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TO STUDY THE IMPACT OF NON-DIETARY FACTORS ON CHILDREN WITH SEVERE ACUTE MALNUTRITION LESS THAN 5 YEARS OF AGE.

***Dr. Sudhir Mehta**[MBBS, DCH, DNB [PEDIATRICS]]

Department Of Pediatrics, Bhandari Hospital and Research Center, Indore, Madhya Pradesh, India.

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***Correspondence for Author**

Dr. Sudhir Mehta

Department Of Pediatrics, Bhandari Hospital And Research Center, Indore, Madhya Pradesh, India

ABSTRACT

Aim of the study: To study the impact of non-dietary factors on children with severe acute malnutrition less than 5 years of age. **Background:** Severe acute malnutrition among the children below 5 years of age remains a major embarrassment and impediment to optimal human capital development globally. Despite being an important health problem in developing countries, there is little information available on factors affecting the malnutrition, especially non dietary ones. **Material and Methods:** This study enrolled 400 children between 6 to 60 months of severe acute malnutrition based on WHO criteria of severe acute malnutrition. The impact of non-dietary factors related to Child, Mother and Socioeconomic status . These data were collected by structured questionnaire and were analyzed. **Results:** The common contributory factors for not gaining were: lack of mother's knowledge about infant feeding practices, low socioeconomic status, poor maternal literacy, history of recurrent infections. **Conclusion:** This study concludes that various non- dietary factors play an important role in etiology of children with SAM. The diet is not the only solution to this problem.

KEYWORDS: Children, Non- dietary, Malnutrition.

INTRODUCTION

Malnutrition remains one of the most common causes of morbidity and mortality among children throughout the world.[1] Severe acute malnutrition among the children below five years of age remains a major embarrassment and impediment to optimal human capital development globally. Malnutrition has been responsible, directly or indirectly, for 60% of

the 10.9 million deaths annually among children under five. Well over two-thirds of these deaths, which are often associated with inappropriate feeding practices, occur during the first year.[2] Community based studies done in Ethiopia showed that malnutrition is common.[3,4] So malnutrition remains a major public health problem throughout the developing world and is an underlying factor in over 50% of the children deaths under 5 years who die each year of preventable causes[5,6,7,8]Approximately 9% of sub-Saharan African and 15 % South Asian children suffer from moderate acute malnutrition[9,10] and approximately 2% of children living in developing countries suffer from severe acute malnutrition.[10] This is equivalent to approximately 60 million children suffering from moderate and 13 million suffering from severe acute malnutrition at any one time. In India alone for example, approximately 2.8% of children under 5, approximately 6 million, are severely wasted[11,12] and in many poor countries such as Malawi, severe acute malnutrition is the commonest reason for pediatric hospital admission.[13] Estimates from most recent nationally representive survey indicate that 6.4% of children below 60 months of age have weight for height below -3SD. In current Indian population of 1100 million, there would be about 132 million under five children (12% of population), of which 6.4% or roughly 8 million assumed to be suffering from Severe acute malnutrition. Malnutrition is an important public health problem in India; however, little information is available on risk factors for severe acute malnutrition (SAM), especially on non dietary ones. In this study, we tried to determine influence of these risk factors that could lead to SAM in children under the age of five.

MATERIAL AND METHODS

This was a prospective observational study done for a period of 3 years from 2011 to 2014 at in our hospital which is a tertiary care multispecialty hospital. The study participants were 400 children of severe acute malnutrition between 6 to 60 months of age. These children were enrolled on basis of WHO's criteria for severe acute malnutrition, which included children with W/H or W/L with Z score <-3 SD, And /or W/H or W/L with Z score <-2 SD with MUAC <11.5 cm, And/ or presence of bilateral pitting edema. The children who met this criterion were enrolled in this study.

WHO's weight for height reference charts were used for their assessment. Their mothers were interviewed using detailed structured questionnaire and the impact of various non dietary factors related to child, mother and socioeconomic factors studied. Studied .The required information for various factors especially non dietary one for their impact on

malnutrition was gathered. The various factors related to child, mother and socioeconomic factors responsible for severe acute malnutrton were studied in detailed. Which included, factors related to **(1) child- Birth weight** i.e. SFD/AFD, History of recurrent infections in past, infant-child feeding practices which included, duration of exclusive breastfeeding, age of starting complementary feeding etc, birth order, any underlying medical or systemic illness, **(II) Study of factors related to mother:** Mother's malnutrition: which was assessed using mother's height and weights, cut off were 145 cm & 45 kg respectively, mother's education status , mother's working status i.e. working/ housewife, mother's knowledge about feeding practices. **(III) Socioeconomic status**, which was assessed using modified Kuppuswamy's scale. All of the information was collected by mother's interviews using structured questionnaires. The informations were analyzed by Chi square test & multiple Logistic regression analysis using SPSS software.

