

Does Maternal Factors Have A Bearing On The Health Of Their Offsprings?

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Abstracts: Background: The development of the child is dependent on the mother and if the health of the mother suffers, the child's growth and development are in turn affected. The mother is also the first teacher of the child, and that is why the mother and child are treated as one unit. A mother is the principal provider of the primary care that her child needs during the first six years of his/her life. The type of care she provides depends to a large extent on her knowledge and understanding of some aspects of basic nutrition and health care. This begins at conception and continues until infancy, teenage and adulthood. Therefore, mothers are key players in the growth and development of children. Methodology: The study was carried out in the villages under RHTC, field practice area of Department of Community Medicine, Dehradun. A sample of 500 mothers with children in the age group of 0-36 months living in the registered population of RHTC were included, where mother's demographic profile, parity, diet during pregnancy were recorded. Results: Maternal factors as maternal age, education, parity diet & supplementary nutrition during pregnancy, emerged as significant predictors of under nutrition. Conclusion: The findings confirms the association of maternal factors with malnutrition of their children. This may involve public health enlightenment campaign discouraging teenage pregnancy and high parity of mothers which predisposes to poor nutritional status, poor diet during pregnancy which further increase the risk of poor outcomes both for the mother and the child. There is also need to increase female education as this will make them receptive to health interventions that will improve their nutritional status along with their children. [Vyas S et al NJIRM 2015; 6(3):31-35]

Key Words: Malnutrition, Maternal Factors, pregnancy.

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Introduction: Malnutrition in this stage has far reaching consequences on child's future by severely affecting child's physical and mental development. Malnutrition in turn weakens the immune system of the child, thereby contributes to more than 50 % of deaths associated with infectious diseases among this age group. Children in preschool stage require most attention, as this is the period of rapid growth and development, which makes them highly vulnerable to malnutrition.¹ During preschool period child is mostly dependent on mother for all its nutritional needs.² It should be noted that the traditional role division has largely laid the responsibility of childcare on women. This begins at conception and continues until infancy, teenage and adulthood. Hence it is argued that the mother being the major care provider for the child during preschool period, her status in the family may have bearing on nutritional status of her child. Therefore, women are key players in the growth and development of children. However, it is not until recently that the role of maternal factors in enhancing the quality of care and nutritional status of children is being

emphasized in empirical research.³ In addition, Maternal factors may act as a forecast for the child's nutritional environment it will encounter after birth.⁴ The child responds and adapts to that forecast using a number of strategies in order to maximize its chances of postnatal survival.⁵ Hence it is argued that the mother being the major care provider for the child during preschool period, maternal factors may have a strong bearing on nutritional status of their child.² This paper therefore tries to examine the influence of various maternal factors on the nutritional status of their children aged 0-36 months

Material and Methods:

A cross-sectional study was conducted amongst mothers having children between 0-36 months of age group in the field practice area of Rural Health Training Centre (RHTC) of Department of Community Medicine, Himalayan Institute of Medical Sciences, Dehradun in the year 2009-2010. This centre is situated at about 5 kms from the Medical College and caters to a population of about 12,500 from 8 villages. Ethical clearance was

taken prior to the conduction of the study. To conduct this study, a semi-structured questionnaire was developed and all the questions were framed keeping in mind the objectives of the study. This questionnaire was tested with a pilot study of 50 mothers of the same area, who had children less than 3 years of age. The researcher herself interviewed the mothers at the time of pilot testing. On the basis of pilot study P was taken as 0.48 and q as 0.52 (1-p). Allowable error d was taken as 10% of p. Sample size thus yielded was 434. Considering 10% non-response, 43 was added to make the total sample size 477. A house-to-house survey of all the families registered with RHTC, Rajeev Nagar was undertaken and households with at least one infant below 3 years were selected. Age of child was confirmed by further interviewing the family members and scrutinizing the available records. In total, 565 under three children were enlisted from these eight villages. Data for infants who reached more than 36 months of age, infants of multiple births defects were excluded from analysis. In families with more than one child, in 0-3 year age group, only the younger child was selected for the present study; thus, 507 mother-infant pairs were identified for the survey. Among the mothers of the eligible infants identified, informed consent to participate in the study was obtained from 98% (500 = 507); thus, the infant population in the selected communities was well-represented. Verbal informed consent was obtained from each of the mother and they were reassured that the information obtained will be confidential and used only for the purpose of this study. After ensuring the confidentiality and building a rapport, in depth interview of mothers was undertaken by the researcher at home. The average time taken for filling each questionnaire was around 15-20 min depending on the mother's response. Height/length and weight of the child was also recorded using standard techniques and instruments by experienced and trained field personnel. Reliability of these questions was checked and suitable modifications were made, before finally administering them to respondents. To keep a check on validity of the data, 10% of it was cross checked. Whole process of data collection was monitored by independent observers and supervised by the investigator. Data analysis: Data was processed on SPSS (Version

