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Nutrition Education on Food Choices of Secondary School Students in Lagos State, Nigeria

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Abstract. Adolescents face the risks of diet-related diseases during transition to adulthood. These diseases could lead to morbidity or mortality when dietary information is not within their reach to improve their dietary behaviour for the prevention of these diseases. This study examined nutrition education on food choices of secondary school students in Lagos Island Local Government Area, Lagos State, Nigeria. Pre test - post test experimental and control group designs were used for the study. The study population comprised 5,946 senior secondary school students in Lagos Island Local Government Area. Multistage sampling technique was used to select one hundred and twenty one (121) participants from two senior secondary schools who were assigned into two groups, namely experimental and control groups. Research instrument is a modified Nutritional Behaviour Questionnaire (r=0.73). Researcher Developed Nutrition Education Manual was also used for the intervention sessions. One research hypothesis was formulated to guide the study. The data collected was analysed using Analysis of Covariance. The hypothesis was tested at 0.05 level of significance. The result of data analysis revealed that the hypothesis was rejected. The findings showed that nutrition education significantly improves food choices of the students. It was concluded that nutrition education improves the food choices of students. The study recommended that all secondary school students should be exposed to nutrition education to improve their choices of food for consumption. This will help improve their behaviour and also reduce the risk of diet related chronic diseases.

Keywords: Behaviour, Diets, Food Choices, Nutrition Education, Secondary School Students.

Introduction

Diet is the sum of food a person consumes daily in a regulated manner to decrease, maintain, or increase body weight, or to prevent and treat diseases. Nutrition involves nourishment at every level (Leonard, 2016). Dieting is the practice of eating food in a regulated manner to change the body weight, prevent and treat diseases (US Department of Health & Human Services, 2017). Health promotion from early stages of life, by fostering healthy eating behaviour, has the potential for a major impact on health and well-being, during childhood and later stages of life. Eating behaviour is attributed to diet related diseases, such as obesity, diabetes mellitus, cardiovascular diseases and cancer. The main determinants of obesity epidemic are physical inactivity and accumulation of excessive calories from sugar, starches or fats which predisposes the consumers to Type 2 diabetes (World Health Organization, 2019).

Nutrition education is any set of learning experiences designed to facilitate the voluntary adoption of eating and other nutrition-related behaviours conducive to health and well-being (Department of Social & Health Services, 2019). Education can help young people to attain the knowledge and the skills that they need to make proper food choices and develop lifelong healthy eating patterns. (Sadegholvad, Yeatman, Parrish & Worsley, 2017). According to Food and Agriculture Organization (2019), specific recommendations for a healthy diet include consumption of more fruit, vegetables, legumes, nuts and grains and the reduction in intake of salt, sugar and fats and choosing unsaturated fats, instead of saturated fats and towards the elimination of trans-fatty acids. National School Health Policy (2006)

established that the aim of health promotion in schools is to set up school feeding services as a component of school health programme which indicates the importance of school feeding and dietary behaviour.

Diet related diseases are some of the major problems adolescent students encounter as a result of the changes experienced during their transition from childhood to adulthood. The rate of diet related diseases among the students is on the increase despite efforts of students to have access to sufficient, safe and nutritious meals. The reason for the increase in diet related diseases may be attributed to inadequate information on proper food choices and eating patterns, especially within the school premises. Adolescents now suffer from diseases such as obesity, diabetes and hypertension. These diseases were initially known to affect the aged. Obesity among children and adolescents is an emerging major public health challenge which has caused substantial loss of life. This health problem also triggers depression, anxiety, the feeling of low self-esteem and guilt. Inadequate diet could be in excess of fats and oils, carbohydrates or fibre which could lead to diseases like bulimia, dental caries, anorexia nervosa, anaemia and accumulation of excess calories in the body causing obesity, this can predispose students to cardiovascular diseases later in life (Owolabi, 2020).

