential to decrease under five mortality. Maternal Education, low order of birth and health Awareness of mother is found to have a significant impact on nutrition and immunisation status of the children below 6 years of age.

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