14.0), EPI-Info 2003 & Microsoft Excel 2007. Chi-square test was applied as and where found appropriate. All variables included to record maternal factors were categorized and coded. To assess child's nutritional status, proportion of underweight, stunting & wasting were calculated using New WHO standards (MGRS 2006), with the help of Anthropometric calculator (Version 2.0.2). Each variable of mother was related independently with the nutritional status of children to examine any association. The information obtained were compiled, tabulated and analyzed statistically to draw out observations and meaningful conclusions. (proportion of underweight, stunting & wasting).

Results: According to Table 1, majority of mothers (96%) were in the age group of 18-30 years at the birth of index child, According to the literacy status of parents, 41.20% of mothers were found to be illiterate. Only 7.80% mothers were working, while 92.2% of mother's were housewife. A higher no (61.60%) of mothers had parity of <2. Table 2 shows that maternal factors which were related to the undernutrition of toddlers were mother's age at the birth of index child, illiteracy, parity >2 strictly vegetarian mothers & lacking extra meal during pregnancy.

Table1: Sex wise Distribution of Maternal sociodemographic factors

Variable	Sex Composition		Total (N=500)
	Male (n=258)	Female (n=242)	
Age at birth of index child(yrs)			
<18	6(42.86)	8(57.14)	14(2.80)
18-30	247(51.46)	233(48.54)	480(96.0)
>30	5(83.33)	1(16.67)	6(1.20)
Mother's Education			
Illiterate	102(49.51)	104(50.49)	206(41.20)
Literate	156	138	294(58.80)
Mother's Occupation			
Working	24	15	39(7.80)
Housewife	234(50.76)	227(49.20)	461(92.20)
Parity			
<2	166(53.90)	142(46.10)	308(61.60)
>2	92	100	192(38.40)
Extra meal during pregnancy			
Yes	92(51.40)	87(48.60)	179(35.80)
No	166(51.71)	155(48.29)	321(64.20)

Received Supplementary Nutrition			
Yes	148(48.21)	159(51.79)	307(61.40)
No	110(56.99)	83(43.01)	193(38.60)
Nutritional Status during Pregnancy			
Weak	93(50.27)	92(49.73)	185(37.00)
Healthy	155(52.36)	141(47.64)	296(59.20)
Overweight	10(52.63)	9(47.37)	19(3.80)
Total	258	242	500

Table2 : Association of Maternal Factors with Nutritional status of children

Characteristics		Total No of Children (N=500)	No. of undernourished children (N=298)	P value
Mothers age at birth of index child	<18	16	12(75.00)	<0.05*
	18-30	477	279(58.49)	
	> 30	7	7(100.00)	
Mother's education	Illiterate	206	151(73.30)	<0.05**
	Literate	294	147(50.00)	
Mother's Occupation	Working	39	25(64.10)	>0.05
	House wife	461	273(59.22)	
Parity	<2	308	171(55.52)	<0.05*

	>2	192	127(66.15)	
Diet	Nonveg	70	30(42.86)	<0.05**
	Veg	430	268(62.33)	
Extra meal during pregnancy	Yes	179	42(23.46)	<0.05**
	No	321	256(79.75)	
Received Supplementary Nutrition	Yes	307	189(61.56)	>0.05
	No	193	121(62.69)	
Nutritional Status during Pregnancy	Weak	296	187(63.18)	>0.05
	Health y	185	98(52.97)	
	Overw eight	19	8(42.10)	

*Significant, **Highly Significant

Table 3 shows that mother's age at birth of index child was significantly associated to underweight, illiteracy of the mother had an association with stunting, maternal diet during pregnancy was significantly associated with underweight & parity of the mother had a significant association with all the three i.e. stunting, wasting, underweight. Further, Extra meal during pregnancy was associated with wasting & stunting.

