ASSESSMENT OF NUTRITIONAL STATUS, KNOWLEDGE, ATTITUDE AND PRACTICES OF SECONDARY SCHOOL STUDENTS IN KANO, NIGERIA

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ABSTRACT
Poor nutritional status during adolescence is an important determinant of health outcome and sustainable development. Roughly 19.7% of the world's adolescents reside in Africa. Nigeria has about 21% of its population as adolescents. Adequate nutrition knowledge, attitude and practices (KAP) among adolescents are necessary for improved nutrition status. However, there is limited data on nutrition KAP among adolescents to inform decision-making in the Northern Nigeria. The study assessed the nutritional status, knowledge, attitude and practices of secondary school girls in Kano, Nigeria. Descriptive research design was used for data collection, 137 students 10-22 years were randomly selected for the study. Data was collected using modified KAP questionnaire developed by the Food and Agricultural Organisation of the United Nation (FAO-UN). Height, weight was measured and used for the calculation of Body Mass Index (BMI). Data were analyzed using SPSS-20. Correlation analysis was used to assess relationship between Nutritional knowledge, attitude and practices. P value of <0.05 was considered statistically significant. Results obtained indicated that majority of the participants (55.42%) were underweight, 43.06% normal, 0.79% overweight and 0.73% obesed. Nutritional Knowledge was found to be 62.77% good, 21.39% fair and 15.84% poor. Nutritional attitude and practice were found to be 16.06% good, 50.36% fair, 33.58% poor, and 1.46% good, 15.33% fair, and 83.21 poor respectively. Correlation between knowledge and attitude, knowledge and practice, as well as practice and attitude were 0.338 (p=0.001), 0.058 (p= 0.504) and 0.235 (p= 0.006) and respectively. Therefore, the study reveals poor nutritional status, adequate knowledge and no significant correlation was found between knowledge and practice.
Key words: Adolescent, Nutritional Knowledge, Attitude and Practice.

INTRODUCTION
Nutritional status has been describe as taking of adequate nutrients from foods, both in quality and quantity and it also been described as body ability to utilize the nutrient in the food appropriately to meet its metabolic needs for fitness and health (Adegun *et al.*, 2013). The world is home to approximately 1.2 billion individuals aged 10–19 years forming roughly 18% of world total population. Adolescent's number has found to double since 1950 (Adegun *et al.*, 2013).

Because of important changes in body composition during adolescence, and particularly during the puberty-related growth spurt which varies in its timing, conducting an assessment of under nutrition, overweight and obesity is more complex in adolescents than it is in adults or younger children. Much less is known and carried out with respect to adolescent anthropometry than in it is for the younger age groups. It is possible that rapid changes in somatic growth in adolescence, there is problems in dealing with variations in the maturation rate that is it differ between individuals, and researchers are getting it difficult to separate normal variation and those associated with health risk, this have became deterrents to the development of a corpus of scientific knowledge that is linking adolescent anthropometry with determinants and outcomes of health (WHO, 2005a)**.**

Anthropometry is the single most universally, applicable, inexpensive and non-invasive method available to assess the proportion, size and composition of human body (WHO, 2005b). Assessment of nutritional status is carried out in order to improve human health.

Malnutrition, both under-nutrition and over nutrition, refers to health impairment resulting from an excess, deficiency or from nutrient imbalance. It is of public health significance

among adolescents across the world. The co-existence of overweight, obesity and underweight are common in developing countries despite the prevailing poor socio-economic status and are found to be increasing proportionally over time (Sturm, 2002).

It has been identified in modern age that lifestyle is the most important factor in health maintenance and avoiding different diseases especially chronic non-communicable diseases. The individuals' nutrition habits are the chief reasons for changing lifestyle (Pala *et al.*, 2013).Therefore, this study was aimed at assessing the nutrition knowledge and attitude, and their association with dietary practices and nutritional status of secondary school students (adolescents) in Kano state.

MATERIAL AND METHODS
Study Area
The study was conducted at Girls Science and Technical College, Abdullahi Bayero Road Nasarawa Local Government, Kano state. The school was established in 1998 as girl's science and technical with 120 student currently have 1487 students.

Sample size
The sample size was determined using Yamane formular (Yamane, 1967).

$n = N/(1 + N(e)2)$

Where

n= number of sample size

N= the population size

e= the error of 8% point, e= 0.08

n= 1487/ (1+14870.(08)2)

n= 1487/(1+1487x0.0064)

n= 1487/(1+9.5168)

n= 1487/(1+9.5168)

n= 1487/10.5168

n= 141.39 $\cong$ 141

To account the non-respondent 120% of 141 was added, it make a total of 150

Ethical Approval
The permission to conduct the research was obtained from the Science and Technical School Board. The participants gave consent following satisfactory explanation of the study protocol.

Questionnaire
A structured modified K.A.P questionnaire was used to collect information on the subjects' nutritional knowledge, attitude and practice using self - administered method. The participants were briefed on how to fill the nutrition KAP questionnaire and were left to fill after measuring and recording their height and weight. The questionnaire was also design to collect information on the socio-demographic characteristics of the subjects. The questionnaire include total of 14 questions (6 for practices, 3

for knowledge and 5 for attitude). Final score was calculated based on the percentage for each individual score for each of knowledge, Attitude and Practices. A score above 75% was considered to be good, between 50% to 74% were reported as fair and <50% to be Poor (Nazefah *et al.*, 2017) .