During pubescence, there is tendency for the adolescent students to engage in unhealthy dieting which may result in absenteeism in school and loss of concentration in class. Some of the students make wrong decisions as regards what they eat and how the food should be consumed, especially in states where there is an increase in the number of food canteens and fast food restaurants. The students may engage in snacking, irregular consumption of junk food which entails consumption of diets high in fat, soft drinks, sugar and refined foods and confectionaries with little or no nutritional value thereby affecting their health status (Owolabi, 2020).

The researchers observed that the studies conducted on nutrition are descriptive in nature and do not focus on education intervention to alleviate problems related to food choices in secondary schools in Lagos State. School subjects such as Food and Nutrition, Physical and Health Education, where nutrition knowledge could be acquired are now electives. Adedini, Aina & Ogbo (2016) reported the prevalence of diet related diseases in Lagos State without exemption of school children particularly in Lagos Island with no clear intervention targeted at these students. There is need to educate students in order to make proper food choices and also know what they eat and how it is being consumed. The importance of nutrition education as an intervention cannot be underestimated for positive change in behaviour. It is against this backdrop that the researchers carried out an investigation on the nutrition education on dietary behaviour of secondary school students in Lagos Island Local Government Area, Lagos State, Nigeria. It is therefore important to carry out an intervention of nutrition education and food choices of students in Lagos State.

1.1 Research Hypothesis

There is no significant effect on nutrition education and food choices of secondary schools students in Lagos Island Local Government Area, Lagos State.

2. Research Methodology

The pre-test, post-test experimental and control research designs were adopted for this study. It involved two groups of participants: Group A (Experimental Group) and Group B (Control Group). The population comprised all senior secondary school students in Lagos Island Local Government Area. The population of senior school students in Lagos Island is 5,946 (Lagos State Government, Ministry of Education, 2019).

Multistage sampling process was used to select 121 senior secondary school students for the study. The first stage of the multi- stage sampling process was the selection of two (2) from eleven (11) state owned senior secondary schools in Lagos Island Local Government using purposive sampling to select the most populous mixed (male and female) senior secondary schools in the study area. The schools are Dolphin Senior High School and Eko Akete Senior Grammar School. The second stage involved the identification of students who are at risk of diet related diseases i.e. students with poor food choices using Nutritional Behaviour Questionnaire (NBQ). The research instrument was administered to all students present in Senior Secondary School (SSS 1 and 2) within the school premises. A total number of one hundred and thirty seven (137) students exhibited poor food choices. SSS 3 students were excluded because they were outgoing and writing their Secondary School Certificate Examination (SSCE). Out of the participants who exhibited poor food choices, one hundred and twenty one (121) students met the inclusion criteria with Sixty (60) participants at Dolphin Senior High School and Sixty one (61) participants at Eko Akete Senior Grammar School. The third stage involved assignment of the two

purposively selected schools into experimental and control groups using simple random sampling technique using fish bowl method without replacement. Dolphin Senior High School fell into the treatment Group while Eko Akete Senior Grammar School fell into the control group.

The research instruments used to collect relevant data for the study were: Socio-demographic Characteristics of Participants (SDCP): The instrument contains 10-items which was designed by the researchers. It focused on participants' socio-demographic information such as serial no., school, age, sex, class, religion, ethnic group, type of apartment, level of education of parent/guardian and family income and Adapted Nutritional Behaviour Questionnaire (NBQ) which contained 7-item questions designed on moderated 4-point Likert scale of Strongly Agree, Agree, Disagree and Strongly Disagree. The positive statements on the questionnaire were scored from 4 points to 1 point while negative statements were scored from 1point to 4 points. The maximum score was 28 while the minimum score was 7. The reliability co-efficient of the instrument is 0.73. To categorize the score of the instrument on low, moderate or high, a modified Ashur (1977) principle was used, thus: 0-39% (low), 40-59% (moderate), 60% and above (high). A Researcher Developed Nutrition Education Manual was developed to train the students on relevant topics on food choices. To ensure content, construct and face validity of the instruments, the research instruments were validated with the assistance of experts in Health Education, Nutrition and Dietetics. The reliability of the instrument is 0.73

A letter of introduction was obtained from the Department of Human Kinetics and Health Education, Faculty of Education, University of Lagos, Akoka, Yaba, which was submitted to the Office of the Head of Service, Public Service Office Alausa, Ikeja, Lagos State. The office gave another Introduction Letter to the Tutor General/Permanent Secretary of the district headquarter, Education District III who is in charge of the Schools in Lagos Island. The letter was approved and permission was given to conduct the research in selected schools. After the collection of the letter of approval, the researchers then proceeded with the letter to the selected schools before carrying out the study to notify the school management of the approval granted and scheduled time for the intervention was agreed upon.

