IMPACT OF HEALTHY EATING EDUCATION ON SOCIO-CULTURAL FACTORS AND DIETARY BEHAVIOUR OF STUDENTS IN LAGOS ISLAND LOCAL GOVERNMENT AREA, LAGOS STATE

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Abstract

There are controversies when socio-economic status and culture are used to determine a change in behaviour after healthy eating education intervention which calls for more research in the area. The study investigated the impact of socio-economic status and culture on dietary behaviour of students after healthy eating intervention in Lagos State. The research design used for the study is a pre test - post-test experimental and control group design. The population of the study included all senior secondary school students in Lagos Island Local Government Area. The study utilised multistage sampling technique to select one hundred and twenty one (121) participants from two schools from the population of 5,946. The samples were assigned to experimental and control group. A modified General Nutrition Knowledge Questionnaire, Nutrition Behaviour Questionnaire and Healthy Eating Education Manual were used by the researchers. Two research hypotheses were formulated to guide the study. The data collected was analysed using Analysis of Covariance (ANCOVA). The hypotheses were tested at 0.05 level of significance. The results of data analysis revealed that two hypotheses null hypotheses were accepted. The findings indicated that the socio-economic status of participants' parents and participants' culture did not significantly influence dietary behaviour of participants after intervention. It was concluded that healthy eating education improves the dietary behaviour of students, irrespective of the socio-economic status of participants' parents and culture. The study recommended that schools should make provisions for adequate diet at school without being bothered about the socio-economic class and culture of the students. The learners should be trained to inculcate healthy eating habits and be treated as one irrespective of their differences.

Introduction

Unhealthy eating, due to wrong selection of food consumed as a result of poor dietary knowledge among adolescents is a risk factor of diet related diseases that can lead to death if not given adequate attention. Health is affected by many predisposing factors, including gender, family size, socio-economic status, residential condition, parental education, working status, nutritional knowledge of mothers, food availability, physical activity and social environment (Elkholy et al., 2012). Parental education is one of the important factors relating to childhood nutrition (Fadare et al., 2019). High level of education of fathers, being

the main earner and decision-maker of the family plays an important role in ensuring better nutritional status of the children (Timmons et al., 2012).

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). According to Murimi et al. (2018), nutrition education is widely used for a range of population groups as a medium to deliver healthy diet and nutrition information; however, this type of intervention is still rarely implemented for school students. During the phase of adolescence, the tendency to engage in unhealthy dieting, meal skipping, and fast food consumption is rather common. Minimal physical activity is also a norm and can likely increase the risk of osteoporosis, obesity, hyperlipidemia, diabetes, and cancer later in life. Such an unhealthy lifestyle is further linked to health-related quality of life, which is related to an individual's nutritional status (Rasheed et al., 2021). Altered nutritional uptake or deviation from the standardised dietary allowances may lead to health disturbances, commonly termed as malnutrition which includes both obesity and under nutrition. There has been a notable increase in the prevalence of overweight and obesity in developing countries (Bhurosy & Jeewon, 2014). It is observed that approximately 10% of the school going children are overweight as an outcome of unhealthy dietary habits that may further leave detrimental effects on their health status (Sahoo et al., 2015; Kansra et al., 2021). This further contributes to early onset of diseases of adulthood such as Type 2 Diabetes, arterial hypertension etc. (Heida et al., 2015) Inadequate maternal and child caring practices, food insecurity and unhealthy environment are also the underlying causes aggravating the condition (Iqbal & Ali, 2021). Malnutrition, on the other hand, has long-lasting effects on children's health and therefore should be properly checked through nutritionally adequate diets and optimal eating pattern (Saavedra, 2022).

Eating during school time was higher among students of vocational schools, from urban areas, of male sex, of highly educated mothers, and high socioeconomic status. Students of urban residence are two times more likely to eat school meal than those of rural residence. Girls are less likely to consume daily snacks and eat school meals than boys. Maternal education is a predictor of daily intake of three meals or more for secondary school students, low socio-economic status is associated with the ability to consume breakfast, lunch and school meal and the likelihood of eating with the family. (El-Gilany & Elkhawaga, 2012). Cultural influences lead to the difference in the habitual consumption of certain foods and in traditions of preparation, and in certain cases can lead to restrictions such as exclusion of meat and milk from the diet. Cultural influences are however amenable to change: when moving to another country people often adopt particular food consumption habits of the local culture (Hamilton-Ekeke et al., 2023). Access to healthy food, vital information on the reason why some foods are healthier than others, pro-healthy food attitudes and norms, and peers who enjoy the food are all important. Culture is a potentially powerful factor that could facilitate a healthy eating lifestyle (De Leersnyder et al., 2014). Cultural norms provide guidelines about the "right," "genuine," and "good" ways to live (Grayling, 2021). People who adhere to their relevant cultural norms tend to experience better life outcomes, including health and well-being (Kitayama et al., 2010).

