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COMPARISON OF NUTRITIONAL STATUS OF CHILDREN AGED 5 T0 59 MONTHS IN COMMUNITY BASED EDUCATION AND SERVICE (COBES)-AMPATH AND NON AMPATH CENTRES

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ABSTRACT

Objective:

The objective of this work was to determine the prevalence and possible causes of malnutrition in children aged 5 to 59 months in selected COBES health centres and compare this with prevalence in non-AMPATH COBES centres

Materials and Methods:

Cross-sectional studies were carried out between March and May 2008 to February and March 2011 in 13 to 15 COBES centres in Western Kenya. Cluster sampling technique was used with each health centre as the sampling unit. Anthropometric measurements were performed on all children aged 5-59 months within the households sampled. The sample size depended on the number of cases seen in the households within the period of study. The parameters considered included Age (in months), Weight (Kgs) and the mid upper arm circumference (cms). The nutritional status of the children was determined using the WHO recommended Z- score values as well as the Kenya Government Ministry of health recommended charts based on anthropometric measurements . Analysis of nutritional data was carried out using Epi-info 2000 computer program to determine the Z- score values from anthropometric data.

Results:

A total of approximately 700 children were measured for anthropometry in the seven Health Centers: (Stunting- HAZ<-2, Wasting-WHZ <-2, underweight –WAZ<-2 and MUAC, < 12.5mm). Preliminary published results indicated that Meteitei (non-AMPATH) had the highest malnutrition prevalence (53% HAZ, 15% WHZ, 27% WAZ and 18.1 MUAC) whereas Chulaimbo (AMPATH) showed the lowest prevalence (7% HAZ, 3% WAZ). The other centres showed mixed prevalence.

Conclusion:

AMPATH centres showed improved nutrition status compared to other COBES centres.

KEYWORDS : Nutritional status, Malnutrition, COBES, AMPATH

INTRODUCTION

Malnutrition is an imbalance - a deficiency or an excess - in a person's intake of nutrients and other dietary elements needed for healthy living. Malnutrition can manifest itself as hunger (or under nutrition), deficiency in vitamins or minerals, or overfeeding. The World Health Organization [1, 2] estimates that fully half of the human family, some 3 billion people, suffer from malnutrition of one kind or another. One out of five people in the developing world suffers from the worst of the variants of malnutrition - hunger [3, 4 ,5]. The problem is accelerated by a number of factors among them poverty. Protein Energy Malnutrition (PEM) affects a large proportion of children under the age of 5 years in the developing world [6] . The prevalence of PEM varies greatly from region to the other. World Health Organization (WHO) has estimated that 32.5% of all pre-school children under 5 years of age are malnourished. Globally, Kenya was ranked 47 out of 144 countries as far as PEM stands based on Height for Age (Stunting) by the year 2003. In sub-Saharan Africa the prevalence stands at (55.2 %) [6]. In Kenya the prevalence stands at 30% stunting [7], while in Western Kenya it also stands at 30% stunting[8]. Community Based Education and Service (COBES) is the training of health professionals at the Moi University, School of Medicine in the community. It is a school-wide activity, not a department. All of School members (Staff and students) are involved [9,10 ,11]. It incorporates theory, Clinical and Field activities. In Second year of study, COBES incorporates community diagnosis where a number of Health problems in the community are diagnosed including nutrition status of children under five years of age. A total of 21 Health centres were identified, namely: Amukura, Bokoli, Bukura, Burnt Forest, Chwele, Chulaimbo, Kabartonjo, Kabuchai, Kaptumo, Kilibwoni, Mautuma, Makunga, Matayos, Nambale, Mbale, Miteitei, Mosoriot, Nyahera, Sirisia, Turbo and Naitiri. AMPATH initially stood for Academic model for Prevention and Traetment of HIV-Aids but this was recently changed to Academic Model Providing Access to Healthcare. Some of the Health centres double up as AMPATH centres namely Amukura, Chulaimbo, Mosoriot, Turbo and more recently Nambale and Naitiri. Due to logistic reasons, not all of them were visited for year of data collection.

