ABSTRACT

Aim: To assess the nutrition and health status of women at pre-intervention. 
Method: Women of reproductive age (N=134) from peri urban communities in the Greater Accra Region of Ghana were recruited. Data collected were socio-demographic, food security status, dietary intake, body measurements and venous blood for haematological and biochemical indices of iron and protein. 
Results: The mean age of the participants was 28.9 ±8.24. Majority were food insecure (85.8%). All the participants did not meet their intakes for folate and iodine. The prevalence of anaemia was 44% among the participants. 
Conclusion/Implication: Food insecurity was high among the participants. Micronutrient intakes were inadequate. Hypochromic red blood cells found in some participants suggest iron deficiency. The high level of anaemia and inadequate micronutrient dietary intake of participants puts them at risk of adverse pregnancy outcomes and reduced quality of health and their contribution to labour and productivity. Intervention to improve their nutritional status is necessary.

INTRODUCTION

Ready to Use Therapeutic Food (RUTF) is a generic term that encompasses different types of foods that are mostly lipid-based pastes that are energy dense, resist bacteria contamination and need no cooking prior to consumption. They have proved successful in correcting undernutrition globally, however the extensive use of milk in the product makes it expensive especially in resource poor settings (Manary 2006).

Current recommendations are that alternative ingredients that are locally available should be used (Owino, 2010). A combination of legumes and cereals have been identified as possible source of ingredients that can be used to produce RUTFs comparable in composition to those that are milk based (Henry, 2003).

Non milk based RUTFs have been produced and have successfully corrected undernutrition in malnourished individuals, even among people infected with HIV (Balbree et al., 2009). More efficacy studies are needed before they can be considered as substitutes for the milk-based RUTF (Collins and Henry, 2004). In accordance with intervention studies, a baseline information on the nutritional status of the participants is needed in order to clearly quantify the effect of the intervention diet.

METHOD

The study sites are peri urban communities in the Greater Accra Region of Ghana. The study participants (N=134) were women aged 18-45 years who are not pregnant or lactating. Data collected were socio-demographic, food security, dietary intake (food frequency questionnaire), weight and height. Five (5) ml venous blood was drawn for sickling profile, serum iron, serum total protein and albumin. ESHA FPRO version 10.0.1. was used to analyse dietary intakes. Statistical Package for Social Sciences (SPSS) for Windows version 16 was used to analyse data. Body Mass Index was obtained from weight (kg) and height (m) measurements (BMI=kg/m²).

RESULTS

The mean age and BMI were 28.9 years and 24.5 kg/m² respectively. Majority of the participants were food insecure (85.8%). None of the participants met their RDAs for folate and iodine. More than half at least met their Recommended Dietary Allowances (RDA) for calories (58.2%), protein (66.4%), iron (73.9%) and vitamin C (75.4%). Sickle cell trait affected 16.4%, however only one person suffered sickle cell haemoglobin C disease.

Forty-four percent (44%) of the participants were anaemic (haemoglobin<12g/dl). Some (12.7%) had bigger than normal size red blood cell (macrocytic anaemia). The haemoglobin concentration of the red blood cells was below normal (microcytic) among 3.7% of the participants. Some participants fell below the reference ranges (RR) for total protein (35.8%; RR=6.6-8.7 g/dl), and albumin (23.9%; RR=3.8-5.1 g/dl). All the participants had normal serum iron (RR=37-145 µg/dl).

DISCUSSION

The high caloric intake versus low micronutrient intakes may be due to the relatively cheaper cost of carbohydrate foods as compared to foods rich in micronutrients such as fruits and vegetables (Townsend et al., 2001).

The cause of anaemia is multi-factorial: iron deficiency (most common), folate deficiency, sickle cell trait and sickle cell disease, worm infestation and malaria have been identified as causes of anaemia (Langlois et al., 2008; WHO, 2009). Inadequate folate intake among the participants may explain the macrocytic anaemia seen in 12.7% of participants. The presence of sickle cell trait identified in some of the participants may also contribute to anaemia prevalence. Worm infestation and malaria may also partly explain the presence of anaemia among the participants. The structure and functioning of haemoglobin and transport of iron is predominantly dependant on protein (Loukopoulos, 2002). The low protein status among some participants (35.8%) could also contribute to the occurrence of anaemia.

A hypochromic red cell is considered as a functional deficiency of iron (Thomas and Thomas, 2002); this suggest iron deficiency in the participants with hypochromic red cell (3.7%). However none of the participants had a serum iron level below the reference range. Other more sensitive iron indices such as ferritin and total iron binding capacity (TIBC) can detect iron deficiency as compared to serum iron. Analyses of serum ferritin and TIBC of participants are ongoing to confirm these.

CONCLUSION

Anaemia and micronutrient under-nutrition still remain a public health concern in Ghana; the high level of anaemia and inadequate intake of folate and iodine puts participants at risk of adverse pregnancy outcomes, reduced quality of health that will compromise on their contribution to labour force and productivity. An intervention to improve their nutritional status is therefore necessary.

THE WAY FORWARD- INTERVENTION

- Participants will be dewormed with a broad spectrum dewormer.
- They will be randomised into a control and an RUTF (intervention) group
- The RUTF will be provided three times in a week for six months
- At every two months during the feeding, measurements (anthropometric and biochemical indicators) will be taken for both study (RUTF) and control groups.
- Measurements from the RUTF group and the control group will be compared within and between groups.
- Measurements from each randomised group will also be compared with their own baseline indicators.
- Documentation of occurrence of infections and diseases will noted to ascertain their effect on nutritional status.

REFERENCES