Assessment of Nutritional Status and its associated risk factors among under five years old children in Angola area, the Khartoum State of Sudan 2015-2017

Original Research Article

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ABSTRACT

This is cross-sectional community based study conducted in Angola area in Khartoum State of Sudan during period of 2015-2017. The aim of the study was to assess nutritional status of under five years old children and its associated risk factors using anthropometric measurements, interview of childcare givers, and observation on nutrition status indicators and socioeconomic profile of families. 282 children and their caregivers were selected and investigated using cluster sampling techniques and predesigned questionnaires and checklist. The results revealed that 19.1 of the studied children were severely malnourished, and 4.7 were moderately malnourished with children in age of one to two years were mostly affective with P value of < 0.05. Family size and parent education level also were reported among the major risk factors of malnutrition with P value of < 0.05. 96.6% of the children had episode of diarrhea at least once, and 81.1% had respiratory tract infection at least once. Few were exposed to frequently to those infectious diseases. The study concluded that severe and moderate malnutrition affect almost quarter of the children in the area especially in the age group of one to two years. Poor education and awareness on how to maintain children health generally is the main risk factor especially knowledge and skills on the causes of malnutrition, proper young children food and feeding practices, breastfeeding, and utilization of available health services. The study recommended extensive health education program along with family support through provision of nutrients high density food.

Keywords:

Malnutrition
Risk Factors
Children
Angola
Khartoum

I. INTRODUCTION

The world health organization defines malnutrition as the cellular imbalance between supply of nutrients and the body's demand to ensure growth, maintenance, and vital function.Women and young children are the most adversely affected group, one quarter to one half of women of child-bearing age in Africa and South Asia are underweight, which contributes to a number of low birth weight infants [1, 2]

Poor environmental conditions, large family size, poor maternal health, failure of lactation, premature weaning, lack of awareness and adverse cultural practices related to child feeding rearing & weaning are the major contributor's factors to malnutrition[3].

One third of young children in low income countries are stunted, half of all deaths among young children are consequence of malnutrition, and 40% of women in the developing world suffer from nutritional anemia, a major cause of maternal mortality and low birth weight. Despite such worrying trend, there has been significant increase in live expectancy in nearly all countries of the world, and continuing improvements in infant mortality rate and the proportion of children malnutrition has generally decreased, Social inequality is an important factor in differential mortality in both developed and developing countries. Many countries have significant pockets of malnutrition and increased mortality of children, while obesity and non-communicable disease (NCD) prevalence increasing (4,5).

The majorities of the malnourished children were resident in high-density, poor home facilities, poor environmental sanitation and low socio-economic areas; the situation is complicated in many areas by the absences of formal education and early marriage [6,7].

In many studies strong association was observed between big family size, birth interval, exclusive breastfeeding, and complementary feeding and malnutrition [9].

Also it was observed that inadequate utilization of available immunization services, lack of education, ignorance and cultural beliefs [10].

Other studies have shown several determinate of growth retardation .among the societal variable. Only income and maternal education level were significantly associated with height deficit. Children of illiterate mothers were more likely to present growth deficit than the children of educated mothers which reflect the importance of mother's education [11].

In the present study, children from families with lower incomes were four times more likely to present stunting than children in the group above five times the minimum [12].

Poor socioeconomic background, poor housing condition, non-availability of latrine, not complete immunization, profuse breast –feeding and nutritionally in adequate diet were found to be risk factor of malnutrition multiple logistic regression of regression analysis showed that a strong association between PEM and diet lacking in animal food, measures should take the multi-factorial causation(19) breast milk is the ideal food for infants; it provides the main source of nourishment in the first year of child live. Under normal condition, no other food is required by the body until 4-5 months after birth [13].

II. MATERIALS AND METHODS

Study design: This is across-sectional community based study conducted in Angola Area lies in Khartoum of Sudan.

Study Area: The area has a total population of the area 56,534 with 10,386 under five year old children according to the area popular committees. Household with children aged 6 to 59 months were selected for the study along with their mothers.

Diarrheal diseases, malaria and acute respiratory infections were the major health problem among young children in the areas. There are five health centers providing PHC services and 5 private clinics.

