

Assessment of community management program of acute malnutrition under five year in Alsuki locality, sinner state, Sudan

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Abstract:

This study is conducted in Al-Suki locality - Sinnar State - Sudan. its aim to evaluate the effectiveness of the community-based treatment program for acute malnutrition in children less than five years old in Al-Suki locality during March to October 2017. The case study methodology was used. A closed-question questionnaire was used to collect data on the demographic, social and economic characteristics of the family, the pediatric history, immunization coverage and anthropometric measurements health records and discussions with health staff, volunteers are discussed. A sample of (756) children was selected, representing 100% of the original community (353 males and 403) at a rate of females (47%) and (53%) respectively. (40%) of children were found with severe acute malnutrition and (60%) of children with moderate severe malnutrition in the period from March to October (2017). Most of the children were in the age group (13 - 18) months and (6 - 12) months, at (46.8%) and (38.2%) respectively. The survival rate in the program was 79.1% and the escape rate was 20.4%, 0.4 % of the children who did not respond to treatment and 0.1% death cases. The main causes of malnutrition proved to be the high incidence of diarrhea, respiratory infection and malaria (48%), (25.5%) and (25.8%) respectively, where the main health problems are admitted to hospital attributed to the low rate of absolute breastfeeding as it reached (11.1%) due to wrong eating habits. The education level of parents showed a low rate of education level of mothers and fathers as the illiteracy rate reached (6.5%) and Khalwa (28.4%), (8.4%) and Khalwa (40.6%) respectively, and that most of the families belonged to a lower level of income. Severe wasting, underweight and stunting reached (40.2%), (32.7%) and (42%), respectively, were found to be severe wasting, underweight and stunting (31.4%), (41.8%), (35.1%), respectively. (3SD->) The study recommended to increase the weekly and monthly educational courses, intensify home visits to know the methods of treatment and detect the causes of escape, absence and lack of access to the center, open new centers to ensure continuity of service.

Key word: CMAM – MUAC – Malnutrition

المستخلص:

اجريت هذه الدراسة في محلية السوكي -ولاية سنار-السودان . هدفت الدراسة الي تقييم فعالية برنامج المعالجة المجتمعية لسوء التغذية الحاد في الأطفال دون سن الخامسة بمحلية السوكي في الفترة من (مارس الي اكتوبر 2017). استخدم منهج دراسة الحالة الدراسة المجتمعية وكانت ادوات جمع المعلومات هي الاستبيان والسجلات الصحية والمناقشات مع الكوادر الصحية والمتطوعين ومسؤولي التغذية بمراكز المعالجة المجتمعية لسوء التغذية الحاد تم استخدام استبيان ذو اسئلة مغلقة لجمع المعلومات عن الخصائص الديمغرافية والاجتماعية والاقتصادية للأسرة , والتاريخ المرضي للأطفال وتغطية التحصين وكذلك عمل قياسات انثروبومترية . تم اختيار عينة عن طريق الحصر الشامل بعدد (756) طفل وهي تمثل نسبة 100% من المجتمع الاصل (353) ذكور و(403) اناث بنسبة بلغت (47%) و(53%) علي التوالي . تمثل نسبة (40%)

من الاطفال مصابين بسوء تغذية شديد حاد و(60%) من الاطفال مصابين بسوء تغذية شديد. معظم الاطفال كانوا في الفئة العمرية (13-18) شهر و(6-12) شهر حيث بلغت النسبة (46.8%) و(38.2%) علي التوالي. بلغت نسبة الشفاء في البرنامج (79.1%) ونسبة الهرويات (20.4%) وتمثل نسبة (4%) نسبة الاطفال الذين لم يستجيبوا الي العلاج (1%) حالة وفاة. اهم اسباب الاصابة بسوء التغذية ثبت انها ارتفاع نسبة الاسهالات والتهاب الجهاز التنفسي والملاريا حيث بلغت النسب (48%)، (25,5%)، (25,8%) علي التوالي حيث تعتبر المشاكل الصحية الرئيسية لدخول المستشفى، انخفاض نسبة الرضاعة الطبيعية المطلقة حيث بلغت النسبة (11.1%) بسبب العادات الغذائية الخاطئة. اظهرالمستوي التعليمي للوالدين انخفاض المستوي التعليمي للامهات حيث بلغت نسبة الأمية (6.5%) والخلوة (28.4%). انخفاض المستوي التعليمي للأباء بلغت الامية نسبة(8.4%) والخلوة (40.6%) وان معظم الاسر تنتمي الي طبقة دنيا من المستوي الاقتصادي والاجتماعي (مستوي منخفض من الدخل). وقد وجد ان معدل انتشار الهزال ونقص الوزن والتقرم (40,2%)، (32,7%)، (42%) علي التوالي ووجدت حالات الهزال الشديد ونقص الوزن والتقرم (31,4%)، (41,8%)، (35,1%) علي التوالي. (3SD->)

