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ANAEMIA AMONG UNDERGRADUATES IN ABEOKUTA, OGUN STATE

*C. AGBON, B. ADESOPE AND O. AKINYEMI

Department of Nutrition and Dietetics, University of Agriculture, P.M.B. 2240, Abeokuta, Ogun State, Nigeria.
***Corresponding author:** akinyemimide@yahoo.com

ABSTRACT

This study was conducted at the University of Agriculture, Abeokuta. Respondents were two hundred (200) female undergraduates who filled out their questionnaires properly and had their anthropometric measurements and their matching blood samples taken. Haemoglobin concentration was determined for each respondent using WHO standard and their nutritional status assessed using Body mass index (wt/ht^2). Descriptive statistics was used to analyze data from the questionnaires. Results from this study showed that more than half (59%) of the population were anaemic. Many (45%) of the students were also underweight. It can be concluded that the low haemoglobin levels found among the students may be as a result of low food consumption and the frequent consumption of tea. Nutrition education is recommended to improve nutritional status of the students

Key words: Female undergraduates, anaemia, Abeokuta

INTRODUCTION

Malnutrition is multifactoral in its aetiology and cumulative in its manifestations. Merchant and Kurz (1993) noted that "A nutritional problem is generally the consequence of earlier problems and the cause of later problems." Increasingly, planners recognize that the health and nutrition needs of females differ from those of males. Some of the most important functional consequences of female malnutrition (for example, the obstetrical risks associated with short stature and iron-deficiency anaemia) have been studied (WHO, 1992). However, data about which population groups are anaemic provide the basis for developing an anaemia prevention and control strategy.

Iron deficiency is the most common cause of anaemia although anaemia can occur as a result of other causes (Kennedy *et al.,* 2001). Nutritional deficiency that significantly increases the risk of maternal mortality is iron deficiency anaemia. Anaemia is defined as a low level of haemoglobin in the blood, as evidenced by a reduced quality or quantity of red blood cells. Haemoglobin level below 12g/dl is the most commonly used indicator of iron deficiency anaemia (WHO, 2001). Anaemia has serious negative consequences, including increased mortality in women and children, decreased capacity to learn, and decreased productivity in all individuals (Kennedy *et al.,* 2001). Its devastating effects on health and physical and mental productivity affect quality of life and translate into significant economic losses for individuals and for countries with high anaemia prevalence. When anaemia is acute, it can cause death

directly from heart failure or shock (WHO, 1992). Fortunately, even among malnourished women, anaemia this severe is quite rare. However, although less severe anaemia may not be a direct cause of maternal death, it is a significant contributory cause. In particular, anaemic women are less able to tolerate haemorrhage (both ante partum and post-partum), which is one of the four leading causes of maternal death in sub-Saharan Africa (WHO, 1992). Anaemia is estimated to account for a fifth to a tenth of all maternal deaths in many countries (Royston *et al.,* 1989). Again, however, it is probably more accurate to say that it is the combination of pre-existing anaemia, haemorrhage, and lack of access to medical care that causes women to die (Kennedy *et al.,* 2001). In Nigeria, Agbon *et al.* (2004) found pregnant women to be anaemic. Students in tertiary institutions are also known to have mineral intake which is below the recommended dietary allowance (Oguntona *et al.* (1998).

A habitual dietary intake of iron which is not sufficient to cover requirements is the most common cause of iron deficiency (FAO/WHO, 2002). The dietary source of iron, for most people worldwide, is provided by cereals (such as rice, maize and wheat) and legumes. The diets of disadvantaged people of the developing world vary from one community to another, but in many regions the main components are cereals and plant foods. In Nigeria, the most frequently consumed staple is maize then cassava followed by rice then sorghum. Yam is another frequently consumed energy source of most Nigerians, the most frequently consumed legume is groundnut followed by cowpea (Maziya-Dixion *et al.,* 2004). The bioavailability of iron in traditional staple foods such as cereals, legumes, tubers and in soymilk can be reduced by the formation of insoluble complexes with phytate thereby preventing absorption (Kennedy *et al.,* 2001). Calcium in the diet can also inhibit iron availability (Hallberg *et al.,* 1992), polyphenols and tannins in tea are important inhibitors of dietary iron absorption (Kennedy *et al.,* 2001). The objective of this study is to assess the nutritional status and the prevalence of anaemia among undergraduates who are mothers of tomorrow and to determine factors that may have affected their iron status.

MATERIALS AND METHODS

Study Area

This study was conducted the University of Agriculture, Abeokuta. The University is situated in Abeokuta the capital of Ogun State and had a student population of 5,000 out of which 2,300 were female.

Subjects

The objectives of the research were made known to 10% female students chosen by simple random sample. However, there was a high refusal rate. Two hundred students (200) who filled out their questionnaires properly and had their anthropometric measurements taken with their matching blood samples made the respondents of this study.

