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Study to Assess the Maternal Factors Influencing Undernutrition among 3 to 6 Year Old Children of Davangere City

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ABSTRACT

Background: Nutritional status of children is an important indicator of health. Sociocultural and obstetric factors play an important role in the causation of under nutrition. In depth understanding of these factors is extremely necessary to formulate effective intervention strategy.

Objective: To assess maternal factors influencing undernutrition of 3-6 year old children of Davangere city.

Materials and methods: Community based case control study with a pre tested semi structured questionnaire interviewed mothers of 310 children attending anganwadis of Davangere city.

Results: 76% Children were of 3-4 years of age and 57% were females among undernourished.23.3% cases and 4.6% controls were born to mothers' whose weight gain during pregnancy was < 10kgs. 70.6% cases, 83.2% controls were observed among mothers' who practised </= 2 years of spacing.

Conclusion: Majority were from low socio economic status background and born to mothers with less education, early marriage (< 18 years) ,lesser antenatal weight gain (< 10 kgs) and birth spacing with < 2 years between the children concluding them as the important maternal factors influencing undernutrition.

Keywords: Malnutrition, Undernutrition,

INTRODUCTION

Malnutrition accounts for more than one third of all child deaths in the world [1].There is a vicious circle consisting of poverty, ignorance, poor housing, repeated infections resulting in undernourishment in the growing children enroot to malnourishment. Untill unless socio economic condition of the large number of people in country like India is improved, malnutrition further clinches strongly resulting in a big social problem making it difficult to erdaicate . It shows how poverty engenders disease which in turn engenders more poverty. This leads to the development of deficiency diseases like Protein-Energy Undernutrition (PEM), vitamin A deficiency, anaemia due to lack or poor absorption of iron, and vitamin B complex deficiency [2].

NFHS 3 data shows 40% stunting, 20% wasting and 43 % underweight among Under 5 children [3]. The more recent Rapid Survey of Children (RSOC) by UNICEF shows that there has been a larger decline, with the rural underweight rate at 31 per cent and urban at 24 per cent in 2014. Still, there is a gap of 7 percentage points between the rural and urban rates. The survey further shows that there are huge variations across states, with Kerala's rate at less than 20 per cent while that of Chhattisgarh about 47 per cent [4].

Various studies have found several factors causing undernutrition, one such is the influence of maternal factor on under nutrition which includes parents education status, socioeconomic status, less birth order, small family size, minimum three ANC visits, high birth weight more than 2500

grams, early initiation of breastfeeding within 1 hour of birth, exclusive breastfeeding for 6 months, weaning at 6 month, breastfeeding along with supplementary food upto 2 years, complete immunization status [5] .An effort is being made in the present study to understand the impact of maternal factors on undernutrition.

Objective of the study was to assess maternal factors influencing under nutrition of 3-6 year old children of Davangere city.

METHODOLOGY

Community based case control study with a pre tested semi structured questionnaire interviewed mothers of 310 children of 3-6 years attending Anganwadis of Davangere city from 1st January 2014 to 31st December 2014 (1 year).

Sampling size technique: According to recent authentic reports by Child Development Project Officer (C.D.P.O) office, Davangere, prevalence of malnutrition in anganwadi children of study area is 27%. Based on the sample size derived is two hundred and seventy. In Davangere there are 147 anganwadis scattered in 5 ICDS circles. To give representation to each circle, we selected 3 anganwadis in 5 circles randomly. During 1 year, visits were made to cover total of 15 anganwadis and studied 313 children.

Identified anganwadis were visited on a particular day with pre intimation. All children were weighed, using salter spring scale weighing machine available at anganwadi. Nutritional status was evaluated using anganwadi (ICDS) growth charts [6]. Children falling in yellow and red area (<-2SD and < -3SD) were considered as Cases(underweight and severe underweight children respectively) and rest as Controls. All children present during visit were included. Severely ill children such as with metabolic syndromes, congenital anomalies, mental retardation, tuberculosis etc and mothers of children who do not give consent were excluded.

Mothers of both cases and controls were interviewed with their consent at their home in their convenient time using pre tested questionnaire to obtain data on maternal factor concerned to the child nutrition. Data collected was entered in Microsoft excel 2010 v and was analysed using SPSS V 17.0 by using appropriate statistic tests like Percentage, chi square test, Odds ratio and p value <0.05 was considered statistically significant.

RESULTS

Out of 313 children studied 116 were found as cases and 197 as controls.

Among them 50(43.1%) were of severe underweight and 66(56.9%) were underweight. Under nutrition was more 88(75.9%) in the age group of 3-4 years, which was found statistically significant between age groups (p value <0.05). Undernourished Females 66 (57%) outnumbered males in this study which was found statistically significant (p-0.03).This suggest that under nutrition is more in the female children than that of male children. (See table 1)

Table 1: Distribution of children by Age and Gender

Variables	Cases (n=116)	Controls (n=197)	p value	OR (95% CI)
Age Group				
4-5 Yrs	28 (24.1)	25 (12.7)	0.009	2.1(1.2-3.9)
3-4 Yrs	88 (75.9)	172 (87.3)		
Gender				
Female	66 (57.0)	136 (69.0)	0.03	1.6(1.04-2.7)
Male	50 (43.0)	61 (31.0)		