واوصت الورقة الي زيادة الدورات التثقيفية الاسبوعية والشهرية لمعرفة اسباب وعلامات وطرق الكشف المبكر لسوء التغذية، تكثيف الزيارات المنزلية لمعرفة طرق سير العلاج وكشف اسباب الهرويات والغياب وعدم الوصول للمركز، فتح مراكز جديد لضمان استمرار الخدمة وتفادي مشاكل الغياب بسبب بعد المسافة.

Introduction:

Malnutrition a condition caused by a decrease or increase in one or more of the nutrients in relative or absolute negative impact on the normal development of the body and leads to symptomatic accompany the emergence of such anemia in the case of iron deficiency of obesity in the case of excessive nutrition and energy (Abu Rmelh 2010). Acute malnutrition cause inadequate nutrition leading to rapid weight loss or failure to gain weight normally appearance wasting or thinness, chronic malnutrition inadequate nutrition over long period of time leading to failure of linear growth (Abu Rmelh 2010). Malnutrition is a broad range of clinical conditions in children and adults that result from deficiencies in one or number of nutrients .in children malnutrition usually indicated by growth failure associated with malnutrition :wasting(acute malnutrition)and stunting (chronic malnutrition). (WFP, 2002). The World Health Organization (WHO) defines acute malnutrition in children who ages range between 6 to 60 months, as a shortage in standard deviation from the WHO standards by not less than (-3) from weight relating to height or it is a shortage of the circumference of the higher hummers by 115 mm or the existence of edema in both feet (WHO,2011).

Sudan has persistent elevated level of under nutrition .poor health condition, suboptimal maternal and child feeding and care practices .food insecurity, compounded by high rates of poverty and illiteracy, play a complex and interrelated role as contributing factors to the wide spread of malnutrition .according to the majority of the nutritional surveys the greatest risk of under nutrition among children 6 – 59 months. (NNP, 2010). Sudanese adult have satisfactory nutritional status, but there is a prevalence of malnutrition among vulnerable group's especially young children, pregnant and lactation mother. (Osman, 1983).

Vitamins (A) prevents injury night and other skin diseases and deficiency results to dry skin and dry conjunctivitis poor physical growth and weakening of the immune as well as anemia, the body to the need, vitamin(D) to absorb calcium and phosphorus from the intestine and take advantage of them and is essential for the growth and development of protects against muscular weakness and enter into the process of pacemaker and is important in the prevention of osteoporosis and resulting deficiency diagnosed with rickets in children.(Musaiger,2005)

Problem Statement:

Malnutrition is global public health problem Some 795 million people in the world not have enough food to lead a healthy active life that's about one in nine people on earth the vast majority of the world hungry people live in Developing countries where 12.9 percent of the population is undernourished Poor nutrition causes near half (45%) deaths in children under five-3.1million children each year.

One million children in Sudan under the age of five suffer from acute malnutrition some 550.000 among them are severely malnutrition and at risk of dying another two million are stunted owing chronic malnutrition. The highest (SAM) rates measured are above 20 percent, and are found in three localities in south Darfur and red sea states. Most of the children with (SAM) are found in north Darfur ,ElGezera ,south Darfur ,Khartoum and elgedaref .These five states carry 51 percent(UN, 2015).