With regards to the rights of human subjects, ethical approval with the reference number LREC/06/10/1192 was obtained from Health Research and Ethics Committee, Lagos State University Teaching Hospital (LASUTH). Before the administration of instrument, Assent form was filled by participants under the age of 18, Consent form was also filled by participants above the age of 18 while parental consent was also sought through the school authority.

The intervention programme lasted for eight weeks. Pre test assessment was given before the intervention and a post test was given after the intervention. Data collected for this study was analyzed using descriptive statistics of frequency counts, percentages, bar charts, pie charts and inferential statistics of Analysis of Covariance (ANCOVA) at 0.05 level of significance with the Statistical Package for Social Sciences SPSS Version 20 (IBM, New York, USA).

3. Results

3.1 Demographic characteristics of the participants

With respect to age of the participants, figure 1 shows that, of the control group, 78.7% of the respondents were between 13-15 years of age; while 21.3% of them were between 16-19years of age. Hence, the most participating students in the control group were those between 13-15 years of age.

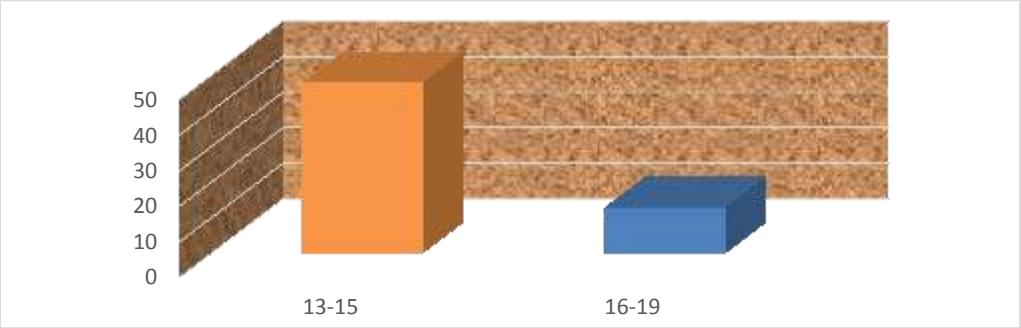

Figure 1: *Age of the control group*

Similarly Figure 2 shows the experimental group, 85% of the respondents were between 13-15 years of age; while 15% of them were between 16-19 years of age. Hence, the most participating students in the experimental group were those between 13-15 years of age.

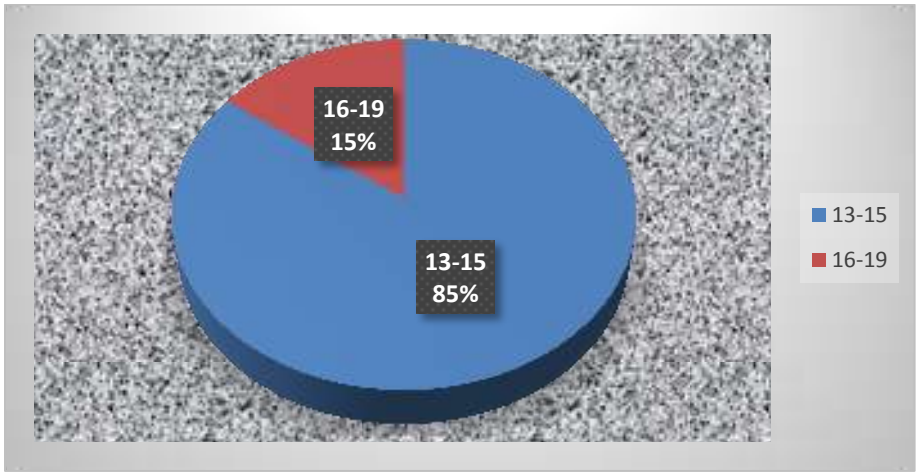

Figure 2: *Age of the experimental group*

Concerning apartment, Figure 3 shows that 19.7% the participants in the control group were living in single room apartments; 37.7% of them were living in room and parlour apartments; 18% of them were living in self contained apartments; 6.6% of them were living in mini-flats; 13.1% of them were living in two bedroom flats; while 5% of them were living in three bedroom flats. Hence, the most participating students in the control group were those were living in room and parlour apartments.

