ASSESSMENT OF OBESITY RISK BEHAVIORS AMONG UNDERGRADUATES OF A PRIVATE UNIVERSITY IN NIGERIA

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Abstract

Obesity has become an emerging epidemic of public health concern and contributes to 2.8 million deaths worldwide. Unhealthy eating habits and sedentary behaviours, particularly among the youths are key risk factors for obesity. There is limited data on obesity risk behaviours among young adults in private universities in Nigeria. This study assesses obesity risk behaviours among undergraduate students in a private university in South-West, Nigeria. A cross-sectional survey design was used for this study. Simple random sampling technique was used to select 255 undergraduates in a private university in South-West, Nigeria. Data was collected using self-reported questionnaire adapted from previous study. Descriptive analysis was done using frequency and percentage while inferential statistics was done using Chi-Square. The demographic characteristics shows that majority of the respondents were females (78.4%), were between of 19-21 years (71%) with the mean age of 20.09 years. Most of the respondents were Christians (89.8%). Majority (86.3%) received a monthly allowance that was between 31, 000 naira and 60, 000 naira. Result of this study, showed that the level of obesity risk eating behaviour of respondents very low although the rate of consumption of Shawarma (76.5) and carbonated drinks (57.3%) are high, 5-7 times a week. This indicates that obesity risk behaviour is high among students of the private university under study. Furthermore, findings reveal that sedentary risk behaviours among respondents is very high and the most common behaviours exhibited by respondents are using the internet and computer/Phone games. Lastly, a significant association is observed between consumption of Sharwama and the monthly allowance of the students ($\chi 2 = 25.31$, $p < 0.05$) This suggests the need for development of comprehensive intervention targeting behavioural skills, health education and counselling to promote healthy eating and increased physical activities.

Keywords: Sedentary lifestyle; Unhealthy eating habits; Obesity; Public enlightenment on nutrition.

Introduction

Obesity is a significant health challenge in recent times, and has become an emerging epidemic of public health concern which contributes to 2.8 million deaths worldwide (Pego-Fernandes, Bibas and Deboni, 2011; Ahmed et al., 2015). About 2 billion individuals globally are currently overweight or obese (Popkin, Adair and Ng, 2012). Obesity is a condition in which there is excess adipose tissue mass in the body (Purnell, 2018). Obesity has been linked with many chronic diseases which include cardiovascular diseases, type 2 diabetes and cancers and also linked with behavioural and emotional problems (Abdelaal, Roux and Docherty, 2017). Whilst obesity among young adults has been on the rise in developed countries, developing countries are sharing the same experience (Ogunbodede et al., 2011). This is linked with transition from food rich in fibers to fast foods which have been reported to have a negative influence on the food habits of young people (Ukegbu et al., 2017). The occurrence of obesity in Nigeria has increased in recent years, particularly among youths (Ukegbu et al., 2017). This can be attributed to transition of the society's dietary practices, urbanization and modernized ways of life (Ukegbu et al., 2017; Gupta et al., 2012).

Consumption of unhealthy diet and sedentary lifestyle are key determinants of overweight and obesity development among Nigerian youths (Buowari, 2010). Young adults particularly undergraduates experience lifestyle changes going to the university, due to displacement from their usual environment to a new and uncertain one (Poobalan and Aucott, 2016). This is usually a period of freedom and a period of taking up the responsibility of making food choices (Yahia et al., 2008). This change may expose young adults to unhealthy eating habits mainly because they are no longer under parental supervision (Aucott et al., 2014). A previous study reports that newly admitted university undergraduates experience substantial increase in weight followed by a gradual weight gain as they move to higher classes (Vella-Zarb and Elgar, 2009). Unhealthy diet or poor eating behaviour refers to eating more of food low in fiber, high in salt, refined sugar and fat (Al-Hazza et al., 2011; Allafi et al., 2014). Unhealthy eating increases energy intake, gradual accumulation of calories resulting in abnormal weight gain that causes adverse health effects (Hill, Wyatt and Peters, 2012).

In spite of the known benefits of information and communication technology, it's continuous use which includes use of computers, watching television,

mobile phone use and playing digital games are vital sedentary activities that may increase obesity prevalence among adolescents (Mahfouz et al., 2011; Al-Subhi, Bose and Ani, 2015). Sedentary behaviours are group of habits with low energy output, which means, amount of energy use is not higher than the resting level (Al-Subhi, Bose and Ani, 2015). In recent times, people's social behaviours have changed as there is increase in social media usage, this includes Facebook, Twitter and Instagram (Alley et al., 2017). Young people engage more in social networking, educational activities, including entertainment in digital mode which may be online or offline. Watching television, working on the computer, and use of internet increase sitting time with negative implications on health (Bickham et al., 2012). Literature has revealed that health behaviour of students may be influenced by their socio-economic status (Buowari, 2010). Consumption of energy dense food, sugary drinks may be attributed to behavioural and socio-economic factors (Seidell and Halberstadt, 2015).