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Sample size: 282 children and their mother were selected using the following formula and based on prevalence rate of nutritional deficiency diseases in Khartoum State of which was estimated to be 10% according Khartoum State Ministry of Health, 2009

$$n = \frac{z^2 \, pq* \text{ design defect}}{(d)^2}$$

Where:

n = sample size, Z = 1.96, P = prevalence rate of nutritional deficiency diseases= (10%), q = 1-p, d = 0.05, Design defect=2

$n = \frac{(1.96)^2 \ X \ 0.9 \ X0.X \ 2}{(0.05)^2} = 138.2976 \ X \ 2 = 276.59$ [14]

The number was rounded to 282 children taken into account the refusal which was estimated to be 9%. Cluster sampling techniques was used by dividing the area into 6 clusters, in each 47 children's and their mothers/caretakers were selected randomly [15].

Data were collected in predesigned questionnaire and check list through interview with mothers and measuring weight and high of their children. Indicators used during this study were: height –for –age (for chronic malnutrition), weight for weight (for acute malnutrition) and edema [16,17].

Weight: The Staler 25kg hanging spring scale marked out in steps 0.1 kg, was used instrument was adjusted to zero before used, the child freed from heavy clothing [16,17].

Height: Children up to 2years (23 months 85 cm length) of age were measured on horizontal measuring board. Children over two years of age (or over 85cm) were measured standing on horizontal surface against vertical measuring device. The height was read out as before, to nearest 0.1cm [29]

Age: The birth data was entered on the recording form from birth certificates where this document was not available we used date of birth given by mothers

Edema: Presence of edema also was recording after examination of children using finger press on the abdomen and legs.

Vaccination statuses: were checked by reviewing immunization cards of the children

Data were analyzed using by SPSS software.

Ethical consideration: The research was approved by the faculty of post graduate studies of the Shendi University. Also the consents of mothers were taken and those who agreed were included in the study.

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III.   STATISTICAL ANALYSIS AND GRAPHICAL PRESENTATION:

Fig. 1. % Distribution of children by thier nutritional status Angola Administration, Umbada Locality, Khartoum State, 2015-2017. n=282

Fig. 5. % Distribution of respondents Knowledge of better food for their children, Angola Administration Umbada Locality, Khartoum State, 2015-2017. n=282

Fig. 2. % Distribution of respondents by mothers' educational level, Angola Administration, Umbada Locality, Khartoum State, 2015-2017 n=282

Fig.6. % Distribution of reasons given by respondents on why they did not breast feed their child during previous pregnancy, angola Administration, Omdurman Locality, Khartoum State, 2012. n=282
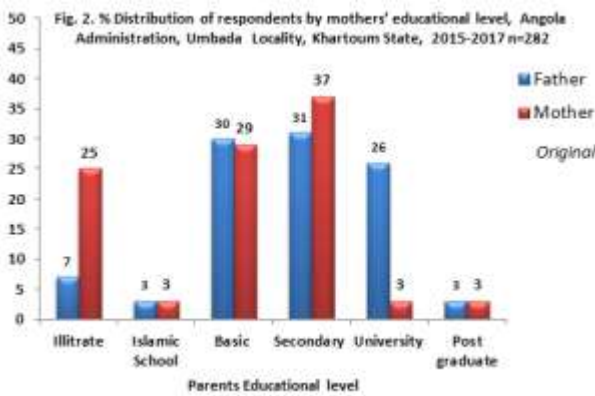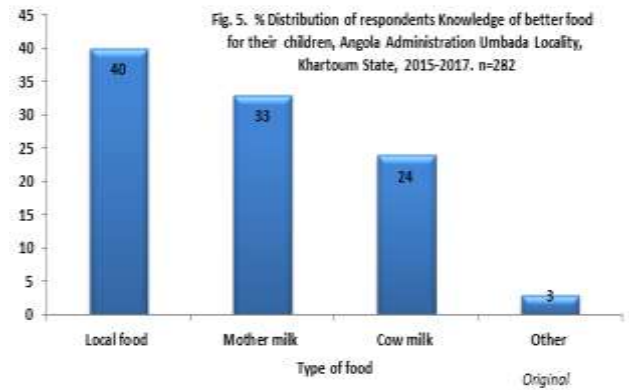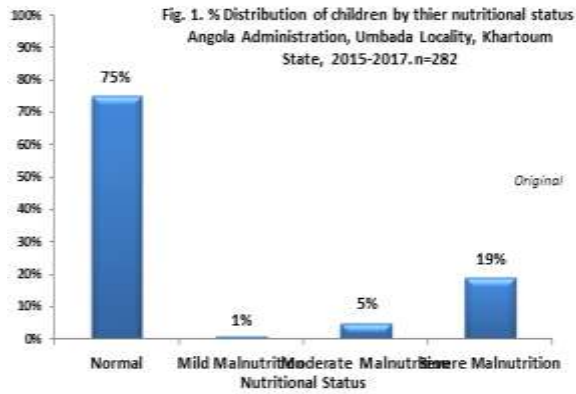