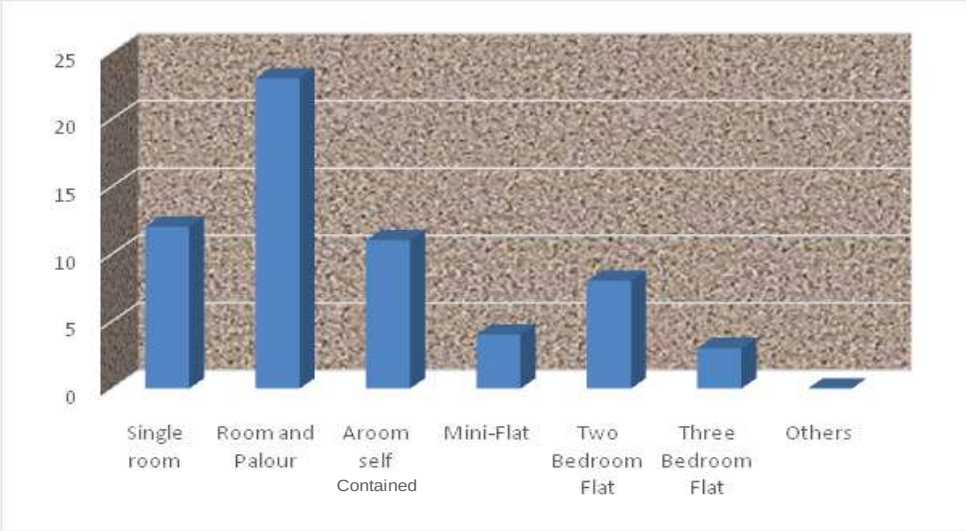

Figure 3: *Apartment of the control group*

Similarly, Figure 4 shows the experimental group, 23.3% of the participants were living in single room apartments; 40% of them were living in room and parlour apartments; 21.7% of them were living in self contained apartments; 8.3% of them were living in two-bedroom flats; while 6.7% of them were living in three-bedroom flats. Hence, most of participants in the experimental group were those living in a room and parlour apartments.