RESULTS

Socio demographic profile of participants

The study included 400 children, out of which 194 were males and remaining 206, were females. 190 of the children were in the age group of 13-24 months and 130 in the age group of 6-12 months. 30 in the age group 25-36 months. 30 were in age group of 37-48 months. 20children were in age group of 49-60 months .The mean age duration for the entire group was 22.95 ± 13.68 months; for boys 24.29 ± 13.18 months and for girls 22.75 ± 13.94 months. 37% of the study population belonged to the scheduled caste (SC) group and 12 % each to the other backward classes (OBC) and scheduled tribes (ST). 58% of the mothers and 35% of fathers of these children had poor literacy rate (< 5^{th} standard). 20.6% had no formal education, 37.3% were studied up to 5^{th} standard and remaining 42% had formal education > 5^{th} standard. The literacy rates were comparatively better among the fathers i.e. only 8.6% had no formal education. 27% were studied up to 5^{th} standard and remaining 64.3% had formal education > 5^{th} standard. 53% of the parents of the admitted children were daily wage laborers, 12% were farmers, while 95% of the mothers were housewives. 45% of children belonged to rural area and remaining 55% belonged to rural area. Families of 87.3% of the study subjects belonged to poor socioeconomic status i.e. class IV & V as per modified kuppuswamy's socioeconomic scale. 68% children were from class IV & 19.3% from class V. 10.6% children were from class III & 1.6% were from class II. The only one child was from class I. Larger family size i.e. more than 4 siblings were found in 58% of children.

Nutritional practices

To begin with all the children were breastfeed. In most breastfeeding was initiated within the first hour of birth. In 72% of these children, however, prelacteal feeds were given. Diluted cow's milk was the most commonly used pre-lacteal feed 57.8% followed by honey. These were exclusive breastfed for the first 6 months of age. Late initiation of complementary diet (mean age 9 months) was also more common. Bottle-feeding was more frequently used in 66.5% of children.

Parental (caregivers') knowledge on infant and young child nutrition

Most of the caregivers did not have the knowledge of feeding practices. Although most of them (80.4%) knew that breastfeeding should be initiated within the first hour of birth. Prelacteal feeds were thought to be important in 68.4% of them. The importance of prelacteal feed was said to be to soften the gastrointestinal tract by 32 % of the caregivers, the other reasons were to keep the infant healthy and strong, to avoid abdominal pain and just as a tradition.

30 of total children had underlying systemic / medical illness (12 CNS, 8 Respiratory, 6 CVS, 2 GIT, 2 metabolic). The incidence of TB was found to be 30 of total 400 children.

Table 1 – Age group distribution

Age group	Children
6 months – 12 months	190
13 months – 24 months	130
25 months – 36 months	30
37 months – 48 months	30
49 months – 60 months	20

Table 2- Immunization status

Immunization status	No.
Unimmunized	57
Partially immunized	63
Completely immunized	280

Table 3- Medical illnesses

Systems	No.
CVS	6
Respiratory	8
GIT	2
CNS	12
Metabolic	2

Table 4 - Parental education

	Mother's Education(%)	Father's Education(%)
No formal education	20.6	8.6
< 5th Standard	37.3	27.1
>5th Standard	42	64.3

Table 5- Socioeconomic status

Class	No(%)
Upper Class	0.1
Middle Upper Class	1.6
Middle Lower Class	10.6
Lower Upper Class	68
Lower Class	19.3

Table 6- Age of starting complementary foods

Age group	No.
Upto 6 months	130
6 months to 1 year	195
> 1 year	75

DISCUSSION

Parental illiteracy especially maternal, is found to be associated with a higher risk of SAM (severe acute malnutrition). Similar results were obtained in some other studies done in Ethopia[15], Africa[16-19], South Asia[20-22], Latin America[23] and other different regions of world. A study done by Haidar J, et.al in rural areas of North Wollo, Ethiopia[15] had found a significant risk of severe acute malnutrition associated with maternal illiteracy. Similar results were obtained in studies done by Ighogboja SI et.al in Nigeria, by Rikimaru T et al in Ghana, by Kikafunda JK et.al in Uganda, by Jeyaseelan et.al in south India in malnourished children, by Appoh LY et.al in a study done in Volta region of Ghana, by Sakisaka K et.al from Latin America.

