EPIDEMIOLOGICAL ASPECTS OF MALNUTRITION IN CHILDREN LESS THAN FIVE YEARS ADMITTED TO GAAFAR IBN OAF PAEDIATRIC HOSPITAL, KHARTOUM, SUDAN

Abdelsafi A Gabbad[1], Alawia Adam[2], Mohammed A Elawad[3]

[13]College of Health Science at Alith, Umm Al-qura University,SAUDIA ARABIA, &
[2] Ministry of Health, SUDAN.

[3]wadelawad32@yahoo.com

ABSTRACT

A study was conducted to investigate epidemiological aspects of Malnutrition in Children under five years Admitted to GaafarIbn Oaf Paediatric Hospital, Khartoum, Sudan. The children less than five years (282) who admitted to the hospitals during one month were subjected to weight and height measurements, and their mothers were interviewed to obtain relevant data. The proportion of malnutrition among all registered diseases was 20.2%. Malnourished children were classified into washiorkor 43.8%, Marasmus 40.4%, Marasmickwash 12.3% and underweight 3.5%. Several factors were associated with malnutrition i.e. sex of child (odds ratio=2.4 - %95 confidence interval=1.3 - 4.5), child age (p-value was close to zero), family size (odds ratio=2.8 - %95 confidence interval=1.5 – 5.1), mother's education (odds=7.5 - %95 confidence interval=3.9 – 14.7) and awareness of mothers about malnutrition (odds ratio=5.3 %95 confidence interval=2.9 – 9.8). The frequency of malnutrition in children less than five, as well as in many developing regions, was high compared to other diseases.

Keywords: Malnutrition, children, kwashiorkor, marasmus, Sudan

INTRODUCTION

Malnutrition is defined as a pathological condition of varying degrees of severity and diverse clinical manifestations, resulting from deficient assimilation of the components of the nutrient complex (Sahibzada et al, 2011).Malnutrition is a major health in developing countries and the most important risk factor for illnesses and death especially among young children (Agozie et al, 2012). About 800 million people are affected with malnutrition, 20%of them in the developing countries (Fatima et al, 2013).Worldwide, over 10 million children under the age of 5 years die every year from preventable and treatable illnesses. At least half of these deaths are caused by malnutrition (Kebede et al, 2013). Malnutrition in childhood contributes to the increase of risks in non-communicable diseases such as cardiovascular diseases and diabetes mellitus in adulthood (Feng et al, 2004).

There are many reasons behind malnutrition such as inadequate intake of nutrients and/or from disease factors that affect digestion, absorption, transport, and utilization of nutrients. However, there are also economic, social, political, and cultural causes of malnutrition (Isabel et al, 2002). Several studies in different regions in the third world reported high percentage of malnutrition in children less than five years. The condition affects mostly children who live in poor socio-economic environment, particularly children in displaced and refugee camps. In displaced Sudanese children, the prevalence was found 56.1% (Nuha et al, 2005). In India, The prevalence of malnutrition among the under five children was 50.46% (Shubhada et al, 2009). In Pakistan, malnutrition among children under five years was 53.8% (Sahibzada et al, 2011).

Leena and Luna International, Oyama, Japan.
(株) リナアンドルナインターナショナル, 小山市、日本.
ISSN: 2186-8476, ISSN: 2186-8468 Print
www.ajsc. leena-luna.co.jp

Child age is one of factors associated with malnutrition (Kebede et al, 2013). The malnutrition is also associated with mothers' education, weaning of the child, income of the family and family size (Sahibzada et al, 2011). In a study carried out in Karachi, it was found that Mother's literacy status has a definite association with the malnutrition of the children <3 years (Syed et al, 2005). Malnutrition can be cured by removing the causes and contributory factors behind it. The improvement of nutrition resulted in reduction of high mortality rates among children less than five years, the assurance of physical growth, social and mental development of children as well as academic achievement (Agozie et al, 2012).

This study aimed at identifying percentage of malnutrition in different forms (Kwashiorkor and Marasmus &Mrasmic Kwashiorkor) and associated factors among children under five admitted to GaafarIbn Oaf Paediatric Hospital, Khartoum, Sudan.

MATERIALS AND METHODS

Operation Definition of Malnourished Child

A child was labeled as malnourished if any of the nutritional assessment indices weight for height, weight for age, or height for age is abnormal.

Anthropometric Measurements:

The children less than five years (282) who admitted to GaafarIbn Oaf Paediatric Hospital, Khartoum, Sudan during one month were subjected to weight and height measurements.

Weight Determination

The child's weight was measured using the portable hanging scale (Salter scale). After hanging the scale securely, the needle adjusted to zero and then the child placed in the basket hanged from the scale. The weight was measured in kilograms to the nearest 100 grams. Then weight for age for each child was determined.

Height Determination

Height for each child in the selected sample was measured using tape scale and registered in cm.

