



NUTRITIONAL STATUS OF ADOLESCENTS OF DANKANDE COMMUNITY OF KADUNA METROPOLIS.

¹*Abdullahi H, ¹Anigo M. K, ¹Owolabi A. O, ²Alhassan U, ¹Sallau A. B, ¹Awal M. I, ¹Abubakar Y. S, ¹Saliu M. A, ¹Hassan S. M, ³Jajere U. M, ¹Luka J

¹Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria-Nigeria

²Department of Plant Science, Institute for Agricultural Research, Ahmadu Bello University, Zaria-Nigeria

³Department of Pharmacognosy and Drug Development, Faculty of Pharmaceutical Science, Gombe State University, Gombe-Nigeria

*Corresponding author's email: get2harun@gmail.com

ABSTRACT

Studies on the nutritional status of adolescents in Dankande community of Kaduna metropolis were carried out. Adolescence is a period between 10 to 19 years of age. This period is a critical period where a healthy diet is needed for proper growth, development, academic performances and human capital development. A validated semi-structured questionnaire was used to assess socio-demographic characteristic of the adolescent caregivers and dietary pattern of the adolescent while weight, height and BMI were used to assess the anthropometry indices of adolescent. 37.2% of adolescents were between age 10-14 years while 62.8% were between 15-19 years. Also, 5.1% of the adolescents were married, 88.5 were single and 6.4% widowed. (19.2%) of adolescents has no formal education, (2.6%) completed primary school, (29.5%) uncompleted primary school, (2.6%) completed Junior Secondary School, (19.2%) uncompleted Junior Secondary School, while (1.3%) completed Senior Secondary and (25.6%) did not complete Senior Secondary respectively. However, on average (35.9%) of adolescent were dieting and (64.1%) were not dieting while (32.1%) were concerned about their weight and (67.9%) were not concerned about their weight. Few adolescents were losing control of their weight (24.4%) while the majority had their weight in check (75.6%), they engaged in physical activity (85.9%), while many adolescents spent more than two hours per day watching tv/games (69.2%). 17.9% engage in smoking while (5.1%) are involved in drinking alcohol, beer or wine. The nutritional status of adolescents of Dankande community of Kaduna state (56.4%) is good when compared with the national average.

KEYWORDS: Kaduna, Dankande, Adolescents, Nutritional status

INTRODUCTION

Nutrition is the science that relates food to the functioning of the body. The food we eat is digested and metabolized in the body then the chemical components in them perform special functions like growth, maintenance and repair (Coila, 2015). The nutritional status of an individual for a given nutrient is the balance between the dietary intake of the nutrient and its expenditure. Nutritional studies on Adolescents show that malnutrition continues to be a major health problem (Carlin *et al.*, 2007). Adolescents age corresponds approximately to the period from 10 to 19 years. It begins at the period of high mortality risk and continues through most adolescent growth spurts and sexual maturation to young adulthood. (Zalilahet *al.*, 2000).

Breakfast is the first meal of a day, most often eaten in the early morning before undertaking the day's work. Some believe it to be the most important meal of the day. The word refers to breaking the fasting period of the prior night (Lien, 2007). Breakfast is widely acknowledged to be the most important meal of the day. Children who habitually consume breakfast are more likely to have favourable nutrient intakes including a higher intake of dietary fibre, total carbohydrate and lower total fat and cholesterol (Deshmukh-Taskaret *al.*, 2010). Healthy eating makes a large contribution to daily micronutrient intake, Iron, B vitamins (folate, thiamine, riboflavin, niacin, vitamin B6, and vitamin B12) and Vitamin D are approximately 20-60% higher in Adolescents who regularly eat compared with meals skippers (Dutta, 2007; Mahalakshmi, 2000). Consuming regular meals can also contribute to maintaining a body mass index (BMI) within the normal range (Balvin-Frantzen *et al.*, 2013). Two systematic reviews report that children and adolescents who habitually consume breakfast (including ready-to-eat-cereal (RTEC)

have a reduced likelihood of being overweight. Meals consumption is also associated with other healthy lifestyle factors (Szajewska and Rusczyński, 2010). Adolescents who do not consume food are more likely to be less physically active and have a lower cardiorespiratory fitness level. Moreover, there is evidence that healthy eating positively affects learning in adolescents in terms of behaviour, cognition, and performance (Hoyland *et al.*, 2009).

Adolescents who eat healthy food are typically in better health overall as well. They are less prone to obesity and illness, leading to fewer sick days, which can cause Adolescents to fall behind in schoolwork (Coila, 2015).

In communities or areas that lack access to safe drinking water, less available foods and lack of accessibility of foods are additional health risks that present a critical problem (Kathry *et al.*, 2005).