Anthropometric Measurement
The anthropometric measurement was taken using World Health Organization acceptable standard (WHO 2005)b . Height was measured using tape of 2 meter long. The tape were hanged on a vertical wall and the respondents were asked to stand against the tape and measurement was taken by putting ruler over their head to the hanged tape, and the reading was taken to the nearest 0.1cm after they remove their head tie, ribbon and shoes.

A bathroom weighing scale of 120 kg weighing capacity was used to measure the weight of the respondents. The scale was placed on a flat ground and set at 0 kg. Participants were asked to remove their shoes, head tie and anything that can affect the weighing result. Weight of each participant was recorded to the nearest 1.0 kg.

Statistical analysis
Descriptive (Frequency, percentages) and correlation analysis test was used to assess the relationship between nutritional Knowledge, attitude and practice with a significant level set at p <0.05.

RESULTS
Table 1 shows that almost all of the respondents 67 (60.95%) are at the age range of 14-17 with the least 01 (00.73%) within 10-13 years. It also showed that all 137 (100%) belong to Hausa/Fulani tribe.

Table 2 presents the body mass index of the respondents based on WHO classification. N=137

Table 3 shows the percentage of the respondents nutritional Attitude, Knowledge and practice. It shows that, majority of the participants (55.42%) were underweight, 43.06% normal, 0.79% overweight and 0.73% obesed. Nutritional Knowledge was found to be 62.77% good, 21.39% fair and 15.84% poor. Nutritional attitude was found to be 16.06% good, 50.36% fair and 33.58% poor. While nutritional practice was 1.46% good, 15.33% fair, and 83.21 poor. Correlation between knowledge and attitude, knowledge and practice, as well as practice and attitude were 0.338 (p=0.001), 0.058 (p= 0.504) and 0.235 (p= 0.006), respectively.

Table 4 showed that there is significant correlation between the nutritional Knowledge and attitude 0.338 (p= 0.001), and that of Practice and Attitude 0.058 (p= 0.504) show no statistical correlation unlike that of Knowledge and Practice 0.235 (p= 0.006) as the p-value is greater than 0.05 as choose by this researcher.

Table 1: Demographic characteristics of the respondents

Parameters	Frequency	Percentage (%)
Age (year)		
10-13	01	00.73
14-17	132	96.35
18-22	04	2.92
Tribe		
Hausa/Fulani	137	100.00
Yoruba	00	00.00
Igbo	00	00.00
Others	00	00.00

Table 2: Body mass index (BMI) of the respondents

BMI (kg/m^2)	Status	Percentage
<18.5	Underweight	55.42
18.5 – 24.9	Normal	43.06
25.0 – 29.9	Overweight	0.79
>30	Obesity	0.73

Table 3: Nutritional Knowledge, Attitude and Practice. N=137.

Parameters	Frequency	Percentage (%)
Attitude		
Poor	22	33.58
Fair	69	50.36
Good	46	16.06
Knowledge		
Poor	08	15.84
Fair	43	21.39
Good	86	62.77
Practice		
Poor	02	83.21
Fair	21	15.33
Good	114	01.46

Table 4: Correlation between Nutritional Knowledge, Attitude and Practice. N=137

Parameters	r- value	p- value
Knowledge and Practice	0.058	0.504
Knowledge and Attitude	0.338	0.001*
Practice and Attitude	0.235	0.006*

*there is significant correlation.

DISCUSSION

This study indicate that more than half of the participants (55.48%) were underweight (table 2), that is they have Body Mass Index (BMI) of <18.5 kg/m^2. Underweight individuals have body weight which is too low to be healthy (Begum, 2008). Table 3 shows that, majority of participants (62.77%) have good nutrition knowledge but poor practice (83.21%). This could be attributed to the fact that, their diet decision is mostly by their parents. The unhealthy BMI could be due to poor nutrition practice. High metabolism is another factor which could lead to low BMI. Adolescent period is a time of rapid growth after infancy (Begum, 2008), it may involve high metabolism even if high energy food is consumed because at that stage the body has an alternative/ additional way of burning extra energy consumed.

Different forms of foods vary in nutritive values and an average consumer is not aware of how to make a wiser food choice. Result of this study indicates the need for serious concern to make interventions and programmes such as school feeding programmes to assuage the situation.

The findings of this study concords with that of Reddy *et al.*, 2009, who reported that, majority (60.3%) of adolescents subjects studied were underweight, 38.8% were normal and 1.0% were overweight. Underweight can lead to some disease conditions, and the earliest sign of underweight/undernourishment is reduced physical activity followed by poor weight gain, muscle wasting, blindness, Xeropthalmia (the general name for ocular manifestation of vitamin A, rickett, beri-beri and disease of various nutrients (Begum, 2008). Underweight people are susceptible to infection as nutrients are needed for body building and function of body defense cells and enzymes. Therefore, under nutrition could lead to low immune response hence low resistivity to infection. It affects psychological efficiency, reduces power for concentration and decision making, and withstanding calamities is very poor (Begum, 2008). Functional capacity of various organs is reduced due to deficiency of essential nutrients which could lead to many conditions such as osteoporosis, frequent episode of sickness and anemia (Daniels, 2006).. Also, as they are females and at their reproductive age, it can affect their mensturation periods, usually women who are underweight may not have regular periods, it may be delayed or absent. Irregular or absent of menstruation can cause infertility. Premature birth according to a study published in an international journal of obstetrics and Gynaecology, a woman who is underweight and pregnant is at a higher risk for pre-term labor.

CONCLUSION

The study reveals poor nutritional status, adequate knowledge and no significant correlation was found between knowledge and practice. Thus, poor nutrition knowledge practice could lead to poor nutritional status

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