There is need to curb health-risk behaviours among university students. Such behaviours if uncurbed may exist beyond student's stay in school and continue in later years with its consequences being fatal. Moreover, obesity in young adults may transform into adult obesity and decreases quality of life. A rise in the number of young adults with poor health status has significant implications for their health in later years (Bonnie and Stroud, 2015). Young adults are of significant percentage in Nigeria population and are needed to be in healthy state to impart the growth and development of the country.

In view of the high fees being charged in private institutions, majority of the undergraduates in privately owned Nigerian universities are considered to be products of affluent families (Akpotu and Akpochafo, 2017). According to Akindele (2013), most undergraduates in Nigeria private institutions are children whose parents are within the high class and only few from middle class in the society. In view of their better financial status, students from private university may have an increased tendency to prefer western diets and fast foods. A previous study has linked unhealthy behaviours with affluence (Lateef et al., 2016).

Despite the increase in the number of private universities in Nigeria, there is limited data about obesity risk behaviours among young adults in private universities in Nigeria (Akindele, 2013). Few studies have reported obesity risk behaviour among young adults in public universities, thus creating a gap in knowledge. This study therefore assesses obesity risk behaviours among private university students through assessments of eating and drinking pattern (dietary pattern), and sedentary behaviours of students. This study also examines the association of dietary pattern and student's monthly allowance. Findings will be useful for developing interventions that target primary prevention of obesity among these target groups since they contribute to majority of the nation's population.

Objectives of the study

1. To assess obesity risk eating/drinking behaviours of respondents
2. To determine sedentary risk behaviours among respondents
3. To identify relationship between eating/drinking obesity risk behaviours and student's monthly allowance

Methodology

The study adopts a cross-sectional descriptive design. The setting for this study was a privately owned university that is situated in the South-Western part of Nigeria. The target population are students from a private university. It has a population of about 5,850 students at the time of this study. The sample size was calculated by using Taro Yamane formula (Singh and Masuku, 2012). Total of 255 students were selected based on estimated sample size. Multistage sampling technique was utilized in selecting the participants.
At the initial stage, Simple Random Sampling (SRS) technique was utilized in selecting three out of five colleges in the university. Second stage involved selection of 50% of departments in each college using SRS. The third stage involved selection of students from 200 level to 400 level in each of the selected department using SRS. The 100 and 500 level students were excluded because the first-year students were still new and may require time to adjust to the school system while 500 level students were excluded for the purpose of uniformity since not all departments had 500 level students. Class list was used as sample frame.

Questionnaire was adopted from Active Where Adolescent Survey (Forman et al., 2008), which was employed to assess environmental correlates of physical activity and diets among adolescents. Questionnaire was arranged into different sections; section A contained respondent's personal information. Section B comprised of items that assessed eating and drinking behaviours of respondent. Section C contained questions that assessed sedentary behaviours. The questionnaire used a 4-point Likert scale (never, once a week, 2-4 times a week, 5-7 times a week) to measure items in section B. A 5-point Likert scale (never, 1-2 hours, 3-4 hours, 5-6 hours and more than 6 hours) was used for measuring items in Section C. Data was

collected by the researcher, students were met in their classrooms and thorough briefing of the reasons for conducting the study was done prior to filling of the self-reported questionnaire, written and verbal consent were obtained from respondents. Questionnaire was filled and retrieved immediately while few students requested for time to fill and retrieved at pre-arranged time. Data entry was done using the Statistical Package for Social Sciences (SPSS) version 20. Participant's dietary and sedentary behaviours data were analysed using frequency and percentage. Test of association of dietary behaviour and student's monthly allowance was done using Chi-Square test at $p < 0.05$ level of significance. Ethical review board of the institution of study approved the conduct of the study

Results

Table 1 shows the demographic data of respondents. Majority are females (78.4%) while 21.6% are males. Also, 14.5% of the respondents are within 16-18 years of age, 71% are within the age of 19-21 years while 14.5% are within the age of 22-24 years. More than half of the respondents are Christians (89.8%) while 9.8% are Muslims and 0.4% others. 9.4% of the respondents are getting N30,000 and below monthly, 53.3% are getting between N31,000-N60,000 monthly, 27.5% are getting between N61,000-N90,000 monthly, 5.5% were getting between N91,000-N120,000 monthly while 4.3% are getting N120,000 and above monthly. This study reveals that majority of the respondents are females (78.4%), are between of 19-21 years (71%) with the mean age of 20.09 years. Most of the respondents are Christians (89.8%). Majority (86.3%) receive monthly allowances between 31, 000 naira and 60, 000 naira.