Material & Methods

The study place in Alsuki locality, sinner state. its covered (all households living in locality to make physical measurements and classification of cases ,Mothers of malnourished children under 5 years of age ,Children under 5 years malnourished, Volunteers ,Health centers in community treatment centers) . The study was conducted in the period from April to October (2017) were the study population reached are(756) severely Malnourished children randomly selected after the extraction of statistics from the records of the ministry of health and records of community treatment center.

The sample was taken by a comprehensive inventory of all malnourished children attending the Alsuki treatment centers.

Data collection:

The data was collected using:-

1. Questionnaire: witch divided into four parts:

a) Part one: general information.

b)Part two: environment, culture, economic and social site.

c) Part three: mother health.

d) Part four: child health and feeding.

2: anthropometrics measurement

Anthropometric measures: is used to assess the children nutritional status. Hanging scale used to determine the weight of the children. (Easfar,2014).

- **Body Weight:** this standard is always expressed as the normal weight of the body or a percentage of normal weight ((Easfar,2014).

- **The circumference of the arm center:** this measurement to determine the level of the body stock of protein. (Easfar,2014).

An accurate way to measure fat-free mass is to measure the Mid Upper Arm Circumference (MUAC).The MUAC is the circumference of the upper arm at the midway between the shoulder tip and the elbow tip on the left arm.

Table (1)Cut-off points for screening the MUAC (Wolfe, 2006)

Target Groups	MUAC (in cm)	Malnutrition
Children under five	11-11.9	Moderate acute malnutrition (MAM)
	<11 cm	Severe acute malnutrition (SAM) Ref

Secondary data:

Therapeutic food(RUTF (plumpy nut)

is a food containing food and energy substances (500 calories/92 grams) ,which is similar to the (F100 therapeutic milk) but it is classified as an iron ,safe and easy for the mother or the service provider to give at home , is not easy to contaminate and the growth of the bacteria ,can be obtained locally .(NNP,2015).

Therapeutic food' in general, is any appropriate food product or products, enhanced nutritionally, and thus made to be more energy-dense and more nutrient-dense. When needed, usually in emergency situations, (Brambilla et al., 2003)

Nutritional Information:

Ingredient: vegetable fat, sugar, peanut, milk powder whey maltodextrin, minerals and vitamin, cocoa. Average nutritional value per 100g of the product plumpy nut (520kcal).

Proteins: 10% of the total energy Lipids: 55% of the total energy Vitamin. A(800Ug), D (15Ug), E (20 mg), C(50 mg), B1(0.5 mg) B2(1.6 mg),B6(0.6 mg) , B12(1.6Ug), K(15ug) ,Biotin (60ug) ,folic acid (200ug), pantothenic acid (3 mg), Niacin (5mg), Minerals :calcium (300mg), phosphorus (300mg), potassium (1100mg), magnesium (80mg), zinc (11mg), copper (14mg), Iron (70ug), selenium (20ug), sodium (<290mg) Plumpy nut use for outpatient.(Briend ,1997) and (WHO,2012).

Nutrition surveys:

a number of volunteers are selected for each village and the volunteers qualification are in different grades (a basic –secondary- university). Some of them are experienced in voluntary work.

Data analysis:

Data was analyzed and processed through Statistical Package for Social Sciences (SPSS) program. The results are presented in form of tables and figures.

Results & Discussion:

Socioeconomic Characteristic:

This section includes analysis and results of data collected from the primary caretakers of the children after obtaining their consent.

The sample of(756) children under five year who suffer acute malnutrition were included in the analysis and discussed as follows:

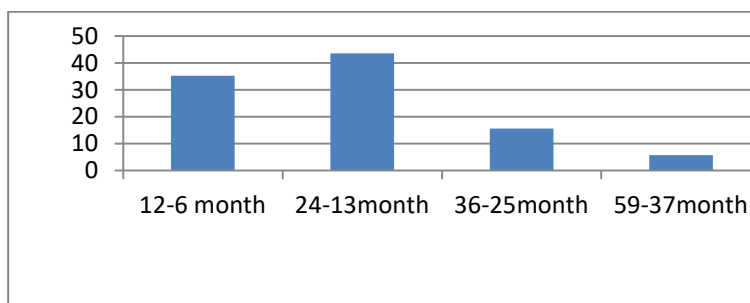


Figure: (1)Age Distribution of children per Month.