Table 3: Distribution of Undernourished Children with Maternal Factors

Characteristics		No. of undernourished children (%)	Wasting	Under wt	Stunted
			146	204	198
Mothers age at birth of index child	<18	12(75.00)	8(66.67)	11(14.67)	9(75.00)
	18-30	279(58.49)	134(48.03)	186(66.67)	184(65.65)
	> 30	7(100.00)	4(57.14)	7(100.00)	5(71.43)
Chi square			1.79	6.63*	0.50
Mother's education	Illiterate	151(73.30)	74(49.01)	111(73.51)	114(75.50)
	Literate	147(50.00)	72(48.98)	93(63.27)	84(57.14)
Chi square			0.00	3.62	11.25 **
Parity	< 2	171(55.52)	110(64.33)	142(83.04)	102(59.65)
	>2	127(66.15)	36(28.35)	62(48.82)	96(75.59)
Chi square			37.75**	39.53**	8.31 **
Diet	Non veg	30(42.86)	16(53.33)	9(30.00)	17(56.67)
	Veg	268(62.33)	130(48.51)	195(72.76)	181(67.54)
Chi square			0.25	22.85**	1.43
Extra meal during pregnancy	Yes	42(23.46)	14(33.33)	13(30.95)	22(52.38)
	No	256(79.75)	132(51.56)	191(74.61)	176(68.75)
Chi square			4.80*	1.27	4.34*

Received Supplementary Nutrition	Yes	189(61.56)	91(48.15)	135(71.43)	128(67.72)
	No	121(62.69)	55(45.45)	69(57.02)	70(57.85)
Chi square			0.15	2.11	0.38
Nutritional Status during Pregnancy	Weak	187(63.18)	89(47.59)	125(66.84)	117(62.57)
	Healthy	98(52.97)	53(54.08)	75(76.53)	76(77.55)
	Over-weight	8(42.10)	3(37.5)	3(37.5)	4(50.0)
Chi square			1.56	6.74*	7.66*

*Significant

**Highly Significant

Discussion: Our study was completely in line with other studies i.e. Benjamin et al, Mittal et al, Kumar et al, Israt et al & Ali et al where majority of illiterate mothers had undernourished children (73.30%)⁸⁻¹². This shows that, the educational level of mothers was directly proportional to the better nutritional status of children. Educated mothers are more conscious about their child's health and tend to look after their children in a better way. In our study, most (92.20%) of the mothers were housewives whose children were found to be less undernourished (59.22%) as compared to working mothers. Corroborative findings were found in a study by Mittal et al⁹ Poor nutritional status of children of working mothers suggests that working places should be provided with crèches/play ways where kids can be taken care of while the mother is at work. A mother who is a housewife has more time at her disposal with the child in the environment at home & can better cater to the physical & emotional needs of the growing child. This also creates a better bonding among mother & child as compared to a working mother. In the present study, 95.40% mothers were in the age group of 18-35 years at the birth of index child. Our findings are comparable to study by Nnyepi at Botswana & NFHS-3 India^{13,14}. Yet another important finding in our study, is maximum under nutrition (100%) was found in those children whose mothers were aged >35 years at the time of birth, followed by children whose mothers were <18 years (75%) at the time of delivery. Our findings are completely in line with Mittal et al & Das et al.^(9,15) Effect of mother's age on prevalence of under nutrition clearly favours the promotion of delaying marriage (>18yrs) of females and further delaying (>20yrs) the birth of the first child. These two steps will help to avoid early pregnancy, further limiting the no of births or by promoting either temporary/permanent methods of

contraception which will help to avoid pregnancy after 35 years of age. Regarding maternal nutrition & nutritional status during pregnancy, It was found that prevalence of under nutrition was significantly low in children whose mother's took an extra meal during pregnancy, included non-vegetarian meal in her diet, & whose maternal status was stated to be healthy during pregnancy. Further, our findings signify that, children of well-nourished mothers had a lower risk of being underweight & stunted as compared to children of malnourished mothers. The reason may be that, thin or malnourished mother cannot provide sufficient breast milk because of their nutritional deficiency. Acute malnutrition of mother could be an impediment for her child's growth. Our findings were supported by Edward et al & Medhin et al^{16,17} who stated that prenatal nutrition may have an association with chronic i.e. stunting & acute under nutrition i.e. under weight. Inference drawn from the above findings suggest that interventions targeted at improving maternal nutritional status during pregnancy might reduce infant under nutrition by increasing birth weight and improving the quantity and quality of breast milk. It might be possible to minimise the rural urban difference in infant under nutrition by empowering mothers living in rural areas with skills of optimal parenting practices and increasing accessibility of health services.

Conclusion: From our study, it can be concluded that maternal factors emerged as significant predictors of undernutrition. Hence, mother should be sensitized regarding the nutritional needs of her growing child. Better nutritional profile of under-three children of educated mothers indicates 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. Literate mothers can easily introduce new feeding practices scientifically, which helps to improve the nutritional status of their children. Then only they will realize the importance of exclusive breastfeeding, timely weaning and provision of protein and energy dense complementary food. Mothers should be taught to monitor the growth of their child by regular weighting and keeping a track of WHO growth charts, so that the growth faltering can be diagnosed at an earlier stage and the necessary interventions can be taken.

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