Among some Nigerian tribes for instance, there is an absolute taboo regarding the killing and eating of animals that are believed to have aided the tribe in wars in the past (Meyer-Rochow, 2009). Absolute food taboos may also be explained by certain morphological characteristics (Schiefenhövel, 2023; Maggiulli et al., 2022).Ambrosini et al. (2009) explained that dietary behaviours during growth contribute to the establishment of lifelong eating patterns. Unfortunately, the dietary behaviours of a large proportion of Nigerian students deviate from the dietary recommendations and increase their risks of nutrition-related health problems, like obesity and insulin resistance (Onyiriuka et al., 2013). Healthy eating habits among adolescents and children are essential for healthy growth, cognitive development and other aspects of health and wellbeing. In addition, the adaption of healthy eating habit has been linked to a reduced risk of chronic diseases in their future life (Van-Cauwenberghe et al., 2010). It is against this backdrops that the researchers carryout an investigation on socio-economic status, culture, dietary behaviour and healthy eating education among students.

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 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 the research instruments. i.e. students with poor dietary behaviour using Adapted General Nutrition Knowledge Questionnaire (GNKQ) and Nutritional Behaviour Questionnaire (NBQ) which was divided into four sections, Section A, B, C and D. 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 dietary behaviour. SSS 3 students were excluded because they were outgoing and writing their Secondary School Certificate Examination (SSCE). Out of the participants who exhibited poor dietary behaviour, 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 inclusion criteria for eligible participants included: Students between the ages 13 -19 years in senior secondary schools who gave their assent, consent including parental

consent and students who scored below average after the administration of Nutritional Behaviour Questionnaire.

The instruments for data collection were Socio-demographic Characteristics of Participants (SDCP) containing 10-items which was designed by the researcher. 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; Adapted General Nutrition Knowledge Questionnaire (GNKQ) consisting 22-items with the reliability of 0.73 developed by Kliemann et al. (2016) was used to measure the dietary knowledge of the participants, it was designed on moderated 4-point Likert scale of Strongly Agree, Agree, Disagree and Strongly Disagree; Adapted Nutritional Behaviour Questionnaire (NBQ) which contained 18-item questions developed by Ikorok et al. (2014) was used to measure the Food Choices and Eating Patterns of participants with the reliabilities of 0.73 and 0.76 respectively. The Food Choices contained 7-item questions designed on moderated 4-point Likert scale of Strongly Agree, Agree, Disagree and Strongly Disagree. The maximum score was 28 while the minimum score was 7 while the Eating Pattern contained 12-item statements based on a 5-point scale of Always, Very Often, Sometimes, Rarely and Never. The maximum score was 60 while the minimum score was 12. The reliability co-efficient of the instrument is 0.76. To categorise 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's Developed Healthy Eating Education Manual was used to train the students during the intervention on topics like nutrition, micronutrient deficiencies, food and its classification, good diet, healthy and balanced diet, individual food needs for different groups, diet and chronic diseases, healthy eating habits and its benefits, importance of physical activity to dietary behaviours, food choices, eating pattern and factors influencing nutritional behaviours. Research materials used included attendance register, projector and stand, handbills, posters on Healthy Eating Education and charts.

To ensure content, construct and face validity of the instruments, the research instruments were validated with the assistance of the Postgraduate Committee of the Department of Human Kinetics and Health Education, University of Lagos.

Permission was sought from the Lagos State Government before commencing the study and 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.

Four research assistants were recruited for the study. The administration of the research instruments was in three phases and they were administered to the participants by the researcher and the research assistants. The phases included Pre-intervention phase which involved administration of the research instruments to the participants as pre-test a week before the treatment session; Intervention Phase where the treatment package was delivered for eight weeks and for one hour in a week; and Post –intervention Assessment which involved re-administration of instruments to the same treatment and control groups.

The control group was not exposed to any intervention during the study but was given a placebo on adolescence and sexual health.

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).