In Figure (1) revealed that the majority of children (43.5%) were the age group of (13– 24) months,(35.2%) of children age (6-12) months. This finding is agree with the finding reported by(Osman ,2014) incidence of protein and energy deficiencies in children aged(6-24)months. And also (UNICEF,2012) reported that PEM is usually occur in these age groups this may be due to late introduction of supplementary feeding and early stop of breastfeeding.

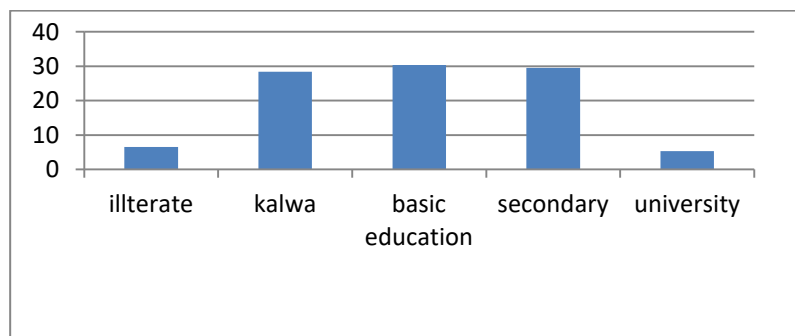


Figure (2) Distribution Educational level of the mothers

figure (2) show that majority of mothers (28.4%) (30.3%) were kalwa and basic education level respectively . this is indicator to poor knowledge about prevention and control of disease and reflex family health . child nutrition will improve with increased mother’s education and nutrition this fact by (Babatunde*et al*, 2011).Devdas et al (1980) showed that the number of years of education of mothers had a definite relationship with the proportion of malnourished children and this was related to an increase in children’s mean daily intake of nutrients with an increase in the mother’s educational level. Good care translates available resources at the family and community levels into nutritional improvements (FAO et al, 1985). This result is agree with the result showed a high percentage of khalwa 84.7% and basic education 12.7%(Adam,,2018).

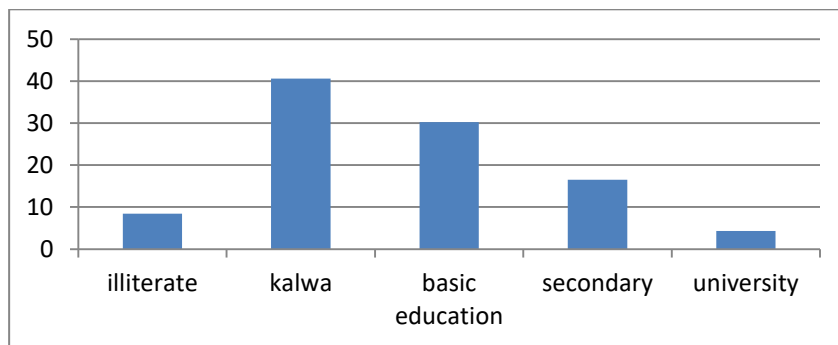


Figure (3) Distribution Education level of the Father.

The results in Figure(3) show that(40.6%) of father kalwa, (30.2%) have a basic education level(16.5%) have asecondary school.This high percentage has a negative effect on child nutrition. Strong relation was found between nutritional status and educational level. (Gubta, 1991).similar finding were confirmed showed a high (68%) kalwa and basic education (18.7%) mention by(Adam, 2018)



Figure (4) Father Occupation.

In figure (4) revealed that majority (35.5%) were farmers. this result reflected in family income this mean that the economic status . These result are in dis agree with the result finding that three-quarters of fathers have free work(77.7%) and (18.6%) farmers (Adam,2018).This study is in consistent with study showed that over half (56%) of the married women reported their husband were casual worker and among other responses respectively (Okwahi, 2015).