Table 1: Demographic characteristics of the respondents

Demographic characteristics		N	%
Gender	Female	200	78.4
	Male	55	21.6
	Total	255	100
Age	16-18	37	14.5
	19-21	181	71.0
	22-24	37	14.5
	Total	255	100
Religion	Christianity	229	89.8
	Islam	25	9.8
	Others	1	0.4
	Total	255	100
Monthly allowance	₦30,000 & below		
	₦3I,000-60,000	24	9.4
	₦61,000-90,000	136	53.3
	₦91,000-120,0000	70	27.5
	Above ₦120,000	14	5.5
		11	4.3

Objective one

To assess obesity risk eating/dinking behaviours of respondents

Table 2 reveals the results on respondents' eating and drinking habits. 17.6% of the respondents have never eaten potato fries, 32.9% take it 1-2 times in a week, 5.1% take it 3-4 times in one week while 44.3% take it 5-7% in one week. 69.8% of the respondents have never eaten meat pie, 23.9% take it 1-2 times in one week, 5.5% take it 3-4 times in one week while 0.8% take it 5-7% in one week. Also, 63.5% of the respondents have never eaten doughnut, 28.6% take it 1-2 times in a week, 6.7% take it 3-4 times in a week while 1.2% take it 5-7 times in a week. 65.1% of the respondents have never taken eggroll before, 19.2% take it 1-2 times in a week, 13.3% takes it 3-4 times in a week while 2.4% take it 5-7 times in a week. 3.1% of the respondents have never taken Shawarma before, 18.8% take it 1-2 times in a week, 1.6% take it 3-4 times in a week while 76.5% take it 5-7 times in a week.

Furthermore, 74.1% of the respondents have never eaten cakes and cookies before, 21.2% take it 1-2 times a week, 2.7% take it 3-4 times a week while 2% take it 5-7 times a week. 5.5% of the respondents have never taken soft drinks (Coke, Pepsi, Malt), 22.3% take it 1-2 times a week, 14.9% take it 3-4 times a week while 57.3% take it 5-7 times a week. 23.5% of the respondents have never taken packaged fruit juice, 43.5% take it 1-2 times a week, 4.7% take it 3-4 times a week while 28.3% take it 5-7 times a week. Higher percentage of respondents eat Shawarma 195 (76.5%) and potato fries 113

(44.3) 5-7 times a week. Result also shows that the level of obesity risk eating behaviour of respondents very low although the rate of consumption of Shawarma (76.5) and carbonated drinks (57.3%) are high, 5-7 times a week.

Table 2: Assessment of Obesity Risk Eating Behaviours of Respondents

Items	Never	1-2 times a week	3-4 times a week	5-7 times a week
	n (%)	n (%)	n (%)	n (%)
Potato fries	45 (17.6)	84 (32.9)	13 (5.1)	113(44.3)
Meat pie	178 (69.8)	61 (23.9)	14 (5.5)	2 (0.8)
Doughnut	162 (63.5)	73 (28.6)	17 (6.7)	3 (1.2)
Eggroll	166 (65.1)	49 (19.2)	34 (13.3)	6 (2.4)
Shawarma	8 (3.1)	48 (18.8)	4 (1.6)	195 (76.5)
Cakes, cookies`	189 (74.1)	54 (21.2)	7 (2.7)	5 (2.0)
Soft drinks (Coke, Pepsi, Malt)	14 (5.5)	57 (22.3)	38 (14.9)	146 (57.3)
Packaged Fruit juice	60 (23.5)	111 (43.5)	12 (4.7)	72 (28.3)
	40.3%	21%	8.4%	26%

Objective two

To determine sedentary risk behaviours among respondents.

Table 3 shows the sedentary behaviour among respondents. 5.9% of the respondents never watch TV/videos, 7.9% watch for 1-2 hours, 33.3% watch for 3-4 hours, 31.8% watch for 5-6 hours while 21.1% watch for more than 6 hours. 1.2% of the respondents do not do homework/read, 10.9% did homework/read for 1-2 hours, 16.1% do for 3-4 hours, 32.6% do for 5-6 hours while 39.2% do for more than 6 hours. 1.9% of the respondents have never used the internet, 7.9% used it for 1-2 hours, 16.5% use for 3-4 hours, 20.4% use it for 5-6 hours while 53.3% use it for more than 6 hours. 3.9% of the respondents do not play computer/phone games, 11.8% played computer/phone games for 1-2 hours, 9.4% play for 3-4 hours, 20% play for 5-6 hours while 54.9% play for more than 6 hours. Furthermore, 12.6% of the respondents sit and listen to music (Radio, MP3, IPod) for 1-2 hours, 45.1% sit and listen to music for 3-4 hours, 27.4% sit and listen to music for 6 hours while 14.9% sit and listen to music for more than 6 hours.

