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Impact of Maternal Nutritional Knowledge on the Anthropometric Parameters of 0-12 years aged Children.

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ABSTRACT

Adequate nutrition and good health are the essential criteria that pave the way for children to grow and develop properly. A good nutritional start also boosts their immune system to resist against infection. Since child's health and nutrition is mostly dependent on their mother's care, hence it is quite expected that knowledge of mothers regarding health and nutrition plays an important role in the maintenance of nutritional status of children. The present study is thus aimed to assess the impact of maternal nutritional knowledge on the nutritional status of 0-12 years aged children. A cross-sectional study was conducted on total 518 mother-child pairs taken from some selected rural and urban regions of West Bengal. Body weights and heights of children were recorded using standard anthropometric methods and different anthropometric parameters (viz. Weight for Age, Height for Age, Weight for Height, Body Mass Index etc.) were studied to express the nutritional status of children. A pre-tested, self-structured questionnaire was used to assess the nutritional knowledge of mothers. The findings reveal that anthropometric parameters related to long term (viz.HAZ) as well as short term (viz. WHZ and BMI) well being of children were significantly influenced by the nutritional knowledge level of mothers.

KEYWORDS maternal nutritional knowledge, anthropometric parameter, children

Introduction:

Child malnutrition is the most serious problem of the world. About 150 million children in developing countries are still malnourished and more than half of underweight children live in South East Asia Region.[1] The World Bank estimates that India is one of the highest ranking countries in the world for the number of children suffering from malnutrition. The 2015 Global Hunger Index (GHI) Report ranked India 20th amongst leading countries with a serious hunger situation. Amongst South Asian nations, it ranks third behind only Afghanistan and Pakistan with a GHI score of 29.0. [2]

The underlying causes of child malnutrition are manifold including various maternal factors. Children are the future of society and mothers play a vital role in protecting and shaping this future. Knowledge of mothers regarding childcare and child nutrition has an important role in the maintenance of nutritional status of the children. Past studies have shown a positive effect of maternal nutritional knowledge on child's nutritional status in many different countries, for example in Ethiopia (Christiansen and Aldeman 2001)[3], India (Sivaramakrishnan and Patel 1993)[4], Ghana (Appoh and Krekling, 2005)5, Lesotho (Ruel, Habicht et. al 1992)[6], Guinea-Bissau (Kovsted, Portner et. al 2002)[7] and Indonesia (Webb and Block 2003)[8].

The above background focused on the importance of nutritional knowledge of mothers. Hence the present study was designed to evaluate the impact of maternal nutritional knowledge on the nutritional status (as indicated by different anthropometric indices) of children aged 0-12 years.

Materials and Methods:

The present cross sectional study was carried out in some selected rural and urban regions from three districts (viz. North 24 Parganas, Howrah and South 24 Parganas) of West Bengal, India. Total 518 mother-child pair was included in the study through stratified random sampling. Age of the children was verified by checking their birth records. Height (up to nearest 1 mm) and weight (up to nearest 100g) of the children were measured using standard anthropometric equipment and procedures. The nutritional status of children was assessed according to SD classification using WHO growth standards.[9] Anthropometric indices used for assessing nutritional status for under five children (N=349) were Weight for Age (WAZ), Height for Age (HAZ) and Weight for Height (WHZ). Whereas for children above 5 years age (N=169) Weight for Age (WAZ), Height for Age (HAZ) and Body Mass Index (BMI) were used.

The nutritional awareness was assessed through a pre-tested, structured Nutritional Knowledge (NK) questionnaire. The NK score was determined (correct response = 1; incorrect = 0) and the overall score was represented as the total of correct responses in percentages. The questionnaire includes questions from different areas of child nutrition and health , such as, basic concepts of nutrition, nutritive values of common foods, child health problems and its management, immunization, breast feeding practices, weaning foods, healthy eating habits of children, food handling practices etc.