Methods

A structured and validated questionnaire was designed and administered on respondents in the study area. The questionnaire sought information on demography and socio economic data of respondents. The nutritional status of respondents was assessed using Body mass index (BMI). Height and weight measurements of each respondent were taken according to standard procedures and then used to determine BMI wt/ht^2 (WHO, 2003).

For each respondent 2ml of blood was collected in the morning and was used for the determination of haemoglobin concentration of each respondent using Dacie and Lewis, (1975). Classification of anaemia WHO (2001) was used for the assessment. Descriptive statistics was used to analyze data from the questionnaires and the soft ware SPSS version 13 was used to determine association between the parameters.

RESULTS

Majority (92%) of the female students studied were between 20-29 yrs (Table 1). Few were married (10%) and many came from monogamous family background (65%). Monthly allowances of many of the students (55%) were below N5, 000 while some (36%) got between N5, 000- N9, 000. This allowance included transportation, feeding and upkeep. Only 9% of the students were found obese as shown in Table 2. Many of the students were either normal or under weight (45%). Haemoglobin status of the students (Table 3) showed a large population of the students (51.5%) to be mildly anaemic and some (7.5%) to be moderately anaemic. The feeding pattern of the students is shown in Table 4 and it revealed that iron enhancers were occasionally taken by the students and tea a known iron inhibitor was taken daily (25.5%) or on alternate days (34.0%) by the students. Cereals and legumes were taken daily by 26% and 24.8% of the students respectively. High bioavailability source of iron such as meat were taken daily by (18.5%) of the students and fish was taken daily by (13%). Although legumes provide low bioavailability source of iron, its contribution is important but this study observed that some female students (20%) rarely consume them.

DISCUSSION

More than half of the students studied were anaemic. The few students that had normal haemoglobin status may also be at risk since an individual is likely to be deficient long before there is a detectable drop in haemoglobin levels (WHO, 2002). Some of the students were also found to be energy deficient. Though, the high underweight values among students may be due to the fact that this study was conducted a few weeks before exams, during which more meals were most likely to be missed because of the now heightened academic activities.

However, this study revealed multiple nutrient deficiencies amongst the university students. The feeding pattern of the students showed that some students rarely consume cereals and legumes they preferred tubers which were cheaper to purchase. Studies have also shown that iron deficiency can also result from the unavailability of the mineral in plant-based diets (Kennedy *et al.,* 2003). High bioavailability source of iron such as meat was taken by the students on alternate day basis, fish was more frequently consumed probably because it is less expensive but the quantity may have been very small. Iron enhancers such as fruits were occasionally taken by the students while tea a known iron inhibitor was taken daily or on alternate days by a large number of the students.

It can be concluded that the low haemoglobin levels found among the students may be as a result of low food consumption and the frequent consumption of tea. This study shows that students may have multiple nutrient deficiencies. Nutrition education is therefore recommended in order to improve the nutritional status of this segment of the Nigerian population and so ensure lower future obstetrical risks.

Table 1: Background of Subjects

Characteristics of respondents	Frequency (No)	Percentage (%)
Age (yrs)		
15-19	14	7
20-24	132	66
25-29	52	26
≥30	2	1
Total	200	100
Marital status		
Single	180	90
Married	20	10
Total	200	100
Family type		
Monogamy	131	65
Polygamy	69	34
Total	200	100
Monthly allowance (N)		
<3,000-4,999	110	55
5,000-8,999	72	36
>9,000	18	9
Total	200	100

Table 2: Body Mass Index (BMI) of Respondents

BMI Range Kg/m^2	Frequency (No)	Percentage (%)
Severe underweight <16	4	2.0
Moderate underweight 16-17	24	12
Mild underweight 17.01-18.5	26	13
Normal 18.51-25.0	129	64.5
Mild overweight 25.01-30.0	12	6
Moderately obese 30.01-40.0	5	2.5
Severe Obesity >40	-	-
Total	200	100

Table 3: Haemoglobin Status of Respondents

Haemoglobin Range g/dl	Frequency (No)	Percentage (%)
Severe anaemia (<7)	-	-
Moderate anaemia (7 - 9.9)	15	7.5
Mild anaemia (10-11.9)	103	51.5
Normal (≥ 12)	82	41
Total	200	100

Table 4: Food Consumption Pattern of Respondents

Food	Frequency of consumption (%)					
	More than Once/day	Daily	Alternate days 2times/wk	Occasionally (Monthly)	Rarely	Never
Low Bioavailability						
Cereals	3.1	26	37.9	4.6	15.4	13
Legumes	1.0	24.8	39.7	4.1	20.3	10.1
High bioavail-ability						
Meat	13.5	18.5	45.0	22.0	1.0	-
Fish	20.0	31.0	37.0	12.0	-	-
Enhancers						
Fruits	3.5	6.3	32.8	50.3	5.8	1.3
Inhibitors						
Tea	8.5	25.5	34.0	19.0	11	2.0

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