The importance of the nutritional status of adolescents cannot be overemphasized. Data is lacking on the nutritional status of adolescents who live in the Dankande Community of Kaduna metropolis.

Adolescence is a time where individuals face a myriad of physical, cognitive, psychological and social changes, presenting a time of Stress and ambiguity (Stolt *et al.*, 2003).

Experiencing Stressful life events during this time introduces yet another challenge for the adolescent to address. There is limited evidence, however, on nutrient intakes and the nutritional status of adolescent in Kaduna state (Sandercock *et al.*, 2010).

This study, therefore, gave information on the nutritional status of adolescent aged 10-19 years in the Dankande community of Kaduna state and provided baseline data that can be used for future policy and decision making.

MATERIALS AND METHODOLOGY

This research work was carried out in the Dankande community of Kaduna metropolis and the population comprises Adolescents from different ethnic groups. This survey work employed the use of semi-structured questionnaires to obtain information such as socioeconomic status of parents, household care resources, feeding practices, hygiene practices, food frequency questionnaire, adolescent information and anthropometric methods which involves the use of instruments such as weighing scale (electronic bathroom scale of 12kg capacity with an increment rate of 100g) and measuring tape to obtaining the adolescent measurements.

The sample size for this study was obtained from 100 households and the sample population were adolescents. A simple random sampling method was used to determine the sample size of 100 adolescents within the age of 10 to 19 years old. Using the formula to calculate the sample size. The calculation of the sample is as follow using 7% estimated prevalence of malnutrition in a study area.

The sample size was calculated using the conventional formula:

$$n = \frac{z^2 pq}{d^2}$$

Where:

n = the desire sample size

z= the standard normal deviate usually set at 1.96 (which corresponds to the 95% confidence level)

p= the prevalence of malnutrition in the target population (7% estimated prevalence of undernutrition in a study location since 2014; NNHS, 2018).

q= 1-p

d= absolute precision or accuracy, normally set at 0.05.

$$n = \frac{(1.96)^2(0.07)(0.93)}{(0.05)^2}$$

$$n = \frac{(3.8416)(0.07)(0.93)}{(0.0025)}$$

= 100

One hundred questionnaires were distributed to adolescents within the sample area of the community using simple random sampling. Each adolescent who matched the criteria between the age of 10 to 19 year. Their nutritional status, dietary pattern, and lifestyle were assessed from their responses.

Data were coded, validated and analyzed using SPSS package version 20. Frequencies, percentages and cross-tabulations were generated to reflect the demographic characteristics of the populations.

RESULT

One hundred questionnaires were distributed to 100 adolescents of the Dankande community of Kaduna states metropolis, only 78 were retrieved and 100% of the sample size used for the data analysis.

Table 1: Demographic characteristics of adolescents.

Characteristics	n=78	Frequency	Percentage
GENDER			
Male		72	92.3
Female		6	7.7
MARITAL STATUS			
Married		4	5.1
Single		69	88.5
Widowed		5	6.4
Total		78	100
AGE GROUP			
10-14		29	37.2
15-19		49	62.8
LEVEL OF OCCUPATION			
Civil servant		4	5.1
Trader		22	28.2
Farming		34	43.6
Craftsman		17	21.8
Others		1	1.3