The collected data was numerically coded and entered into Microsoft Excel 2007 and then transferred to SPSS version 20. Added data was analyzed with appropriate test like ANOVA test to see the difference in NK score of mothers of children belonging to different nutritional grades, at a minimum significance level of 0.05.

Results:

Out of total 518 children participated in the present study, 349 children belongs to under-five age group, whereas 169 children belongs to above five age group. The impact of mother's nutritional knowledge on their child's nutritional status was separately studied in those two age groups.

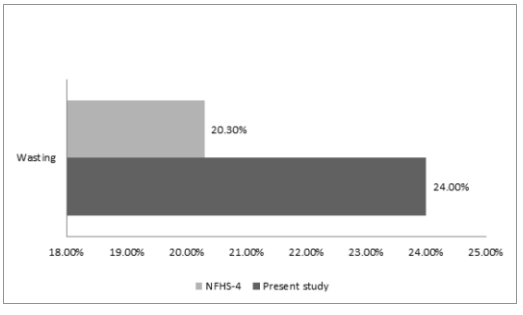
In case of under-five children we found that 8.8% were severe underweight, 15.1% were moderate underweight **(Table 1)**. Again 5.1% under-five children were severely stunted and 23.4% were moderately stunted. Severe and moderate wasting was found among 5.7% and 18.3% children respectively **(Table 1)**. Nutritional Knowledge Score of mothers was found to exert significant effect on the long –term nutritional status of under-five children as indicated by HAZ. The mean NK score percentage was found to be significantly lower in case of the mothers of stunted children than the mothers of the normal ones (p=0.0393) **(Table 1)**.

The overall prevalence of wasting among under-five children was found to be 24% that is much higher than the state level average of 20.3% wasting as reported by NFHS-4 for West Bengal.10 **(Figure 1).**Thus the impact of nutritional awareness of mothers on the WHZ for under-five children was studied separately on three age groups viz. < 1 year, 1-3 yrs and 4-5 yrs. The mean NK score percentage was found to be significantly lower in case of the mothers of wasted children (aged < 1 year) than the mothers of the normal ones (p=0.035) **(Table 1).** But for 1-3 yrs age group severe wasting was also found among children whose mothers possess high NK scores. Although the difference between mean NK scores of mothers was found to be non-significant (p=0.246) (**Table 1)**. For 4-5 yrs age group, it was found that the mean NK scores of mothers having moderately wasted children was significantly lower than the mean NK scores of mothers having normal children.

Table 1: Relation between mother's nutrition knowledge and their under five children's nutritional status (as indicated by different anthropometric indices)

Nutritional Grade	No	Percentage	Mean NK Score	Std. Dev	Minimum	Maximum	Median	p-value
A] Weight for Age	31	8.8	59.0645	9.3457	35.6000	76.2000	56.4000	0.3617
1. Severe Underweight	53	15.1	62.5396	9.6296	23.7000	76.2000	65.3000	
2. Moderate Underweight	265	75.9	61.0989	11.1628	19.8000	83.1000	63.3000	
3. Normal								
B] Height for Age	18	5.1	54.9000	5.7393	47.5000	65.3000	54.4000	0.0393
1. Severe Stunting	82	23.4	61.8329	10.4347	23.7000	79.2000	64.3000	
2. Moderate Stunting	249	71.3	61.3586	11.0798	19.8000	83.1000	63.3000	
3. Normal								
C] Weight for Height	9	16.0	61.5444	12.438	35.6000	75.2000	64.3000	0.035
	8	14.2	51.9250	13.629	24.7000	68.3000	54.9000	
(for < 1 yr.)	39	69.6	62.284	8.591	45.5000	79.2000	65.3000	
1. Severe Wasting								
2. Moderate Wasting								
3. Normal								
(for 1-3 yrs)								
1. Severe Wasting	4	2.4	65.3000	8.937	54.4000	76.2000	65.3000	0.246
2. Moderate Wasting	34	20.4	63.2110	9.436	29.7000	80.1000	65.3000	
3. Normal	128	77.1	60.4770	9.908	23.7000	83.1000	61.3000	
(for 4-5 yrs)								
1. Severe Wasting								
2. Moderate Wasting	7	5.5	67.000	3.995	64.3000	75.2000	65.3000	0.010
3. Normal	22	17.3	54.590	9.215	37.6000	73.2000	53.4000	
	98	77.1	62.410	12.583	28.7000	78.2000	66.3000	