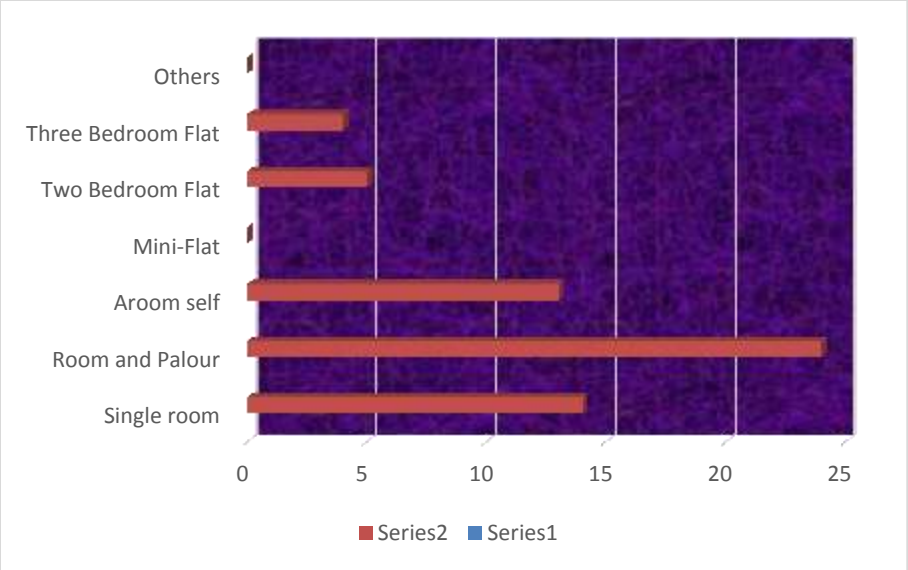

Figure 4: *Apartment of the experimental group*

With respect to educational status of the participants' parents in the control group, Figure 5 shows that none of the participant had no formal education; 19.7% of them had Primary School leaving Certificate; 42.6% of them had SSCE; 6.6% of them had first degree; 26.2% of them had second degree; while 4.9% of them had Ph.D. Hence, the most participating students in the control group have parents who had SSCE as their highest academic qualification.

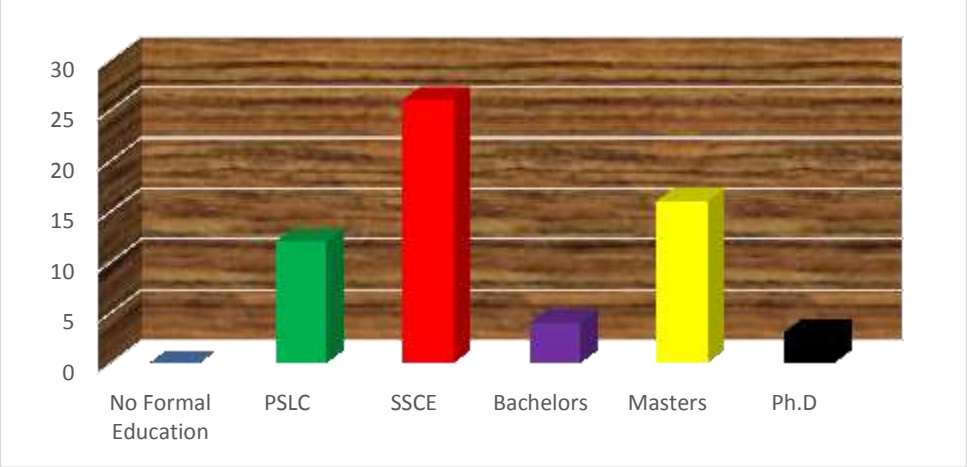

Figure 5: *Educational status of parents of the control group*

Also, for the experimental group, Figure 6 shows that 8.3% of them had no formal education; 21.7% of them had Primary School leaving Certificate; 46.7% of them had SSCE; 10% of them had first degree; 8.3% of them had second degree; while 5% of them had Ph.D. Hence, the most participating students in the experimental group have parents who had SSCE as their highest academic qualification.

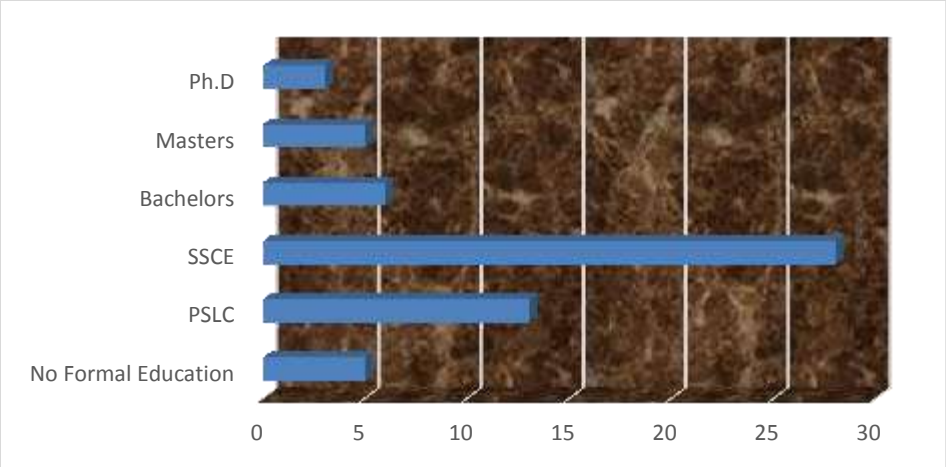

Figure 6: Educational status of parents of the experimental group

Regarding gender, Figure 7 shows that 63.9% of the control groups were male students; while 36.1% of the participants were female students. Hence, most of the participants in the control group were male students.