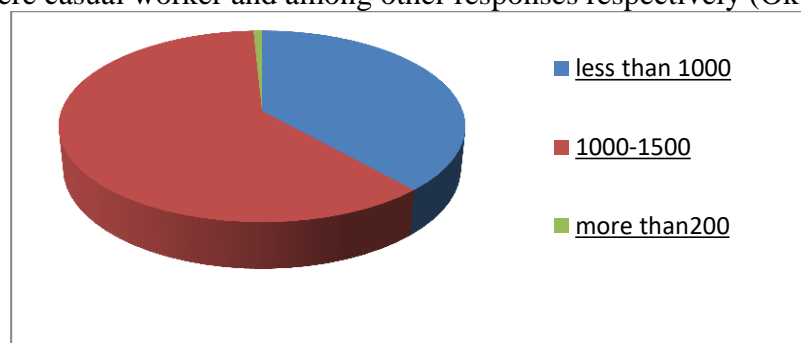


Figure (5) Family Income level per/month

The finding in figure (5) shows that most of the families (60.8%) were low income level (1500-2000) and (38.4%) less than (1000). It is agree with (nearly more than half of the families 53.0% have low level of income, while 44.7% have middle level of income, high level of income was represented by only 2.3%) (Abdelrahim,2018). This is disagree with (Okwahi,2015) that most of the families (48%) had the family income of (750-949) and among other responses respectively.

Information on Breastfeeding :

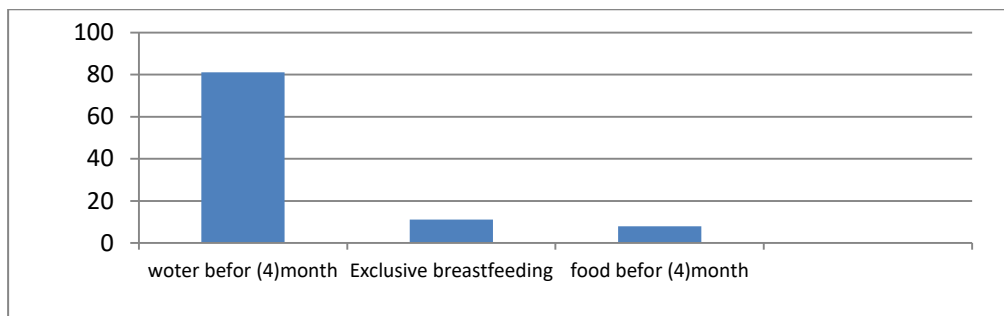


Figure (6) Duration of Exclusive Breast Feeding:

In figure (6) showed that (81%) of mothers were enter the water before completion of four months ,(11.1%)Exclusive breastfeeding this finding reflex lack of mother knowledge about importance of breastfeeding for the children and mothers .This result agreement with The result obtained by(Adam,2018) who said that duration of exclusive breast feeding for less than 4 months was(68%) and more than 6 months was (18%)of children . WHO(2001) recommend that children should be exclusively breastfed on demand for the first six months of life .

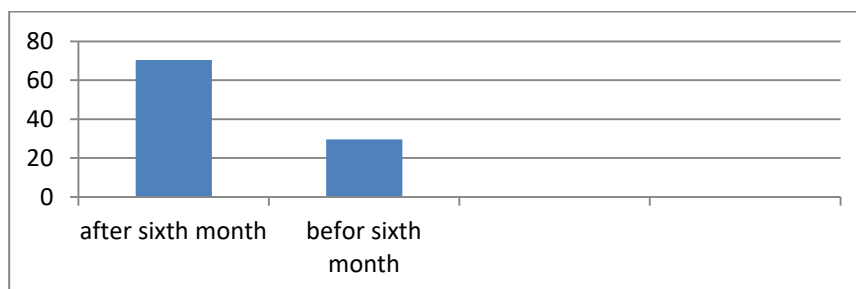
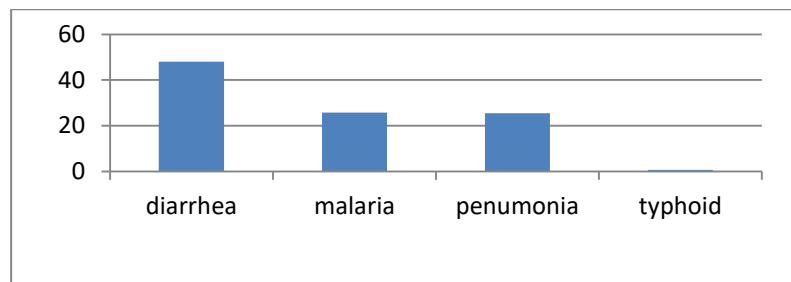