Results

Table 1: Demographic characteristics of the participants

	Control Group		Experimental Group	
Variables	Frequency	Percent	Frequency	Percent
Age:				
13-15	48	78.7	51	85.0
16-19	13	21.3	9	5.0
Total	**61**	**100.0**	**60**	**100.0**
Apartment:				
Single room	12	19.7	14	23.3
Room and Palour	23	37.7	24	40.0
A Self Contained	11	18.0	13	21.7
Mini-Flat	4	6.6	0	0.0
Two Bedroom Flat	8	13.1	5	8.3
Three Bedroom Flat	3	4.9	4	6.7
Others	0	0.0	0	0.0
Total	**61**	**100.0**	**60**	**100.0**
Religion:				
Islam	17	27.9	11	18.3
Christianity	44	72.1	48	80.0
Others	0	0.0	1	1.7
Total	**61**	**100.0**	**60**	**100.0**
Educational status of Parents/Guardian:				
No Formal Education	0	0.0	5	8.3
PSLC	12	19.7	13	21.7
SSCE	26	42.6	28	46.7
Bachelors	4	6.6	6	10.0
Masters	16	26.2	5	8.3
Ph.D	3	4.9	3	5.0
Total	**61**	**100.0**	**60**	**100.0**
Gender:				
Male	39	63.9	42	70.0
Female	22	36.1	18	30.0

Total	**61**	**100.0**	**60**	**100.0**
Class:				
SSSI	43	70.5	36	60.0
SSSII	18	29.5	24	40.0
Total	**61**	**100.0**	**60**	**100.0**
Ethnic background				
Hausa	2	3.3	0	0.0
Igbo	6	9,8	7	11.7
Yoruba	53	86.9	53	88.3
Others	0	0.0	0	0.0
Total	**61**	**100.0**	**60**	**100.0**
Family Income:				
Below N75,000	18	29.5	34	56.7
N75,000 - N100,000	30	49.2	21	35.0
Above N100,000	13	21.3	5	8.3
Total	**61**	**100.0**	**60**	**100.0**

With respect to age of the participants, figure 4a 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. Similarly, for 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.

Concerning apartment, 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. Similarly, for 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.

Concerning religion, for the control group, 27.9% of them were Muslims; 72.1% of the responding students were Christians. Hence, the most participating students in the control group were the Christians. Also, for the experimental group, 18.3% of the responding students were Muslims; 80% of them were Christians; while 1.7% of them were in other religions. Hence, the most participating students in the experimental group were the Christians.

With respect to educational status of the participants' parents in the control group, 0% of them 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. Also, for the experimental group, 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.

Regarding gender, 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. Moreover, for the experimental group, 70% were male students; while 30% of the participants were female students. Hence, most of the participants in the experimental group were male students.

As for the class of the students, 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. Moreover, for the experimental group, 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.

For ethnic background of the students, 3.3% of them were Hausas; 9.8% of them were Igbo; while 86.9% of them were Yoruba. Hence, most of the participants in the control group were the Yoruba. Also, for the experimental group, none of them were Hausa; 11.7% of them were Igbo; while 88.3% of them were Yoruba. Hence, most of the participants in the experimental group were the Yoruba.

With respect to income status of the participants' parents in the control group, 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. Also, for the experimental group, 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.

Hypothesis One

There is no significant difference on socio-economic status of participants' parents and dietary behaviour after exposure to healthy eating education 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 2

Table 2: One-way ANCOVA showing difference on socio-economic status of participants' parents and dietary behaviour in secondary schools after exposure to healthy eating education

Source	Sum of Squares	Df	Mean Square	F	Sig.
Intervention	3774.166	1	3774.166	35.260	.000
Dietary behaviour	.346	1	.346	.003	.955
Socio-economic	69.454	2	34.727	.324	.726
Interaction	181.536	2	90.768	.848	.434
Error	12202.433	114	107.039		
Total	17731.325	120			

P < 0.05; F (2, 114)= 3.92; F (2, 114) = 3.07

The data in Table 2 indicates after the exposure to the healthy eating education, the socio-economic status of parents has no significant influence on dietary behaviour of secondary school students, because the calculated F(0.324) is less than the critical value of 3.07 given 2 and 114 degrees of freedom at 0.05 level of significance. Similarly, there is no significant interaction effect between the intervention group and socio-economic status of parents, because the calculated F-value of 0.848 is less than the critical value of 3.07 given 2 and 114 degrees of freedom at 0.05 level of significance.