Classification Of Malnutrition

Malnutrition was classified according to Gomez classification

Weight for Age (Gomez)	*With Edema*	*Without Edema*
60-80%	kwashiorkor	undernutrition
< 60%	marasmic-kwashiorkor	marasmus

Mothers were interviewed to collect other relevant data

RESULTS

Proportion of malnutrition among all registered diseases was 20.2% as shown in figure one. Malnutrition was found in different forms i.e. Kwashiorkor 43.8%, Marasmus 40.4%, Marasmickwash 12.3% and underweight 3.5%. (table1). Several factors were associated with malnutrition i.e. sex of child (odds ratio=2.4 - %95 confidence interval=1.3 - 4.5), child age (p-value was close to zero), family size (odds ratio=2.8 - %95 confidence interval=1.5 – 5.1), mother's education (odds=7.5 - %95 confidence interval=3.9 – 14.7) and awareness of

mothers about malnutrition (odds ratio=5.3 %95 confidence interval=2.9 – 9.8) as displayed in table 2.

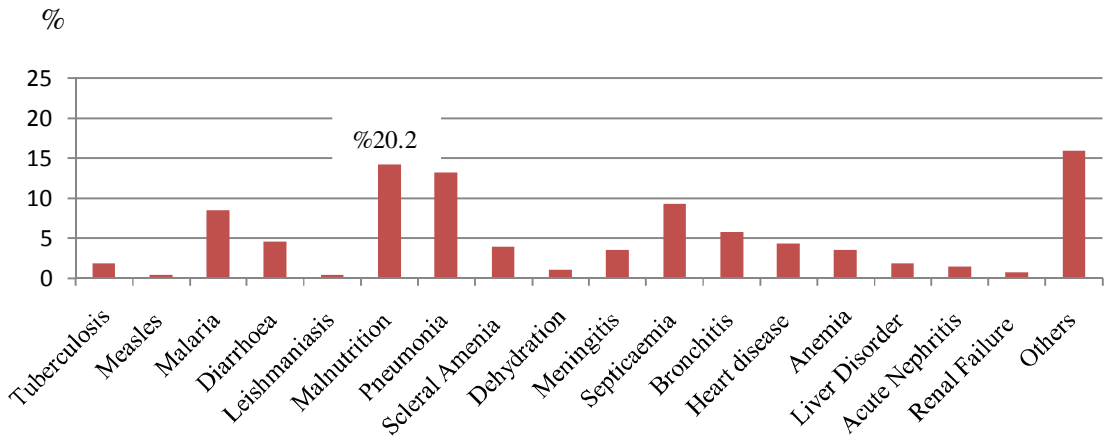

Figure 1: Proportional rate of Malnutrition in children Admitted to GaafarIbnAof Hospital, Khartoum, Sudan

Table 1: Classification of malnutrition in children Admitted to GaafarIbnAof Hospital, Khartoum, Sudan

Malnutrition	*No*	*Percentage*
Kwashiorkor	25	43.8
Marasmus	23	40.4
Marasmickwash	7	12.3
Under weight	2	3.5
Total	57	100

Table 2: Associated factors with malnutrition in children Admitted to GaafarIbnAof Hospital, Khartoum, Sudan

	Malnutrition				*Total*		*Odds ratio*	*%95 confidence interval*	*P value*
Child sex	*Malnourished*		*Well-nourished*						
	No	%	No	%	No	%			
Male	32	29.1	78	70.9	110	39	2.4	1.3 - 4.5	
Female	25	14.5	147	85.5	172	61			
Child age									
< 6 months	14	17.7	65	82.3	79	28			
6 - 18 month	23	65.7	12	34.3	35	12.5			0.0000
19-32 month	13	16.5	66	83.5	79	28			
33-48month	1	2.9	33	97.1	34	12			

Leena and Luna International, Oyama, Japan.
(株) リナアンドルナインターナショナル, 小山市、日本.
ISSN: 2186-8476, ISSN: 2186-8468 Print
www.ajsc. leena-luna.co.jp

49-60month	6	10.9	49	89.1	55	19.5		
Family size								
> 6	34	30.3	78	69.7	112	39.7	2.8	1.5 – 5.1
2 - 6	23	13.5	147	86.5	170	60.3		
Mother's education								
Illiterate	27	52.9	24	47.1	51	18.1	7.5	3.9-14.7
Educated	30	13	201	87	231	81.9		
Mother awareness								
Not aware	35	40.2	52	59.8	87	30.9	5.3	2.9 – 9.8
Aware	22	11.3	173	88.7	195	69.1		

DISCUSSION

Children are vulnerable group; they tend to develop nutritional disorders if they are not feeding properly. Malnutrition is a common one of these disorders particularly among children less than five years in developing countries. In the present study approximately malnutrition represented 20.2% (57 children) of all recorded diseases in GaafarIbn Oaf Paediatric Hospital, Khartoum, Sudan during one month. This percentage includes Kwashiorkor, Marasmus, Marasmickwash and underweight. Several studies reported high frequencies of malnutrition in children less than five years. On example way in displaced Sudanese children, the prevalence was found 56.1% , about 38.2% of malnourished children were classified as underweight and 0.9% marasmus

(Nuha et al, 2005). In India was 50.46% (Shubhada et al, 2009) and in Pakistan 53.8% (Sahibzada et al, 2011). Although the period of study was short, this percentage is high and indicates to presence of public health problem. We think there are many other malnourished children in the catchment area did not come to health care settings absolutely.