Similar results were also obtained in a case-control study done in Bangladesh by Islam MA et.al, maternal illiteracy was associated with a fourfold increase in the risk of severe acute malnutrition in their children.[22]

Another similar case control study 'Risk factors for clinical marasmus' done by Henry FJ et.al done in Bangladesh found a significant association with maternal education and risk of malnutrition.

The risk of SAM (severe acute malnutrition) is increased with poverty. Similarly poor family income and low socioeconomic status has been found as a risk factor for severe acute malnutrition in studies done in Nigeria[24], Sudan[25], Zimbabwe[26], India[20] and Bangladesh.[21]

A study 'Risk factors for malnutrition among rural Nigerian children' done by Odunayo SI et.al in Nigeria[24] found a significant relationship between poverty and incidence of malnutrition. Similarly Coulter JB et.al found similar association between prevalence of malnutrition with socioeconomic factors and family background' in a study done in Northern Sudan.[25]

Radebe BZ et.al from Zimbabwe[26], Getaneh et.al from Ethopia ,Jeyaseelan L, et.al from south India, Islam MA et.alfrom Bangladesh found similar relationship in their studies.

A larger family size or high birth order is associated with an increased risk of severe acute malnutrition. The effect of a large family size with overcrowding leading to poor hygiene , finally to recurrent infections and inadequate spacing has been implicated as a risk factor for severe malnutrition in different studies.

A similar relationship was observed in study done by Haidar J, et.al in rural areas of North Wollo, Ethiopia. Ighogboja SI et.al , Henry FJ, et.al from Bangladesh, Odunayo SI et.al also observed similar relationship in their study.

This supports the effect of the above socio-economic risk factors, However, the impact was less in magnitude in this study when compared to the effect of infant and young child feeding practices.

Breastfeeding is a norm in India; nearly all the children were breastfed. In majority breastfeeding was initiated within the first hour of birth, however, prelacteal feeds were given more frequently. Diluted cow's milk was the most commonly used pre-lacteal feed followed by honey.

The use of prelacteal feeds is not recommended as it can make the infant ill and interferes with breastfeeding[27]. A study 'feeding practices in 105 counties of rural China' done in China by Wang X, et. al[28] showed that the introduction of other diet before the age of six months increased the prevalence of pneumonia and diarrhoeal disease. Similarly a study in

western Kenya by Bloss E, et .al[29] showed an increased risk of being underweight when complementary food was started early. As a global public health recommendation, infants should be exclusively breastfeed for the first 6 months of life to achieve optimal growth, development and health.

Thereafter to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond[30]. Bottle-feeding is more commonly observed in children . Bottle-feeding is discouraged at any age. It is usually associated with increased risk of illness, and especially diarrhoeal disease, because of the difficulty in sterilizing the nipples properly. Bottle-feeding also shortens the period of postpartum amenorrhea and increases the risk of pregnancy.

A statistically significant lack of knowledge of mothers about infant feeding practices i.e. on the recommended duration of breastfeeding and on the appropriate time of initiating complementary diet was observed. Beghin in his critical assessment of 21 NRCs across 6 Latin American countries, also found nutrition education to be lacking at most of the centers he visited .[31]

This indicates that it is not only lack or shortage of food that predisposes young children to malnutrition but also lack of knowledge on appropriate infant and young child feeding practices.

CONCLUSION

The findings of this study confirmed that the association of severe acute malnutrition to various non-dietary factors.

To reduce childhood malnutrition due emphasis should be given in improving the knowledge and practice of mothers on appropriate infant and young child feeding practices. However, as this is a hospital-based study further community based studies are recommended to identify risk factors for severe acute malnutrition.