Figure 1: Comparing the prevalence of wasting among under-five children with NFHS-4 for West Bengal



In case of above five children we found that 6.5% were severe underweight, 15.5% were moderate underweight **(Table 2).** Again 1.7% above-five children were severely stunted and 11.2% were moderately stunted. Severe thinness was found among 11.2% children and 6.5% children were found overweight **(Table 2).**

For above –five age group, mother's NK scores were found to exert statistically significant impact on all the anthropometric indicators studied (i.e., WAZ, HAZ and BMI).

Weight for Age gradation was done for 6-10 years old Children (N=122) (as SD classification for WAZ of WHO Growth standards was given upto 10 years of age). Here we found that the mean NK scores of the mothers having underweight children was significantly higher than the mean NK scores of mothers having normal children (p=0.0078) **(Table 2).** Similarly trend of possessing lower mean NK scores was observed among mothers having stunted or wasted children **(Table 2).**

Table 2: Relation between mother's nutrition knowledge and their above five children's nutritional status (as indicated by different anthropometric indices)

Nutritional Grade	No	Percentage	Mean NK Score	Std. Dev	Minimum	Maximum	Median	p-value
A] Weight for Age 1. Severe Underweight 2. Moderate Underweight 3. Normal	8 19 95	6.5 15.5 77.8	56.0250 61.8105 65.3705	9.4563 8.5486 8.7303	38.6000 40.5000 34.6000	73.2000 71.2000 77.2000	56.4000 61.3000 67.3000	0.0078

B] Height for Age 1. Severe Stunting 2. Moderate Stunting 3. Normal	3 19 147	1.7 11.2 86.9	53.73 33 59.52 11 64.39 52	1.15 47 9.62 11 8.58 86	52.40 00 38.60 00 34.60 00	54.400 0 77.200 0 77.200 0	54.40 00 56.40 00 65.30 00	0.0106
C] Body Mass Index 1. Severe Thinness 2. Thinness 3. Normal 4.Overweight 5.Obese	19 33 104 11 2	11.2 19.5 61.5 6.5 1.1	61.91 05 61.03 94 64.09 81 68.72 73 72.70 00	7.16 74 7.21 63 9.55 80 6.22 30 0.70 71	54.40 00 40.50 00 34.60 00 58.40 00 72.20 00	76.200 0 71.200 0 77.200 0 77.200 0 73.200 0	59.40 00 62.30 00 65.30 00 68.30 00 72.70 00	0.0457

Discussion:

The present findings indicate that the mother's nutritional knowledge possesses a strong influence on the long term (as indicated by HAZ) well-being of under-five children. Also the short term well being (as indicated by WHZ) of < 1 year and 4-5 years children were found to get influenced by the nutritional knowledge level of mothers. Importance of the mother's nutritional knowledge in determining the nutritional status of 0-72 months children was also reported by Christian et.al.11 They reported that mother's NK score were associated with long term well being of children as represented by HAZ. They also reported that WHZ of children was significantly related to the mother's nutritional knowledge. For 1-3 years and 4-5 years age group, severe wasting among children was also observed whose mothers possess considerably high NK scores. However for 1-3 years age group the difference between mean NK scores of mothers was found non-significant at all. Jyothi Lakshmi et.al conducted a study on rural preschool children of Mysore and found that the percentage of normal children was 2.5 times higher among mothers with better knowledge of nutrition.12 But they found a non-significant relationship between mothers' nutritional knowledge and children's nutritional status. Khokar,A. conducted a cross-sectional survey in rural areas of Tamilnadu on under-five children.13 The researcher concluded that the nutritional knowledge of mothers plays an important role in the maintenance of nutritional status of children. [13]

On the other hand, for above five age group, maternal nutritional awareness influences the long term (as indicated by HAZ) as well as short term well (as indicated by BMI) being. The WAZ indicator of older children was also affected by NK scores of mothers.