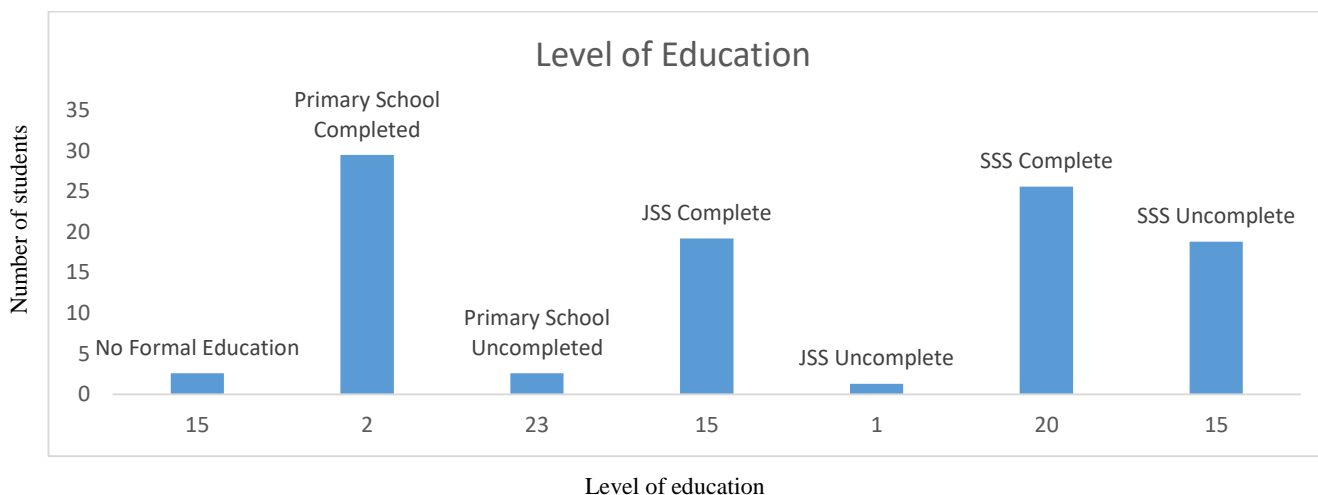


Figure 1: Level of Education Adolescents of Dankande Community of Kaduna Metropolis

Table 1.0 and Figure 1.0 shows that out of the 78 respondents, male where the majority 72 (92.3%) and only 4 (5.1%) are married while 69(88.5%) are single and 5 (6.4%) are widowed. It also shows the age distribution of the respondents where 29(37.2%) of the respondent are between the age of 10 — 14 while 49(62.8%) are between the age of 15 -19. It also shows that (5.1%) of the respondent are civil servant, 4(28.2%) are traders, 22(21.8%) are farmers, 17(1.3%) are craftsman while 34(43.6%) are other professions. It also indicates the educational background of the respondents which (19.2%) has no formal education, 15(2.6%) completed primary school, 2(29.5%) primary school uncompleted and 23 (2.6%) completed J.S.S, 15 (19.2%) J.S.S uncompleted while 1(1.3%) completed S.S.S and S.S.S uncompleted 20(25.6%) respectively.

Table 2: Socio-economic status of the care guide of the adolescents of Dankande community Kaduna metropolis.

Status	n=78	Frequency	Percentage
SOURCE OF DRINKING WATER			
Private well		11	14.1
Public well		13	16.7
Public tap		11	14.1
Borehole		38	48.7
River/Stream		4	5.1
Others		1	1.3
METHOD OF WATER STORAGE			
Clay pot		19	24
Plastics container		52	66.7
Aluminum container		6	7.7
Others		1	1.3
HOUSEHOLD METHOD OF FOOD STORAGE			
Refrigeration		34	43.6
No means of storage		5	6.4
Other; cooler		39	50
MAIN TYPE OF TOILET			
Bush		23	29.5
Water system		14	17.9
Pit latrine		34	43.6
River		7	9
PRIMARY METHOD OF REFUSE DISPOSAL			
Bush		7	9
Refuse dump		51	65.4
City services		19	24.4
Others		1	1.3

Table 2 shows that the adolescents of Dankande community of Kaduna metropolis have the main source of drinking water with borehole (43.6%) been the highest, method of storage of water with plastic container (66.7%) been the highest, method of waste disposal refuse dump (65.4%) been the highest means of waste disposal, the main type of toilet pit latrine (43.6%) been the highest means, household method of food storage others means (43.6%) respectively. Therefore, we conclude that the socio-economic care guide for the adolescents of the Dankande community of Kaduna metropolis it's of high in the community.

Table 3: Individual Indices of Adolescents by Age

AGE GROUP n=78	HEIGHT	WEIGHT	BMI
10-14	2.52	35.2	14
15-19	2.92	53.6	18.4

Table 4: Nutritional status of adolescents of Dankande community of Kaduna metropolis Using their Body Mass Index

STATUS n=78	FREQUENCY	
	FREQUENCY	PERCENTAGE
Underweight	27	34.6
Normal	44	56.4
Overweight	3	3.8
Obese	4	5.1

Table 3 and 4 show the nutritional status of adolescent of the Dankande community of Kaduna metropolis classifies body mass index of each adolescent in which 27(34.6%) are underweight, 44(56.4%) are normal, 3(3.8%) are overweight and 4(5.1%) are obese respectively, we, therefore, conclude that the nutritional status of adolescents of Dankande community of Kaduna metropolis is of normal nutrition status.

Table 5: Life pattern of the adolescents of Dankande community Kaduna metropolis.