Figure (7) Complementary feeding practice.

in figure (7) indicated that, majority (70.4%) of mothers enter the food after the child complete six months because the customs and concepts, (29.6%) of mothers fed their children before the sixth months. This results disagree with the result done by Osman (2014) who found that (15%) of mother feed their child in the (3) month of age, 56% start feed at the (4) month,(27%) start at (5) month and just (2%) in the six month. This study is disagree with study conducted in Damazin–sudan by(Babiker,2015) improper complementary feeding practice was so common in the study area (77.3%)

Incidence of malnutrition:



Figure(8): History of Morbidity on two weeks before admission

Regard to history of morbidity on two weeks before admission, results in figure(8) showed that majority of children (48%) they had diarrhea ,(25.8%) had malaria (25,5%) pneumonia. This result consistent with the results say that (35%) suffer from diarrhea, 28%is acute respiratory infection, 25%is malaria, and 12% suffer of more than one disease (Osman,2014).

This study is in consistent with Adam *et al.*,(2018) reported that During the two weeks before the study conduction(40.7%) of the children had diarrhea, (12%) had fever,(5.3%) had malaria, and about(4%) had acute respiratory infection.

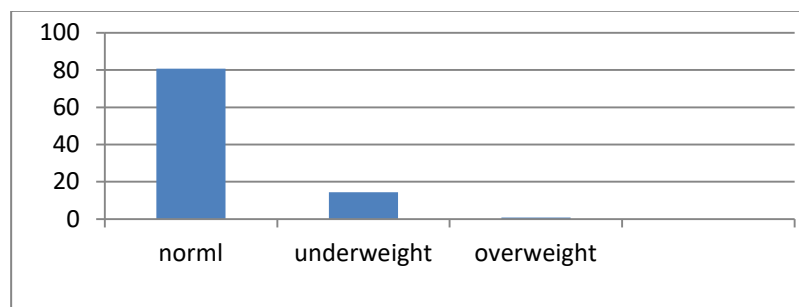


Figure (9) Distribution of child weight at birth.

In figure (9) showed that (80.8%) of children were born with normal weight and (14.4%) were underweight and (.8%) were overweight . This study is in consistent with study conducted in port sudanate-sudan by (Osman,2014) showed that (72%) of children were born with normal weight, 25% were underweight and 3% were overweight .LBW baby is effectively born malnourished (effect of nutritional status) and at higher risk of dying in early life. (WHO, 2000).

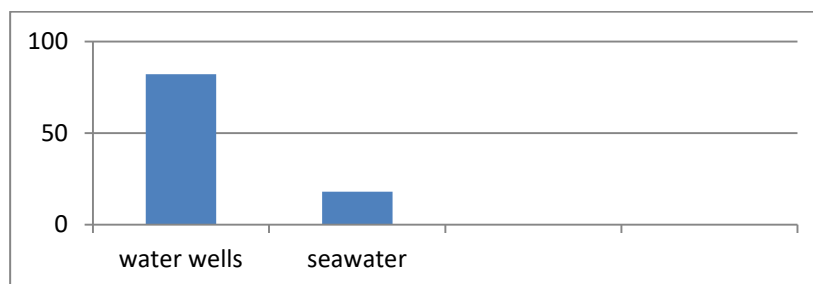


Figure (10) Source of water supply

figure (10) represented that (82%) of the households consume water wells and (18%) consume untreated seawater containing a quantity of silt in the autumn period which may cause diarrhea especially children. Water may be contaminated due to the quality management and domestic

hygiene. (WHO,2000).A study conducted by Babiker(2015) who found that piped water was only available in(25.5%) of the homes, while vendor’s water was used by (74.5%) of the families.