Hypothesis Two

There is no significant difference on participants' culture and dietary behaviour after exposure to healthy eating education 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 3.

Table 3: One-way ANCOVA showing difference on participants' culture and dietary behaviour in secondary schools after exposure to healthy eating education

Source	Sum of Squares	Df	Mean Square	F	Sig.
Intervention	1763.635	1	1763.635	16.626	.000
Dietary behaviour	8.730	1	8.730	.082	.775
Culture	285.513	2	142.756	1.346	.264
Interaction	27.127	2	13.564	.128	.644
Error	12092.506	114	106.075		
Total	17731.325	120			

P < 0.05; F (1, 114)= 3.92; F (2, 114) = 3.07

The data in Table 3 indicates that after the exposure to the healthy eating education, participants' culture has no significant influence on dietary behaviour of secondary school students, because the calculated F(1.346) is less than the critical value of 3.07 given 2 and 114 degrees of freedom at 0.05 level of significance. Similarly, there is no significant interaction effect between the intervention group and participants' culture, because the

calculated F-value of 0.128 is less than the critical value of 3.07 given 2 and 114 degrees of freedom at 0.05 level of significance.

Discussion of Findings

Hypothesis one stated that there is no significant difference in socio-economic status of participants' parents and dietary behaviour after exposure to healthy eating education in Lagos Island Local government Area, Lagos State. The result of the analysis indicated that there is no significant difference in socio-economic status of participants' parents and dietary behaviour in secondary schools after exposure to healthy eating education. Thus, hypothesis one was accepted. The reason for the acceptance could be as a result of the parents being carried along with the intervention package. Fliers containing some dietary information were passed across to parents through their children which must have made them see reasons to judiciously use what they have to eat healthy, irrespective of their socio-economic class. This finding is in line with Fismen et al.(2012) who confirmed that different relationships exists between the distinct socioeconomic dimensions for predicting healthy adolescent eating behaviours. Considering the effects of parental educational level, family material wealth and occupation, there were no significant difference on dietary behaviours. Petrauskienė et al. (2015) in their report on family socioeconomic status and nutrition habits established that family income had no impact on daily breakfast consumption. This finding however is against Lazzeri, et al. (2016) who found a significant association between family material affluence and eating pattern.

Hypothesis two stated that there is no significant difference in participants' culture and dietary behaviour after exposure to healthy eating education in Lagos Island Local government Area, Lagos State. The result of the analysis indicated that there was no significant difference in participants' culture and dietary behaviour in secondary schools after exposure to healthy eating education in Lagos State. Hypothesis two was therefore accepted. The reason why there was no difference could have been due to the intervention package which laid emphasis on culture and dietary need. This must have made the participants realise that culture is not barrier to eating right. This finding corroborated with Jayasinghe et al. (2025) who acknowledged that cultural influences lead to the difference in the habitual consumption of certain foods and in traditions of preparation and in certain cases can lead to restrictions, such as the exclusion of meat and milk from the diet. However, cultural influences are amenable to change, particularly when a person moves to a new country. He or she adopts the food habits of the local culture. The finding did not support Otunola and Martirosyan (2021) who posited that foods and nutrition can be affected by culture, with respect to different beliefs within the culture. Some cultures may encourage or frown upon consumption of different foods by individuals who belong to their groups. Also the consumption of different foods at different stages of life may be actively encouraged or discouraged. This is due to the benefits and dangers of consuming these foods at certain times of life and in certain conditions. Among the cultural factors that determine patterns of eating include the person food is being made for. Traditional eastern cultures foods tend to be prepared for a large number of people at regular times of the day. The opposite is true

in western cultures, where food is prepared less frequently during the day and often the same meal is eaten more than once during the day.

Conclusion

Socio-economic status of participants' parents and culture did not seem to affect the dietary behaviour of participants after healthy eating education intervention. This could be due to the reason that the students are already partially approaching their independence and have the will to make choices of what they consume at some point in their life thereby making the intervention to key into what their positive will to change in behaviour. 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.Outcome of the study led the researchers to recommend that :

1. School Administrators should work with health educators in order to feed students with information to exhibit proper food choices and consumption pattern without segregation of the socio-economic class and culture of students.
2. Health education media especially the use of projectors, posters and fliers as instructional materials should be introduced as effective media in promoting nutrition education and reducing the risk of diet related diseases among school students.
3. Health Educators and Dietitians should develop models, charts and other instructional materials that could promote nutritional habits.

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