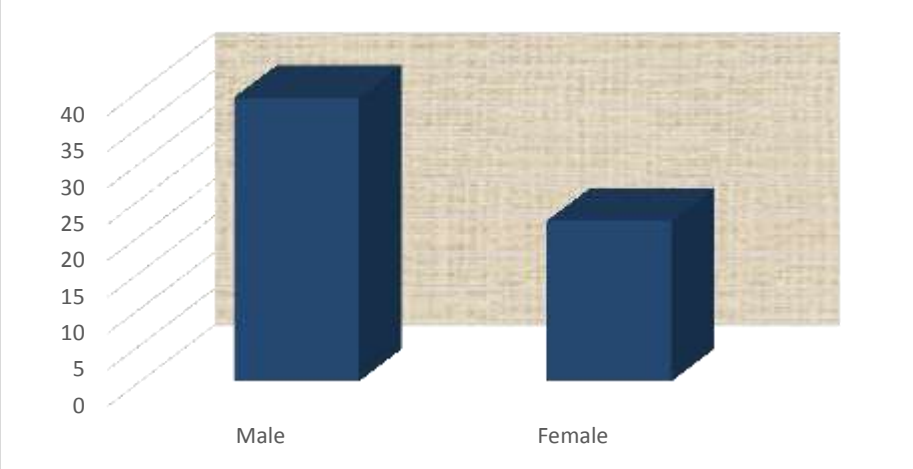

Figure 7: *Gender of the control group*

Moreover, for the experimental group, Figure 8 shows that 70% were male students; while 30% of the participants were female students. Hence, most of the participants in the experimental group were male students.

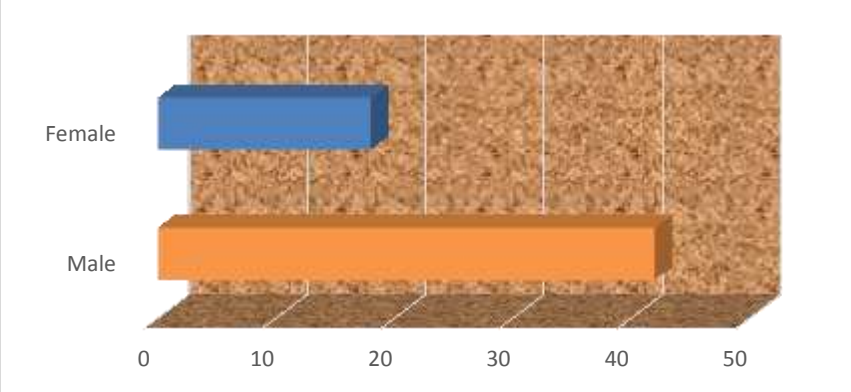

Figure 8: *Gender of the experimental group*

As for the class of the students, Figure 9 shows that 70.5% of the control group were SSS I students; while 29.5% of them were SSS II students. Hence, most of the participants in the control group were SSSI students.

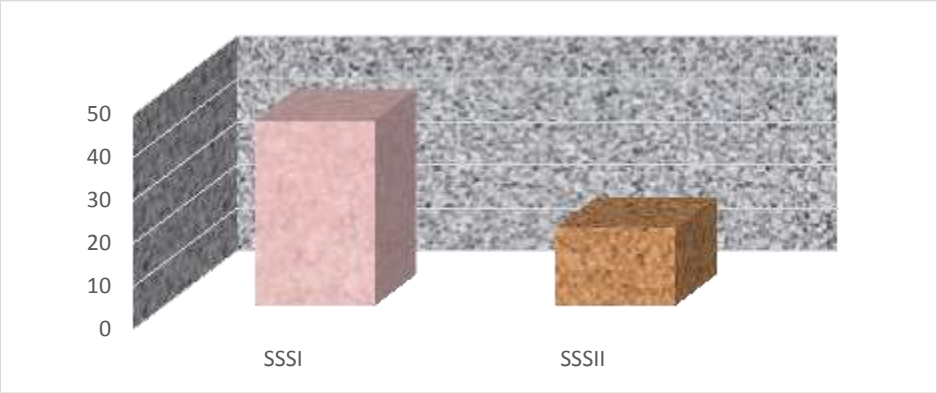

Figure 9: *Class of the control group*

Moreover, for the experimental group, Figure 10 shows that 60% of them were SSS I students; while 40% of them were SSS II students. Hence, most of the participants in the experimental group were SSSI students.