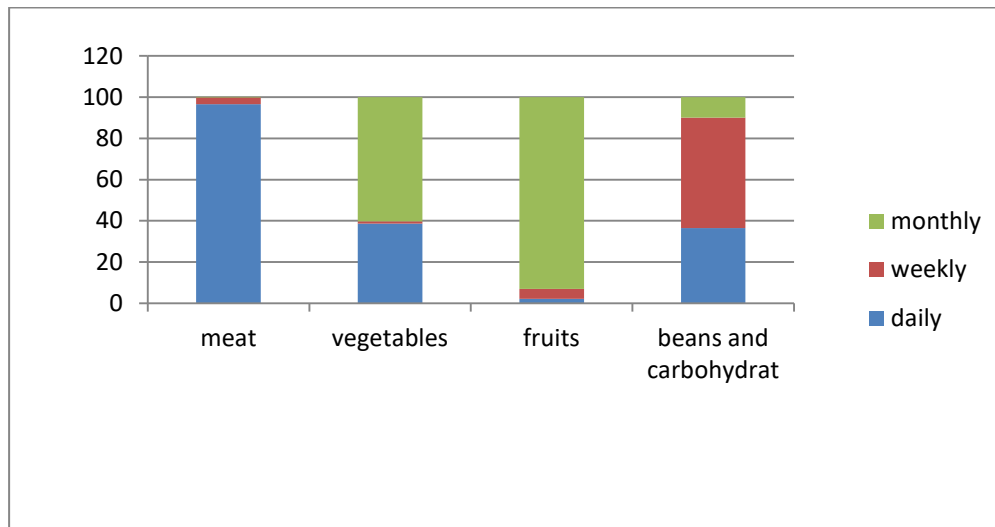


Figure (11) Frequency of food consumption

In figure (11) with regard to the distribution of participant by consumption of food item the study showed that participant daily meat(96.6%), vegetables (38.7%),fruits (2.1%), beans and carbohydrate (36,4%) ,weekly meat(3.3%) ,vegetables (1.1%),fruits (4.9%), beans and carbohydrate (53.7%),monthly meat (0.1%) ,vegetable (60.2%), fruits(93%) ,beans and carbohydrate (9.9%).this result reflect that low income and mothers lake of awareness of the importance of food diversity.These result are contradicted with study in Damazin Blue Nail state –sudan said that Frequency of consumption of energy foods (millet as acida or kisra) was mainly provided to the children (42.5% and 34.4%) on 3-5 times/week and 1-3 times/day respectively. Regarding meat and meat products, the majority of the caregivers (38.8%) provided this food groups 3-5 times /week, about 26.3% consumed it on daily basis (1-3 times/day).As regards the frequency consumption of vegetables and fruits, the table indicated that the majority of the children 36.2% were giving none, while about 31% of the caretakers reported 3-4 times/ month or rare consumption. Regarding the frequency consumption of milk or its products the majority of the caretakers 36.7% giving milk 1-3 times/day, 3-5 times/week was mentioned by 34.6%. Pulses consumption such as was reported by 55.2% 1-3 times.

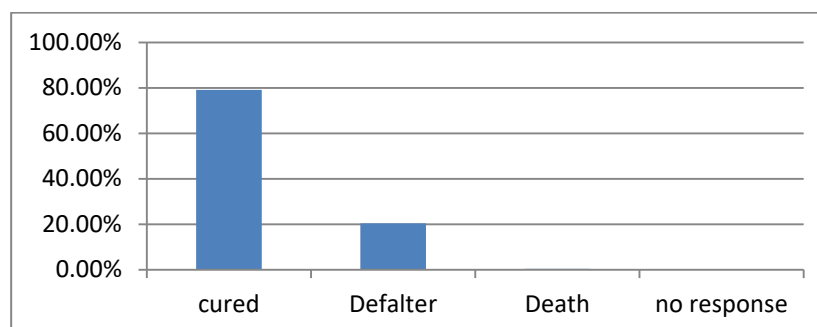


Figure (12) Distribution of the study sample according to weight gain

The study in figure (19)showed that the majority cured(79.1%), defaulter (20.4%),no response(0.4%) , death (0.1%). This result consistent the result table shows that(85.9%) were cured (>75%), 13.5%defaulters (15%), 0.3% none response (<5%) and similar percentage obtained for deaths (<5%) (Babiker,2015).