It is with this in mind that the nutrition status was determined in COBES centres in Western part of Kenya from March to May, 2008. In this study we further report the comparison of malnutrition in centres where AMPATH activities are carried out against non- AMPATH ones.

Objectives

The broad objective of the study was to determine the nutritional status of children in selected representative Health Centres where Moi University students go for COBES placement during their second year of study for community diagnosis fieldwork. The specific objectives were to compare the nutritional status in AMPATH and non- AMPATH COBES centres.

MATERIALS AND METHODS

Study area and population

The studies were carried out in selected COBES Centres namely Kabuchai in Bungoma County, Makunga in Kakamega County, Matayos in Busia County , Meteitei in Nandi County, Mosoriot in Nandi County, Chulaimbo in Kisumu County and Mbale in Vihiga County, all in the larger Western part of Kenya (Map1), for the period March to May, 2008, 2010 and 2011 respectively. Two of the Centres are also used as AMPATH centres, namely: Chulaimbo and Mosoriot for the first survey. Sebsequent surveys looked at more AMPATH centres. A total of approximately 700 children were sampled during the study from the seven areas.

Kabuchai:

This is in Bungoma county in Western province. It is one of the six rural areas of Bungoma District. There is high incidence of malnutrition, poverty and a lack of HIV/AIDS awareness. There is lack of knowledge on the benefits of nutrition in the treatment in the HIV infection. There is also lack of knowledge on the on the potential of food crops in the reduction of malnutrition and food poverty levels. The main income is from small scale farming in cash crops such as sugarcane and maize.

Makunga:

is in Butere/Mumias District and also in Kakamega County. The major cash crop in the area is sugarcane that is milled by the nearby Mumias Sugar Company. Most of the inhabitants in the area have turned their farms into small plantations of sugarcane with an average size of plot holding of 4 acres. This type of farming has left many families with very small pieces of land that are used for food crops resulting in increased malnutrition in the area. Especially among children hence increased family expenditure on health [12].there is good climate with rainfall occurring twice a year. Apart from sugarcane, maize, millet, cassava and sweet potatoes are also grown. There is very little livestock farming in the area. No grass is readily available due to overdependence on sugarcane.

Matayos:

Found in Busia county. Has a population of about 56,186 [12]. The main economic activity is trade with the neighbouring Uganda with Busia town. The area is heavily reliant on fishing and agriculture with cassava, millet, sweet potatoes beans and maize being principal cash crops. Malnutrition levels are not well documented in the area.

Meteitei:

Found in Nandi county in Tinderet Division. It lies on the outskirts of the famous Tinderet forest well known for tea growing. It lies at an altitude of 9,000 feet above sea level in Rift valley area of Western Kenya. It also borders Lake Victotia as well as Kakamega and Kisumu Counties [12]. The topography is dominated by the Nandi Hills. Population of Tinderet is 58,925 [12]. Malnutrition has also not well documented in the area.

Chulaimbo:

Found in Kisumu county, Nyanza, Western Kenya. Situated near Maseno on the Equator and about 20 kilometers from Kisumu City. The area is surrounded by the Bunyore Hills. HIV prevalence is high leading to establishment of an (Academic Model for the prevention and Treatment of HIV-Aids) AMPATH Centre in the area. Academic Model for the Prevention and Treatment of HIV-Aids (AMPATH) is jointly run by collaboration by Moi University and Indiana University in USA. Malnutrition linked to HIV-AIDS was reported in the area by AMPATH but the levels have since then come down.

Mosoriot:

Situated in Nandi county and close to Eldoret. It is also an AMPATH Centre like Chulaimbo. Malnutrition levels have been reported to be low [12] mainly due to the Agricultural practices of the local community. Milk is the stable diet of the local people.

Mbale:

Found in Vihiga county in Western Province. The area is also hilly with hot and wet climate. The average rainfall is 250 mm per month. This combined with fertile loam soil favours the growth of various food crops. The main food crop is maize, which is also the stable food. Most residents depend on food bought at the market due to scarcity of land in the area.