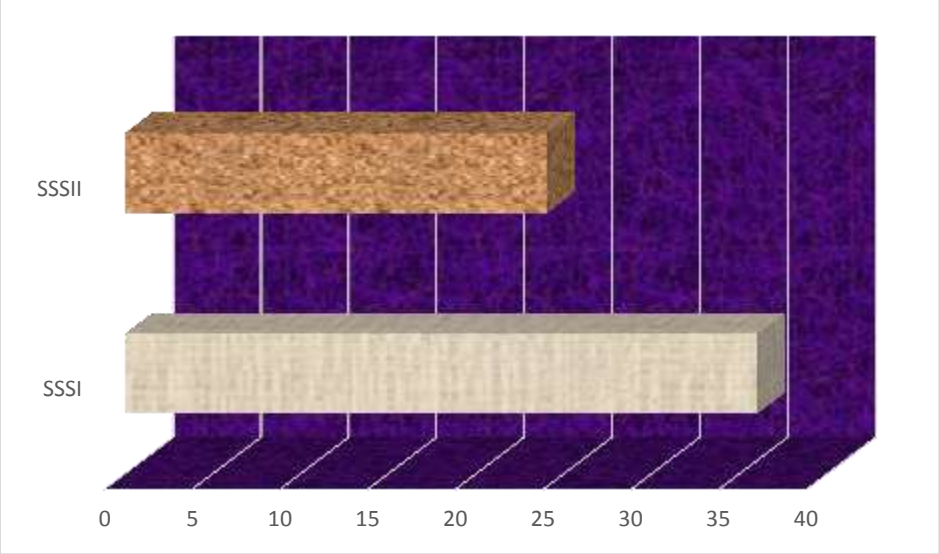

Figure 10: *Class of the experimental group*

With respect to income status of the participants' parents in the control group, Figure 11 shows that 29.5% of them were below N75,000; 49.2% of them were between N75,000 - N100,000; while 21.3% of them were above N100,000. Hence, the most participating students in the control group have their parents with income status between N75,000 - N100,000.

Figure 11: *Family income of the control group*

Also, for the experimental group, Figure 12 shows that 56.7% of them were below N75,000; 35% of them were between N75,000 - N100,000; while 8.3% of them were above N100,000. Hence, the most participating students in the experimental group have their parents with income status below N75,000.

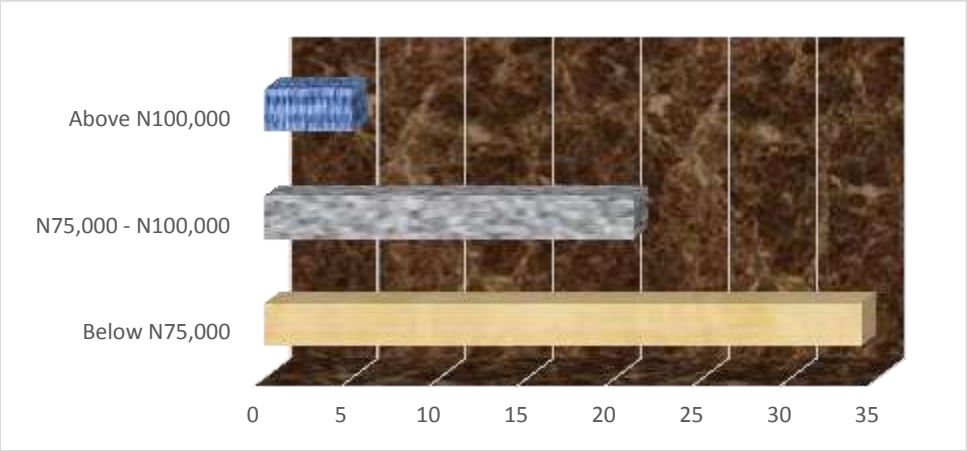

Figure 12: *Family income of the experimental group*

3.2 Testing of Hypothesis

Hypothesis One

Nutrition education has no significant effect on the eating pattern of secondary school students in Lagos Island Local Government Area, Lagos State. This hypothesis was tested using one-way Analysis of Covariance (ANCOVA) and the result is presented in Table 1