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REFERENCES

1. World Health Organization, Management of severe malnutrition: a manual for physicians and other senior health workers. Geneva 1999.
2. WHO. Global strategy for infant and young child feeding. WHA 55/15, April 2002.
3. Yimer G. Malnutrition among children in Southern Ethiopia: levels and risk factors. Ethiop. J. Health Dev. 2000; 14(3):283-292.
4. Getaneh T, Assefa A, Tadesse Z. Protein-energy malnutrition in urban children: prevalence and determinants. Ethiop Med J. 1998; 36(3):153-165.
5. Black R. E., Morris S.S., and Bryce J., Where and Why Are 10 Million Children Dying Every Year? Lancet 28-6-2003; 361:(9376), 2226-2234.
6. Caulfield L. E., Deonis M. and Black R. E., Under nutrition as an Under-lying Cause of Child Deaths Associated with Diarrhea, Pneumonia, Malaria, and Measles. American Journal of Clinical Nutrition 2002; 80 :(1) 193-198.
7. Rice A. L, Sacco L, Hyder A, and Black R. E, Malnutrition As an Under-lying Cause of Childhood Deaths Associated With Infectious Diseases in Developing Countries. Bulletin of the World Health Organization 2000; 78: (10), 1207-1221.
8. Pelletier D. L. and Frongillo E. A., Changes in Child Survival Are Strongly Associated With Changes in Malnutrition in Developing Countries. J. Nutr. 2003; 133 : (1),107-119.
9. UNICEF, State of the World's Children 2005. 2005; New York, UNICEF. State of the World's Children. Report.
10. UNICEF, Global Database on Child Malnutrition. UNICEF 2001; http://www.childinfo.org/eddb/malnutrition/database3.htm
11. International Institute of Population Sciences, International Institute for Population Sciences and ORC Macro. National Family Health Survey (NFHS2), 1998-99. 2000; Mumbai, International Institute of Population Sciences.
12. CIA World Fact Book 30-8-2005; http://www.cia.gov/cia/publications/ factbook/geos/in.html
13. Manary M. J, Ndkeha M. J, Ashorn P, Maleta K, and Briend A, Home Based Therapy for Severe Malnutrition With Ready-to-Use Food. Arch. Dis. Child 2004; 89 :(6),557-561.
14. Bal Shakti Yojna. Government of Madhya Pradesh, Innovative Schemes and Programme Interventions under NRHM, Department of Public Health and Family Welfare, Bhopalhttp://www.mp.gov. in/health/nrhm/Innovative-nrhm.pdf.

15. 15. Haidar J, Abate G, Kogi-Makau W, Sorensen P. Risk factors for child under-nutrition with a human rights edge in rural villages of North Wollo, Ethiopia. East Afr med J 2005;82(12):625-30.
16. Ighogboja SI. Some factors contributing to protein energy malnutrition in the middle belt of Nigeria. East Afr Med J 1992;69(10):566-571.
17. Rikimaru T, Yartey JE, Taniguchi K, Kennedy DO, Nkrumah FK. Risk factors for the prevalence of malnutrition among urban children in Ghana. J Nutri Sci Vitaminol (Tokyo). 1998;44(3):391-407.
18. Appoh LY, Krekling S. Maternal nutritional knowledge and child nutritional status in the Volta region of Ghana. Matern child Nutri 2005;1(2):100-110.
19. Kikafunda JK, Walker AF, Collett D, Tumwine JK. Risk factors for early childhood malnutrition in Uganda. Pediatrics 1998;102(4):E45.
20. Jeyaseelan L, Lakshman M. Risk factors for malnutrition in south Indian children. J Biosoc Sci.1997;29(1):93-100.
21. Islam MA, Rahman MM, Mahalanabis D. Maternal and socioeconomic factors and risk of severe malnutrition in a child: a case-control study. Eur J Clin Nutr. 1994;48(6):416-24
22. Henry FJ, Briend A, Fauveau V, Huttly SR, Yunus M, Chakraborty J. Risk factors for clinical marasmus: a case-control study of Bangladesh children. Int J Epidemiol. 1993;22(2):278-283.
23. Sakisaka K, Wakai S, Kuroiwa C. et al. Nutritional status and associated factors in children aged 0-23 months in Granada, Nicaragua. Public Health 2006;120(5):400-411.
24. Odunayo SI, Oyewole AO. Risk factors for malnutrition among rural Nigerian children. Asia Pac J Clin Nutr. 2006;15(4):491-495.
25. Coulter JB, Omer MI, Suliman GI, Moody JB, Macfarlane SB, Hendrickse RG. Protein-energy malnutrition in Northern Sudan: prevalence, socioeconomic factors and family background. Ann Trop Paediatr. 1988;8(2):96-102.
26. Radebe BZ, Brady P, Siziya S, Todd H. Maternal risk factors for childhood malnutrition in the Mazowe District of Zimbabwe. Cent Afr J Med. 1996;42(8):240-244.
27. F. Savage King. Helping Mothers to Breastfeed. Revised Edition. Nairobi AMREF, 1992.
28. Wang X, Wang Y, Kang C. Feeding practices in 105 counties of rural Chaina. Child Care Health Dev 2005;31(4):417-23.
29. Bloss E, Wainaina F, Bailey RC. Prevalence and predictors of underweight, stunting, and wasting among children aged 5 and under in western Kenya. J trop Pediatr. 2004;50(50):260-270.

30. World Health Assembly Resolution. Infant and young child nutrition. WHA 54.2, May 2001.
31. Beghin ID. Nutritional rehabilitation centers in Latin America: A critical assessment. Am J Clin Nutr 1970; 23:1412-7.