About 2.8% of the respondents do not sit talking/texting/chatting on mobile phones, 43.1% of the respondents sit talking/texting/chatting on mobile phones for 1-2 hours, 21.6% sit talking/texting/chatting on mobile phones for 3-4 hours, 21.6% sit talking/texting/chatting on mobile phones for 5-6 hours while 10.9% sit talking/texting /chatting on mobile phones for more than 6 hours. 3.9% of the respondents have never sit/hang out talking with friends, 16.1% sit/hang out with friends for 1-2 hours, 29.8% sit/hang out with friends for 3-4 hours, 26.7% sit/hang out with friends for 5-6 hours while 23.5% sit/hang out with friends for more than 6 hours. This study reveals that more than half engage in internet (54.9%) and computer/mobile phone games (53.3%) more than 6 hours daily respectively. Less than average 100 (39.2%) engage in sitting doing homework and reading more than 6 hours daily. The use of the internet is the most common sedentary activity among students and almost all students are engaged in internet (90.2%), listening to music through radio, iPod & MP3 (87.4%), computer/phone games (84.3%) for more than 2 hours daily. This finding shows that sedentary risk behaviour among respondents is very high and the most common behaviours exhibited by respondents are using the internet and computer/Phone games.

Table 3: Sedentary Behaviours among Respondents

Activities	Number of hours engaged daily				
	Never	1-2hours	3-4hours	5-6 hours	More than 6 hours
	n (%)	n (%)	n (%)	n (%)	n (%)
Watching TV/Videos	15(5.9)	20 (7.9)	85 (33.3)	81 (31.8)	54 (21.1)
Homework/Reading	3 (1.2)	28 (10.9)	41 (16.1)	83 (32.6)	100 (39.2)
Using the internet	5 (1.9)	20 (7.9)	42 (16.5)	52 (20.4)	136 (53.3)
Computer/Phone games	10(3.9)	30 (11.8)	24 (9.4)	51 (20.0)	140 (54.9)
Sitting listening to music (Radio, MP3, IPod)	0 (0)	32 (12.6)	115(45.1)	70 (27.4)	38 (14.9)

Sitting talking, texting, or chatting on mobile phones	7 (2.8)	110 (43.1)	55 (21.6)	55 (21.6)	28 (10.9)
Sitting/hanging out talking with friends	10(3.9)	41 (16.1)	76 (29.8)	68 (26.7)	60 (23.5)
	3%	16%	25%	26%	29%

Objective three

To identify the relationship between eating/drinking obesity risk behaviours and student's monthly allowance

Table 4 shows the association of eating and drinking behaviours with student's monthly allowance. A significant association is observed between consumption of Sharwama and the monthly allowance of the students ($\chi 2 = 25.31$, $p < 0.05$). There is no significant association of participant's eating of other fast/junk food and drinking sugar containing drinks with student's monthly allowance.

Table 4: Test of relationship between eating and drinking obesity risk behaviours and student's monthly allowance