Hence the present study reveals the importance of maternal nutritional awareness on child's nutritional status. At the same time the positive impact of mother's nutritional knowledge on the short as well as long term anthropometric outcomes of 0-12 years aged children was clearly reflected in the study.

Conclusion:

The present study reveals that mothers' knowledge regarding nutrition has a direct positive impact on the anthropometric parameters studied for 0-12 years aged children. Significant difference in maternal nutritional knowledge was found among the under-five children with different nutritional grades (as indicated by HAZ and WHZ). This indicates that mothers' nutritional knowledge possess a strong influence on the long term (as indicated by HAZ) as well as short term (as indicated by WHZ/BMI) well being of 0-12 years aged children. Thus the current findings indicate that the inclusion of health and nutrition knowledge skills in school curricula may lead to substantial improvement in child nutritional status by directly enabling the girls who are future mothers to have an improved health knowledge, practices, and health seeking behavior.

References:

1. Joshi, H.S., Gupta, R., Joshi, M.C. and Mahajan, V. (2011) "Determinants of nutritional status of school children –A cross sectional study in western region of Nepal." National Journal of Integrated Research in Medicine, 2(1):10-15.
2. 2015 Global Hunger Index Report. International Food Policy Research Institute (IFPRI), Available from: https://en.wikipedia.org/wiki/Malnutrition_in_India.
3. Christiaensen, L. and Alderman, H.(2001) "Child malnutrition in Ethiopia : Can maternal knowledge augment the role of income?" Africa Region Working Paper Series, 22 Available from: http://www.worldbank.org/afr/wps/index.htm.
4. Sivaramakrishnan, M. and Patel, V. (1993) "Reasoning about childhood nutritional deficiencies by mothers in rural India: A cognitive analysis". Social Science & Medicine, 37(7):937-952
5. Appoh, L.Y. and Krekling, S. (2005) Maternal nutritional knowledge and child nutritional status in the Volta region of Ghana. Matern Child Nutr, (2):100-10.
6. Ruel, M.T., J.P. Habicht, P. Pinstrup-Andersen, and Y. Grohn. (1992) "The Mediating Effect of Maternal Nutrition Knowledge on the Association between Maternal Schooling and Child Nutritional Status in Lesotho." American Journal of Epidemiology 135(8): 904-14.
7. Kovsted, J., Pörtner, C. C., & Tarp, F. (2002) "Child health and mortality: Does health knowledge matter?" Journal of African Economies, 11(4), 542–560.
8. Webb,P. and Block, S. (2003) " Nutrition knowledge and parental schooling as inputs to child nutrition in the long and short run." Discussion Paper No.21. The Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy, Food Policy and Applied Nutrition programme.
9. WHO Multicentre Growth Reference Study Group. WHO Child Growth Standards Based on length/height, weight and age. Acta Paediatr Suppl 2006, 450: 76-85.
10. National Family Health Survey (NFHS-3) 2015-2016. State Fact Sheet, West Bengal, Government of India, Ministry of Health and Family Welfare.
11. Christian, P., Abbi, R., Gujral, S. and Gopaldas, T. (1988) "The role of maternal literacy and nutrition knowledge in determining children's nutritional status". Food and Nutrition Bulletin. The United Nations University Press. 10(4):35-40.
12. Jyothi Lakshmi, A., Khyrunnisa, B., Saraswathi, G. and Jamuna, P. (2003) "Nutritional status of rural preschool Children-mediating factors". The Journal of Family Welfare 49(2): 45-56.
13. Khokar A. (1998) "A study to assess the knowledge of mothers with regard to nutritional status of under-five children in selected rural community area". India J Paediatr.63:122-23.