Fig. 3. % Distribution of respondents by family size, Angola Administration, umbada Locality, Khartoum State, 2015-2017. n=282
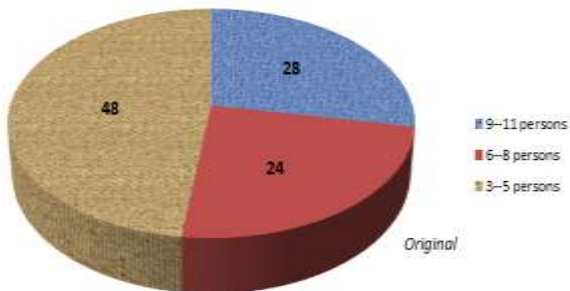

Fig. 7. % Type of food give to the child after weaning, angola Administration, umbada Locality, Khartoum State, 2015-2017. n=282
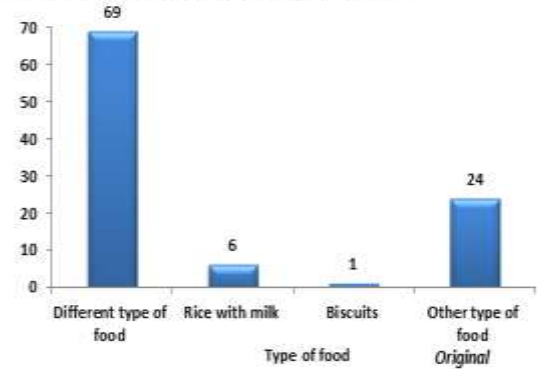

Fig. 4. % Distribution of the study population by frequency of direahea and Respiratory infections angola Administration, umbada Locality, Khartoum State, 2015-2017 n=282
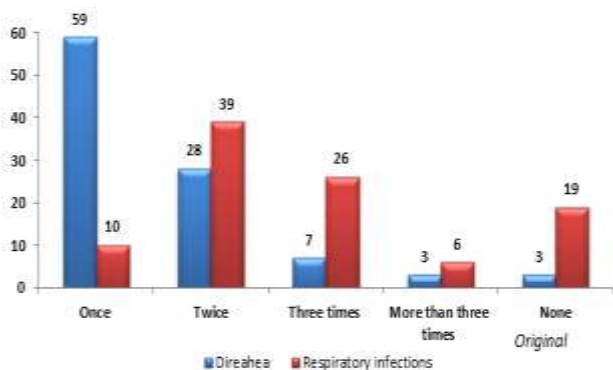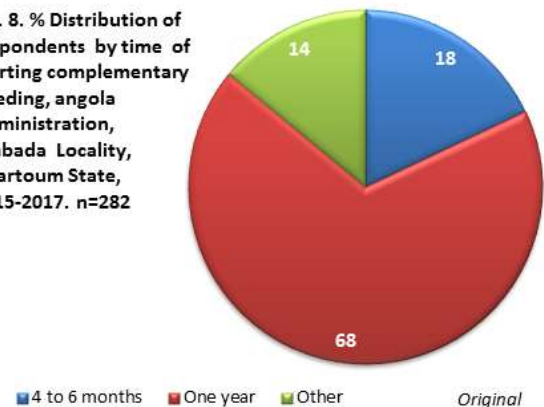

Fig. 8. % Distribution of respondents by time of starting complementary feeding, angola Administration, umbada Locality, Khartoum State, 2015-2017. n=282

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IV.   DISCUSSION

This is cross sectional community based study conducted in Angola area in Khartoum of Sudan aimed to assess nutritional status and its associated risk factors among under five years old children.