There are two rainy seasons in the study areas: the long rains occur from March to May and the short rains from October to December. While malnutrition is believed to be an important health problem, especially in months before the harvest, estimates from these areas have not been fully described.

Study design

Cross-sectional surveys were carried out. Cluster sampling technique was used with each health centre as the sampling unit.

Anthropometry:

The parameters considered included Age (in months), Weight (Kgs), height (cms) and the mid-upper arm circumference (cms). Anthropometric parameters were performed according to standard WHO procedures. [2,13]. Children aged < 6months were undressed and weighed in plastic weighing pants to the nearest 10 grams using a 10 Kg ± 10g hanging weighing scale (Salter, UK). Weight of older children, wearing light clothes only was measured to the nearest 100gms, using a 25Kg ± 100g hanging weighing scale (CMS,UK). The weighing scales were calibrated daily. Standing height was measured in children from 2 years of age to the nearest 0.1cm, using a tape measure. Height and length were measured when children were barefoot and after removal of headgear [14] Mid-upper Arm Circumference (MUAC) was measured to 0.1 cm using specialised non-stretchable measuring tapes (Zerfuss insertional tapes, Ross Ltd, USA). Analysis of anthropometric nutritional data was carried out using Epi-info 2000 computer program to determine the Z- score values from anthropometric data [15, 16]

Consent

Consent was sought from the guardians of the children prior to taking anthropometric measurements. This was because all the children studied were < 5 years of age and could not give consent on their own.

Ethical considerations

Prior to commencement of community diagnosis programme of COBES 2 of Moi University, permission was sought from the Institutional Research and Ethics Committee of Moi University School of Medicine. Permission was also sought from District Medical Officers of Health from the counties under which the COBES Health Centres fall.

RESULTS

Demography:

a total of approximately 700 children from 7 selected COBES Centres were sampled. The age ranged from 5 to 60 months

Anthropometry:

various centres showed mixed prevalence values in the three surveys as shown (Figures 1, 2 & 3). In Figure 1, Kabuchai showed Moderate stunting value of 13.6 % and severe stunting at 12.7%, Moderate underweight of 4% and severe underweight at 2,5%. Makunga showed Moderate stunting at 9.7% and severe stunting at 4.9%, Moderate underweight prevalence was 8% while severe underweight was 4.9%.

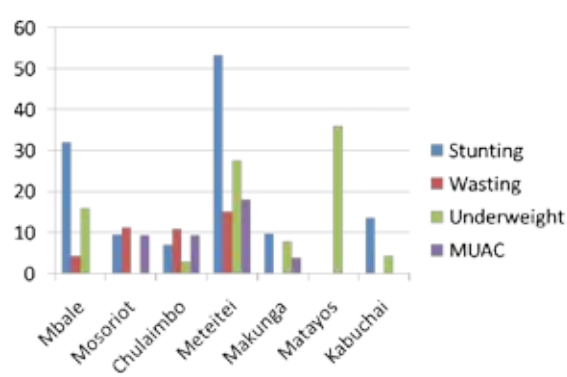

Figure 1. Percentage (%)- Y axis, Nutritional status of children < 5 years in selected COBES Health Centres-X axis..

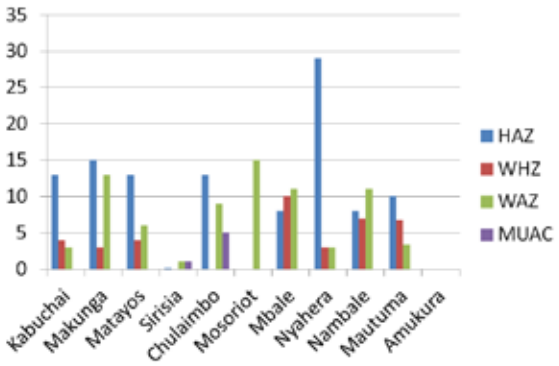

Figure 2. Summary of the comparative anthropometric measures for stunting, wasting, underweight and MUAC and severe cases ( ) ,for eleven COBES centres for the period March to May, 2010.