Opinion	Frequency	Percentage
DIETING TO LOSE WEIGHT OR MAINTAIN OR WEIGHT		
Yes	28	35.9
No	50	64.1
CONCERNED ABOUT YOUR WEIGHT		
Yes	25	32.1
No	53	67.9
LOSE WEIGHT OR CONTROL YOUR WEIGHT BY VOMITING, TAKING DIET PILLOR LAXATIVES OR NOT EATING		
Yes	19	24.4
No	59	75.6
PARTICIPATE IN PHYSICAL ACTIVITY (WALKING, RUNNING OR RIDING A BIKE) IN THE PAST		
Yes	67	85.9
No	11	14.1
SPEND MORE THAN 2 HOURS PER DAY WATCHING TELEVISION DVD OR PLAYING COMPUTER GAMES		
Yes	54	69.2

No	24	30.8
WATCH TELEVISION DURING MEALS		
Yes	42	53.8
No	36	46.2
SMOKE CIGARETTES OR CHEW TOBACCO		
Yes	14	17.9
No	64	82.1
EVER USE ANY OF THE FOLLOWING		
Alcohol, beer, or wine	4	5.1
Steroids (without Doctors permission)	5	6.4
Never	69	88.5

Table 5 shows the dietary pattern of the adolescents of Dankande community of Kaduna metropolis with breakfast, lunch and dinner (98.7%, 77.6%, 81.6%) are mostly like not missed among them, 48.7% skips breakfast 3 or more times a week while 51.3% don't, 43.6% skips lunch 3 or more times a week while 56.4% don't, 39.7% skips dinner or supper 3 or more times a week while 60.3% don't, 48.7% have dinner with their families 4 and more times a week, while 51.3% don't, 52.6% fix their meal and 47.4% buys their meals, 57.7% don't eat or take their meal from a fast-food restaurant 2 or more times a week, while 42.3% do, 69.2% are not on any special diet, while 30.8% are on

special diet for medical reason and 100% are not vegetarian respectively. We, therefore, conclude that the dietary pattern of the adolescents of Dakande community Kaduna metropolis is normal.

Figure 2: Dietary Pattern of the adolescent of Dankande community of Kaduna Metropolis