Among 282 children and their families investigated, 60.6% of respondents were female while 39.4% of were females and the mortify of them (80%) were in the age range of 1-2 years, this age is critical for the growth and development of children since face many challenges including weaning and introduction of complementary food, in addition of completing their routine immunization against EPI target diseases, this was confirmed by significant statistical association reported during this study where P value < 0.05 was recorded.

The results analysis of nutritional status of study population revealed that 75% of the children have normal growth, 1% had mild malnutrition, 5% had moderate malnutrition, and while 19% had severe malnutrition, this categorization was done according to Sudan ministry of health standards **(Fig.1)**

In many previous study, education level of parents play an important role in supporting well health of their children particularly the issues of breastfeeding, introduction of complementary food, weaning, utilization of health services especially immunization, in this study most of respondents fathers had secondary education (31.2%) and 30.1% had basic education. The majority of their mothers had secondary education (36.9%), 29.4% had basic education. Statistical significant (p value <0.05) was observed between the level of parents education and nutritional status of the children **(Fig.2)**

Although more than half of the respondents heard about malnutrition, the important of education and awareness was emphasized by poor knowledge reported during this study which was indicted by more than 38% of the respondents did not knew the definition of malnutrition, 39% defined it as loss of appetite, 13.5% as diarrheal diseases and body weakness, and 2.8% as irregular nutrition and unhealthy diets.

Family size also was among the risk factors investigated during this study because family member especially young children share the limited family available resources including time and efforts given child care, the gig family size well affect negatively the overall support given to child, in our study families had more than 9 member were 27.7%, families with 6 to 8 member 24.5, these family size was considered high compared national and international family size averages which was found to around 5 members per family **(Fig. 3)**

Young children need special attention to their food for normal growth, for maintenance, for their physical activities in the right amount and right combination of different 5 food group (carbohydrates, protein, fats, vitamins and minerals), in our study over 40% **(Fig. 5)** of the respondents believe that they local food is better for their children, generally local food lack variety and in many circumstances is limited to very few types of food, this case is confirmed in many studies that is closely related to micronutrients deficiency and their related to other health consequences (18),

For example vitamin A and iron deficiencies are among the majors health problem associated with lack of variety of food among young children food, and will enhance children susceptibility to infection diseases such diarrheal and respiratory infection diseases **(Fig. 4).** On the other hand cow's milk which was reported as major food for 24.1 of the children during this study was another problem because of its poor iron

contents. Mother milk which was well know that it is the best food for children in their first 4 months[19].In our study only 43.6% of mother believe in this facts, the majority of mother intend to add additional food during this period which has adverse effect child nutritional status. **(Fig. 6, 7)**

Most of respondents mentioned that they had no specific food during pregnancy (13.1%), 12.8% mentioned starches, 9.9% mentioned sugar and fruits, 8.5% did not know, 1.1% vegetables, 2.8% fish, 4.6% milk, 0.7% meat while 36.5% mentioned other food rather than explained above.

The majority of respondents (72.3%) had no food to avoid during pregnancy.

Is this study it was observed that over 62% of mother did not breast feed their child during previous pregnancy and they believe that milk is harmful to their children during pregnancy, taking into account the short interval between pregnancies, this will harm their children health due incomplete breastfeeding.

Regarding age for introduction of complementary food 67.7% of mother reported after one which is too long, and the child will suffer from shortage of nutrient since the mother milk will not be enough after six months, **(Fig. 8)** this situation has consequences on over all child health including normal growth, immunity against infectious diseases, and his body functions [20].

This fat was supported by 96% of children had diarrhea least once and 81.2% had least once episodes of respiratory infections.

V.   CONCLUSION

The study concluded that severe malnutrition is very high among children. Mothers illiterate, big family size, late starting of complementary feeding along with infection diseases especially diarrhea were the major contributing factors.

VI.   ACKNOWLEDGEMENT

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