Many authors attributed the high prevalence of malnutrition to many host factors. The study found that there were strong statistical significance between malnutrition and sex of child (odds ratio=2.4 - %95 confidence interval=1.3 - 4.5), child age (p-value was close to zero), family size (odds ratio=2.8 - %95 confidence interval=1.5 – 5.1), mother's education (odds=7.5 - %95 confidence interval=3.9 – 14.7) and awareness of mothers about malnutrition (odds ratio=5.3 %95 confidence interval=2.9 – 9.8). Kepeda et al (2013) found that child age is associated with malnutrition (AOR=7.15; 95%CI=2.33 - 21.90). Ngianga et al (2011) reported that malnutrition was higher among children from non educated mother as well as finding obtained by Syed et al, (2005). The role of education and high awareness of mothers is to inform them with healthy habits as regards to nutritional value of nutrients and prevention of infectious diseases associated with malnutrition such as diarrhoea.

CONCLUSION

The frequency of malnutrition in children less than five was high among all other registered diseases in GaafarIbn Oaf Paediatric Hospital, Khartoum, Sudan. Sex of child, child age, family size, mother's education and awareness were factors associated with malnutrition.

ACKNOWLEDGEMENTS

Thanks to administration, physicians and nurses in diseases in GaafarIbn Oaf Paediatric Hospital, Khartoum, Sudan. Also our thanks to participants children and their families.

REFERENCES

[1] Agozie, C., Ngozi, S., Chika, N., Chinyeaka, M. &Chinelo, A. N. (2012). Under-five protein energy malnutrition admitted at the University of Nigeria Teaching Hospital, Enugu: a 10 year retrospective review. *Nutrition Journal*, 11:43

[2] Fatima, O. N., Ahmed, E. E. & Omer, K. A. (2013). Socio - economic and environmental risk factors of protein energy malnutrition among children under five years of age in Omdurman pediatric hospital. *Merit Research Journal of Food Science and Technology*,1(1), 001-008.

[3] Feng, Y. Z., Hui, W., Su, C., Dawei, F., Keyou, G. & Barry, M. P. (2004). The Current Status, Trend, and Influencing Factors to Malnutrition of Infants and Children in China. *J Community Nutrition*, 6(2),78 – 85.

[4] Isabel, D. F., John, H. H. & Mercedes, d. O. (2002). Prevalence of nutritional wasting in populations: building explanatory models using secondary data. *Bulletin of the World Health Organization*, 80 (4), 282 – 292.

[5] Kebede, M., Kassahun, A. & Bikes, D. (2013). Prevalence of Malnutrition and Associated Factors Among Children Aged 6-59 Months at HidabuAbote District, North Shewa, Oromia Regional State. *Nutritional Disorders & Therapy*, 22-15

[6] Ngianga, B. K., Tumwaka, P. M., Jacques, B. E., Kikhela, P. D. & Francesco, P. C. (2011). Malnutrition among children under the age of five in the Democratic Republic of Congo (DRC): does geographic location matter. *BMC Public Health*, 11:261

[7] Nuha, M., Susan, H., Mustafa, M., Hussan, M. A., Salah, T. &Ishag, A. (2005). Prevalence, Types and Risk Factors for Malnutrition in Displaced Sudanese Children. *American Journal of Infectious Diseases*, 1 (2): 84-86.

[8] Sahibzada, S. M., Saleh, M. &Zahid, K. B. (2011). Nutritional Assessment of Children under the Age of Sixty Months in District Sialkot, Pakistan. *J Pak Med Stud*, 1(1), 7 – 12.

[9] Shubhada, S. A., Vaishali, D. P. & Deepak, B. P. (2009). Epidemiological Study of Malnutrition (Under Nutrition) Among Under Five Children in A Section Of Rural Area. *Pravara Med Rev*, 1(2), 20 – 22.

[10] Syed, S. A., Nasim, K., Abdulghaffar, B. & Syed, (2005). S. H. Association of Literacy of Mothers with Malnutrition among Children Under Three Years of Age in Rural Area of District Malir, Karachi. *J Pak Med Assoc*, 55(12), 550-553.

Leena and Luna International, Oyama, Japan.
(株) リナアンドルナインターナショナル, 小山市、日本.
ISSN: 2186-8476, ISSN: 2186-8468 Print
www.ajsc. leena-luna.co.jp