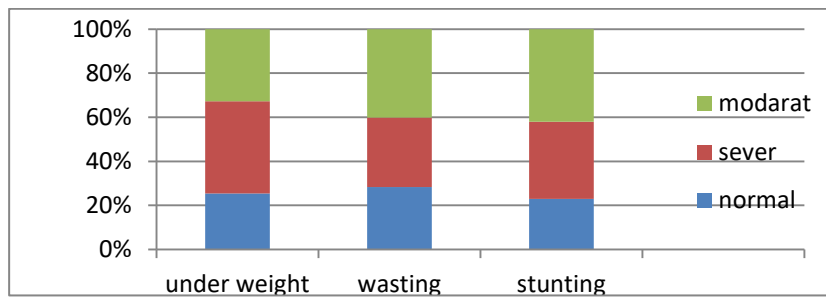
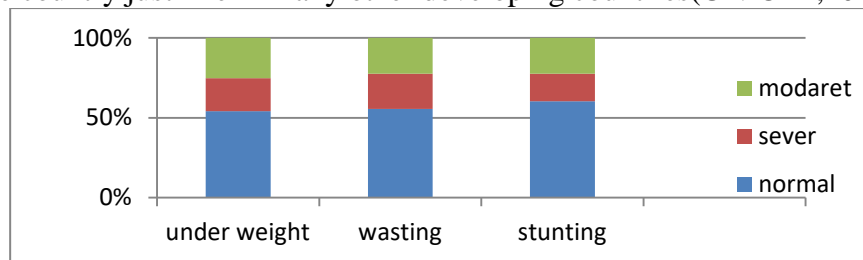


Figure (13) Distribution of children according to nutritional status before intervention program

The study showed that in figure(13) the overall prevalence of wasting, underweight and stunting was found to be (40.2%), (32.7%), (42%) respectively. Severe wasting, underweight, and stunting (<-3SD) was found in (31.4%), (41.8%), (35.1%) respectively. The majority of them 55.7% were in the age group 24-59 months. Overall prevalence of wasting, underweight and stunting was found to be 14.7%, 27.3%, and 38% respectively. Severe wasting, underweight, and stunting (<-3SD) was found in 5.7%, 9.3%, and 13.7% respectively. In 2017, globally there were 151 million children under 5 years of age who were stunted, 51 million wasted and 38 million overweight (WHO, 2018).

Sub-Saharan Africa and South Asia have reported the highest prevalence of stunted children in the world. In sub-Saharan Africa, 37% of children under-5 years are stunted. Also, available data from the United Nations Children's Fund estimates the prevalence of childhood stunting in Nigeria at about 36% in 2013 which indicates that stunting remains a major public health problem in the country just like in many other developing countries (UNICEF, 2015).



Figure(14) Distribution of children according to nutritional status after intervention program.

The result showed that in figure(14) the majority (25.3%), (22.5%), (22.4%) wasting, underweight and stunting respectively. Severe wasting, underweight, and stunting (<-3SD) was found in (21.9%), (20.5%), (17.2%) respectively. Child malnutrition continues to be a major public health problem in BN state (UNICEF, 2010). As mentioned above, overall 20.1% of under-five children are underweight that is they are too thin for their age. Underweight is composite in doctor combining both chronic and acute malnutrition. While 27.3% of all under-five children are stunted, that is they are too short for their age. Stunting reflects failure to receive adequate food intake for a long period of time and is therefore, a measure of chronic malnutrition. About 52.6% of children are wasted, that is they are too thin for their height. Wasting reflects the failure to receive adequate nutrition for a short period of time and also may be due to childhood illness. It is considered a measure of acute malnutrition (Adam, 2018).

Conclusion:

Exclusive breastfeeding refers to an infant who received only breast milk. Just about 11.1% were exclusively breastfed. We need more attention to raise awareness about exclusive breastfeeding. Strategies that are aimed at promoting EBF and weaning practices must be developed based on social determinants that influence the observed practices and periodic surveys to assess these determinants for reprogramming.

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