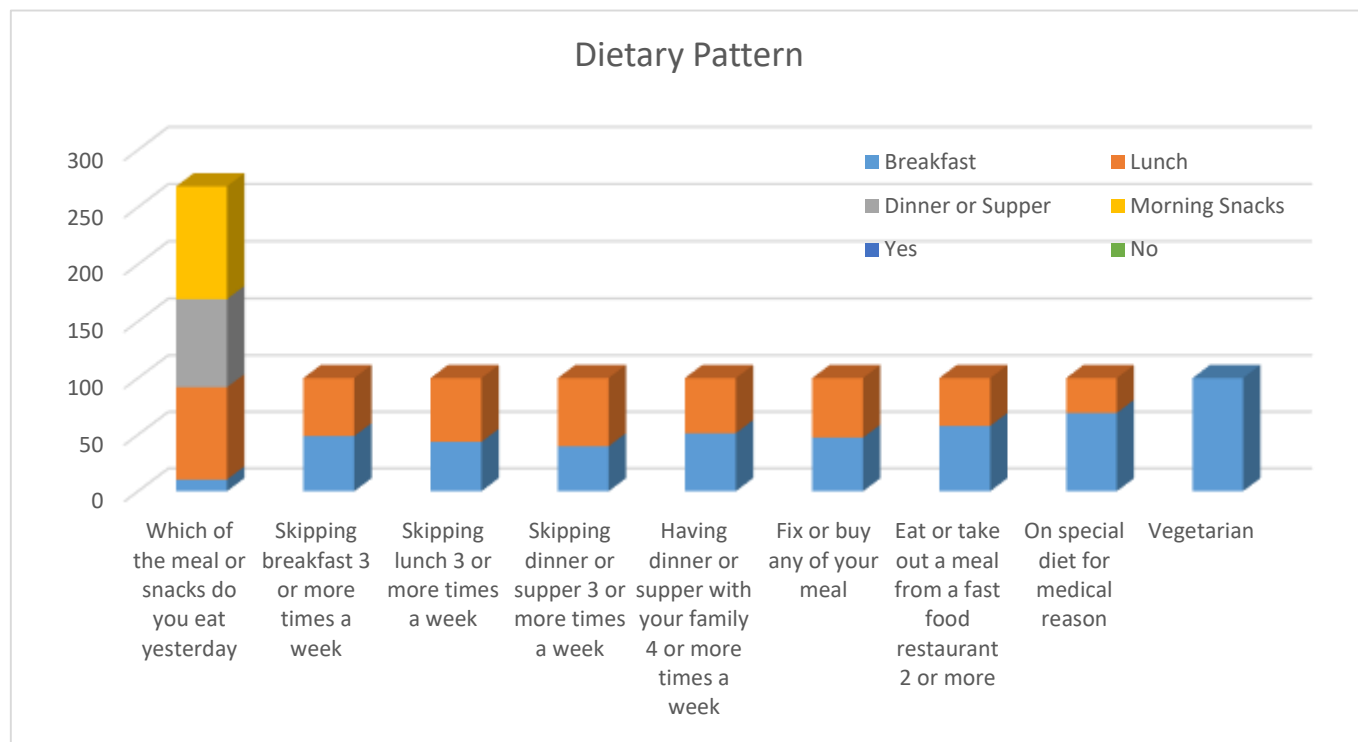


Figure 2 shows life pattern of the adolescent in Dankande community of Kaduna metropolis 67.9% are not concerned about their weight while 32.1% are concerned, 64.1% are not dieting to lose their weights while 35.9% are dieting to lose their weight, 85.9% participate actively in physical activities, while 14.1% are not, 69.2% spend more than 2 hours per day watching television and DVDs or playing computer games, while 30.8% don't, 53.8% watch television during taking their meals and 46.2% don't, 17.9% smoke cigarettes or chew tobacco and 83.1% don't, finally 5.1% ever use steroid under doctor permission, 6.4% ever use steroid not under the doctor permission and 88.5% has never used any. Since the percentages of no outweigh the percentages of yes, we, therefore, conclude that the life pattern of adolescents of the Dankande community of Kaduna metropolis is healthy.

DISCUSSION

Although several national nutrition programs are in operation for the benefit of adolescents, the prevalence of nutritional deficiencies among adolescents continues to be a public health concern (Vijayaraghavan, 2002). In the present study, adolescents in the age group of 10-19 years were interviewed and examined. A significant difference between the nutritional status and gender (<0.05) was found. Moreover, early adolescents are more vulnerable to malnutrition than late adolescents. The study conducted by Sambhar, had comparatively not similar findings with the present study, namely, that 56.4% of the adolescents were normal, 3.8% were overweight, 5.1% were obese and 34.67% were undernourished. It was reported that 32.3% of urban school adolescents were in the normal range while 65.3% were either overweight or obese (Kathry *et al.*, 2005). The extent of undernutrition is lower in the present study than that reported in one Indian study (53%) (Kurz, 1996) and two other Kenyan studies (61%) (Cookson *et al.*, 1998) and (57%) (Woodruff *et al.*, 1998).

In the present study, it was also found that the type of family, parent's education, and socioeconomic status of the adolescents play a pivotal role in their nutritional status. Parents with higher education show significant association with the nutritional status of the adolescents. It was also seen that the higher the socioeconomic status, the better the nutritional status of the adolescents. Documented findings in developing countries like India and Ghana report a positive association between socioeconomic status and BMI (Vilasini, 2001). The importance of parental education in raising the nutritional status of children is well known (Spyckerelle *et al.*, 1990). Mothers' education has a profound effect on preschool children, whereas fathers' education seems to have greater importance in the care of adolescents (Keejeong, 2005). It was reported that when the nutritional status of adolescents was examined against the highest education in the family, it was evident that with the increasing level of education decline in undernutrition was noticed among the subjects. In comparison to joint families, nuclear families were able to maintain the normal nutrition status of the adolescents (Choudhury *et al.*, 2015).

Despite the normal physical activity of adolescents of the Dankande community of Kaduna metropolis in comparison to others, the differences observed were not significantly different. In American adolescents, a lower physical activity level has been reported to result in a higher BMI (Srivastava *et al.*, 2005). Likewise, other studies in Iran on adolescent girls of Semnan and Tehran provinces showed that BMI tends to increase with decreasing the level of physical activity (Duncan *et al.*, 2007). The relation between BMI and the level of physical activity may be explained by the fact that the low-physical activity levels reduce energy metabolism and muscular activities as well as fat oxidation in body tissues which favour body excess weight. The lack of regular physical activity and exercise is considered an important factor in obesity development (Cook and James, 1994).

The strength of this study is that it can show the poor nutritional status among urban adolescents in Dankade community. It also reveals that the problem of malnutrition is multifaceted and has links with various socioeconomic and demographic factors. This study had a limitation, in that a 3-7day food intake questionnaire was used instead of a 21 -days. The reason behind using a shorter version of the questionnaire was to exclude recall biases.

CONCLUSION

The overall nutritional status of the adolescents was satisfactory. The health and nutritional status among the

adolescents was found to be normal. The prevailing dietary practices of adolescents have been up to the mark in the Dankande community of the Kaduna metropolis. Such practices may be due to normal food allocation at the family level and because of individual likes and dislikes. The macronutrients and micronutrients deficiencies lead to a decrease in the growth spurt, for both physical and mental health.

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