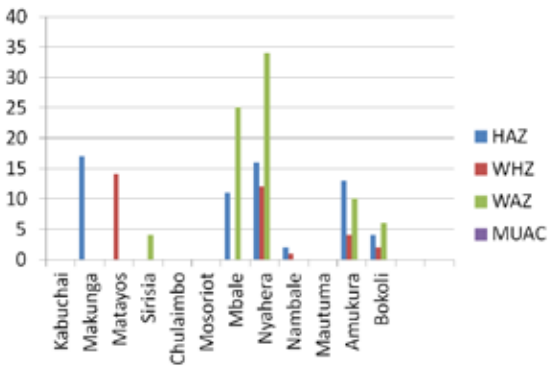

Figure 3 Summary of the comparative anthropometric measures for stunting, wasting, underweight and MUAC and severe cases ( ) ,for eleven COBES centres for the period March to May, 2011.

DISCUSSION

According to WHO [2], 32.5% of pre-school children under 5 years of age are malnourished [5]. In Kenya the major study reporting prevalence of PEM nationally was carried out [7] and still stands to the present moment. Several studies have been carried out since then showing prevalence of malnutrition in different national regions [8 , 17]. The present study specifically looked at prevalence of malnutrition in COBES health centres (Both AMPATH and non-AMPATH) in three surveys from 2008 to 2011. This kind of work has been carried out on annual basis but has not been comprehensively documented. From the study, Anthropometry showed majority of the children to have normal nutrition based on underweight, stunting and wasting (WAZ, HAZ and WAH > -2), This represented about 60% of the children studied. Prevalence of Stunting was extremely high in some areas such as Mbale and Meteitei that were non-AMPATH as compared to the national and regional values. The results from the other COBES centres were consistent with work earlier reported for the region [8]. Wasting was highest in Meteitei while underweight was highest in Matayos, both being non-AMPATH centres. Prevalence of severe (acute) malnutrition at the COBES Centres at the time of study showed a similar trend to mild or moderate malnutrition although this was not carried out in all the seven health Centres where data was collected. The National figures for Western Province still stand at 30% stunting, 20% underweight and 5% wasting [7, 8]. It is surprising that stunting levels at Mosoriot were slightly higher (9.5%) than Chulaimbo (7%) both being AMPATH centers. The reasons for this are not yet so clear. This indicates that the nature of malnutrition in these two areas points at both chronic and long term malnutrition. These results agree with similar work carried out elsewhere [5]. Under normal circumstances, this would not have been the result but given that these measurements occurred immediately after post election unrest resulting in scarcity of food at some of the Centres, thus describing the acute phase and the prevailing annual drought in the areas at that time of the year, representing the long term phase, this could explain the outcome recorded. The data available to support malnutrition in these areas of COBES placement needs to be regularly updated for proper management and control of this chronic problem in the areas. So many factors may be pointers for the malnutrition trends obtained apart from presence or absence of AMPATH at the Health centre. Such factors include; demography, socioeconomic as well as genetics, breastfeeding, immunization, birth weight and other childhood illnesses such as measles, diarrhea, malaria and many others. All these were not considered in this particular study since health centre records could easily be accessed for reference in all the 7 centres.

CONCLUSION

The prevalence of malnutrition was high in some Centres during the period of study. Meteitei which is non-AMPATH showed the highest malnutrition prevalence of 53% which poses a major public health concern. The reason could not be immediately evident but one of the possibilities could be due to absence of health education facilitated by AMPATH as well as dependence on tea as a major cash crop at the expense of food crops or due to data mismanagement. The current national figure for malnutrition stands at 30% as well as in Western province. Prevalence of malnutrition in Chulaimbo which is also an AMPATH centre was the lowest maybe due presence of additional health benefits from AMPATH and also due to mixed farming practised in the area or successful health education in the population. Prevalence in other centres was within the normal range. Improved nutritional practices could be recommended in areas with high malnutrition although poverty was the major cause of the problem in Kenya as well as other developing parts of the world. The way forward would be to expand the health benefits given by AMPATH to all the COBES health Centres.

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