Table 2: Association between Undernutrition and Maternal factors

Maternal factors	Cases (n=116)*	Controls (n=197)*	P value	OR (95% CI)
Age at Marriage				
< 18 years	20(17.3)	62(31.5)	7.647	0.45
≥ 18 years	96(82.7)	135(68.5)		(0.26-0.8)
Age of mother at child's birth				
< 18 years	3(2.6)	3(1.5)	0.812	1.72
≥ 18 years	113(97.4)	194(98.5)		(0.3-8.65)
Mother's literacy status				
Illiterate	32(27.6)	29(14.7)	0.005	2.21
Literate	84(72.4)	168(85.3)		(1.25-3.89)
Mother's occupation				
Employed	35(30.2)	39(19.8)	0.036	1.75
Unemployed	81(69.8)	158(80.2)		(1.03-2.97)
Antenatal weight gain				
<10 Kgs	27(23.3)	9(4.6)	0.000	6.34
10-12 Kgs	89(76.7)	188(95.4)		(2.86-14.04)
Birth spacing				
≤ 2 years	82(70.6)	164(83.2)	0.009	0.49
> 2 years	34(29.4)	33(16.8)		(0.28-0.84)
Birth order				
< 2	32(27.5)	29(14.8)	0.005	2.21
>2	84(72.5)	168(85.2)		(1.25-3.89)

*Figure in parenthesis indicate percentage

Among 313 subjects studied, 61 (52.5%) undernourished children and 95(48.2%) non undernourished children were from class 4 according to Modified B. G. Prasad classification of Socio economic status January 2014, found statistically significant (p<0.05) and supports that lower socio economic status is a determinant of undernutrition.

Only 26 (22.4%) undernourished and 29(14.7%) in non-undernourished children had illiterate mothers', whereas primary education among mothers'

of 12 (10.4%) cases, 25 (12.8%) among controls. Higher primary among mothers' of 37 (31.9%) cases and 37 (18.8%) controls. Secondary level of education among mothers' of 25 (21.6%) cases and 61 (30.9%) controls. PUC/Diploma was studied 12(10.3%) among cases, 44(22.3%) among controls and graduate were only 4(3.4%)cases, 1(0.5%) control which is found statistically significant ($p<0.05$) stating the impact of mother's literacy level on child nourishment.(see table 2)

Early marriage (<18 years) was observed only in 20 (17.3%) mothers' of undernourished children compared to 62(31.5%) among normal children which is found statistically significant ($p <0.05$).Higher proportion 37 (32%) among cases and 94 (48%) controls were born to mothers' who had the child birth at the age of 20-22 years,however only 3 mothers' each in cases and controls had their delivery of their child before 18 years. Illiterate mothers are 2.2 times more likely to have undernourished child compare to literate mothers [OR (95% CI)- 2.2 (1.25-3.89)].Children of Mothers' with Antenatal weight gain < 10 kgs are 6.2 times more to develop under nutrition in their children compared to mothers with antenatal weight gain > 10 kgs [OR(95% CI)-6.34(2.86-14.04)] (see table 2).

DISCUSSION

In the present study females outnumbered males in undernourishment which was contrary in study by Basit et al [7] and Hui ji wong et al [8] which supports that the female children negligence in care and support make them more vulnerable to undernutrition.

Lower socio economic status was found to be a factor in causing undernutrition which is being emphasized by soloman et al [9] also where it further adds up to the fact that the financial power of the family to purchase the food,care and to lead a healthy lifestyle when compromised results in nutritional deficiencies among the children of the family which was not in support by Hasan J et al [15].

In the present study the proportion of undernourished children were more among unemployed mothers which was found statistically significant which is contrary to the results of Lokesh sanakaria et al [10], A Mittal et al [14] where it was revealed that 50% of children of mothers who were working were undernourished arouse thought being unemployed, poor and having less education might support the above statement on unemployed mothers.

Illiterate mothers being less knowledgeable about the child rearing practices and seeking health care during illness was found more among the cases in our study as well study by Solomon et al [9] , Lokesh sanakaria et al [10], Bantamen et al [11] , Eme Owoaje et al `[12],Khushbu Makadia et al [13] and A Mittal et al [14]which proves as a factor influencing of undernutrition.

In our study mothers with < 10 kgs weight gain antenatally were found to have higher proportion of undernourished children which supports the fact that antenatal weight gain during pregnancy indirectly estimates the health of an antenatal mother which will influence in turn child's weight at birth. Lesser the birth order of a child will have less chance to go for undernutrition as being supported by Khushbu Makadia et al [13] also.

Spacing more than 2 years between children will allow mother to regain the nourishment which will be decreased during before and after child birth which is being supported by our study and found statistically significant which is in par with results of Lokesh sanakaria et al [10].

CONCLUSION

In this study socio demographic factors like early marriage(<18 years),mother's literacy status, lower socio economic status, occupational status of mothers' and reproductive factors such as antenatal weight gain < 10kgs and birth spacing less than 2 years are found to be the major determinants of undernutrition.

RECOMMENDATIONS

Education of girls should be supported along with sustaining of schemes like Bhagyalakshmi, Beti Padhao-beti bachao etc. Maternal education regarding child rearing practices, childhood illness, immunization and nutrition should be given by all health workers certainly in a platform like Anganwadis of ICDS projects which are link for nutrition, education and immunization of mother and child. Hence the support and services need to be strengthened from antenatal, natal and postnatal period of a mother along with her child.

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