Table 1: One-way ANCOVA showing effect of nutrition education on the eating pattern of secondary school students

Source	Sum of Squares	Df	Mean Square	F	Sig.
Intervention	603.862	1	603.862	22.529	.000
Eating pattern	1.787	1	1.787	.067	.791
Error	3162.846	118	26.804		
Total	3965.467	120			

$P < 0.05$; $F(1, 118) = 3.92$

Table 1 shows that there is a significant effect of nutrition education on the eating pattern of secondary school students, because the calculated F-value of 22.529 is greater than the critical value of 3.92 given 1 and 118 degrees of freedom at 0.05 level of significance. The hypothesis is rejected therefore; Nutrition education has a significant effect on the eating pattern of secondary school students in Lagos Island Local Government Area, Lagos State.
Based on the significant F-value obtained in Table 1, a Post-Hoc analysis was done using Bonferroni method to determine which group of secondary school students differs from the other in their eating pattern and the trend of the difference. This is shown in Table 2

Table 2: Post-Hoc analysis showing pair-wise comparison between the groups on the eating pattern

(I) Group	(J) Group	Mean Difference (I-J)	Sig.[b]
Experimental	Control	5.042*	.000
Control	Experimental	-5.042*	.000

From Table 2, the pair-wise comparison of secondary school students showed that the experimental group significantly differs in eating pattern from the control group ($P = 0.000 < 0.05$).

4. Discussion of Findings

Hypothesis one stated that Nutrition education has no significant effect on food choices of secondary school students in Lagos Island Local government Area, Lagos State. The result of the analysis indicated that Nutrition education had significant effect on food choices in the experimental and control groups. Hypothesis one was therefore rejected. The reason for the impact of Nutrition education could be

attributed to the treatment package which emphasized informed the participants on making right food choices. This finding was supported by Lua and Elena (2012) who found out that nutrition education appeared to be the best method for promoting healthier diets and lifestyles. Similarly, Satia et al. (2004) reported that young people need guidance on how to make informed choices which can be achieved through nutrition education. Sadegholvad et al. (2017) opined that education can help young people to attain the knowledge and the skills that they need to make proper food choices thereby, suggested schools as ideal settings for nutrition education because of the reach to most youth, and the fact that nutrition fits into several subject areas within the school system including health, science, and consumer science. This finding further corroborates the report of Jung, Huang, Eagan & Oldenburg (2019) who examine the effectiveness of a school-based healthy eating intervention program, for improving healthy food choice behaviour among school students adopting the key aspects of social cognitive theory into the healthy eating promotion strategies at school, the program helped students raise the value of good health and nutrition, identify the benefits of adopting healthy eating patterns, develop practical skills for reading food labels and make healthy food choices through observation and hand-on experiences. The outcome intervention of the intervention based on pretest–posttest design was statistically significant; more students improved their healthy eating literacy mentioning healthy and unhealthy foods among their daily food choices.

5. Conclusion

Nutrition education has a significant effect on food choices of secondary school students in Lagos Island Local Government Area, Lagos State. The outcome of the study showed that nutrition education improves the choice of food among students. The use of various health education media such visual media (printed material), audio media (public address system) and audiovisual media (projector slide show and videos) are effective tools in disseminating information to increase nutritional knowledge, improve choice of selection of food and pattern of consumption among students.

6. Recommendations

- Nutrition education should be introduced into senior secondary school curriculum as a core subject for all the students.
- The researcher developed Nutrition Education Manual is recommended for carrying out intervention on dietary behaviours among students in Nigeria.
- School Administrators should work with health educators in order to feed students with information to exhibit proper food choices and consumption pattern.

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