Monthly Allowance k = 1000 Naira n =255									
Consumption of Fast Food/Sugary drinks	No of Times/week	≤30k n (%)	31-60k n (%)	61-90k n (%)	91-120k n (%)	Above 120k n (%)	χ2	Df	P value
Potato fries	Never	2 (4.5)	27 (60.0)	11 (24.4)	4 (8.9)	1 (2.2)	19.442	12	0.078
	1-2	6 (7.1)	46 (54.8)	22 (26.2)	6 (7.1)	4 (4.8)			
	3-4	1 (7.6)	6 (46.2)	3 (23.1)	0 (0.0)	3 (23.1)			
	5-7	15 (13.3)	57 (50.4)	34 (30.1)	4 (3.5)	3 (2.7)			
Meat pie	Never	17 (9.6)	91 (51.1)	52 (29.2)	11 (6.2)	7 (3.9)	11.307	12	0.503
	1-2	3 (4.9)	38 (62.3)	15 (24.6)	2 (3.3)	3 (4.9)			
	3-4	4 (28.6)	6 (42.9)	2 (14.3)	1 (7.1)	1 (7.1)			
	5-7	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)			
Doughnut	Never	16 (9.9)	86 (53.1)	45 (27.8)	8 (4.9)	7 (4.3)	12.855	12	0.380
	1-2	5 (6.8)	41 (56.2)	19 (26.0)	6 (8.2)	2 (2.7)			
	3-4	2 (11.8)	9 (52.9)	5 (29.4)	0 (0.0)	1 (5.9)			
	5-7	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)			
Egg roll	Never	18 (10.8)	84 (50.6)	50 (30.1)	8 (4.8)	6 (3.6)	10.104	12	0.607
	1-2	3 (6.1)	29 (59.2)	10 (20.4)	5 (10.2)	2 (4.1)			
	3-4	2 (5.9)	21 (61.8)	8 (23.5)	1 (2.9)	2 (5.9)			
	5-7	1 (16.7)	2 (33.3)	2 (33.3)	0 (0.0)	1 (16.7)			
Shawarma	Never	1 (12.5)	3 (37.5)	1 (12.5)	3 (37.5)	0 (0.0)	25.317	12	0.013
	1-2	3 (6.2)	25 (52.1)	17 (35.4)	1 (2.1)	2 (4.2)			
	3-4	0 (0.0)	3 (75.0)	0 (0.0)	0 (0.0)	1 (25.0)			
	5-7	20 (10.3)	105(53.8)	52 (26.7)	10 (5.1)	8 (4.1)			
Cakes	Never	20 (10.5)	99 (52.4)	52 (27.9)	11 (5.7)	7 (3.5)	20.630	12	0.056
	1-2	0 (0.0)	32 (60.0)	16 (30.0)	3 (5.0)	3 (5.0)			
	3-4	4 (57.1)	0 (0.0)	2 (28.6)	0 (0.0)	1 (14.3)			
	5-7	0 (0.0)	5 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)			
Soft drinks	Never	1 (7.1)	7 (50.0)	5 (35.7)	1 (7.1)	0 (0.0)	13.613	12	0.326
	1-2	2 (3.5)	37 (64.8)	14 (24.6)	1 (1.8)	3 (5.3)			
	3-4	4 (10.4)	21 (56.2)	7 (18.8)	4 (10.4)	2 (4.2)			
	5-7	17 (11.5)	71 (48.1)	44 (28.9)	8 (6.7)	6 (4.8)			
Packaged fruit juice	Never	3 (4.8)	31 (51.6)	14 (24.2)	7 (11.3)	5 (8.1)	20.557	12	0.057
	1-2	17 (15.8)	52 (46.5)	32 (28.7)	6 (5.0)	4 (4.0)			
	3-4	1 (8.3)	8 (66.7)	2 (16.7)	1 (8.3)	0 (0.0)			
	5-7	3 (5.0)	45 (62.4)	22 (30.0)	0 (0.0)	2 (2.5)			
	Total	24 (9.4)	136(53.3)	70 (27.5)	14 (5.5)	11 (4.3)			

Discussion

This study assesses obesity risk behaviours of students in a privately owned university in South-West, Nigeria. The demographic characteristics of respondents reveal that majority of the respondents are females and between age 19 and 21 years. This is similar to the findings from Ukegbu et al.'s (2017) effort whose respondents are 19-21years in tertiary institutions in South Eastern Nigeria. Most of the respondents are Christians, received monthly allowances that is between 31, 000 naira and 60, 000 naira. This indicates that majority of students live on more than N1, 000 per day, which is higher than

the N18, 000 monthly minimum wage of a Nigerian worker.

This amount is also higher than the daily per capital international poverty line of $1.09. This finding is contrary to Alfaris et al.'s 2015 effort whose student's monthly allowance is less than N18, 000. This implies that the socio-economic status of participants is high and this may be related to their behaviours; majority of students in private institutions in Nigeria are often viewed as children from affluent homes, how often they purchase fast foods and sugar containing drinks depends on their ability to afford them. According to a finding, higher level of socio-economic status increases student's consumption of unhealthy snacks (Feyzabadi et al., 2017).

Result shows that obesity risk eating behaviour of respondents is very low although the rate of consumption of Shawarma and carbonated drinks is high, 5-7 times a week. This finding is similar to Alfaris et al. (2015), who observe that adolescents and young adults living in Riyadh, Saudi eat junks and drink carbonated drinks 5-7 times a week. This finding is consistent with Ukegbu et al. (2017) whose eating behaviour of participants is also low and majority of the girls consumed fast food at least once in one week in South-Eastern Nigeria. There is a current transition of diet from the traditionally fiber-containing food to fast food in developing countries. This may be a major influence on undergraduate's dietary lifestyle (Olusanya and Omotayo, 2011). Also, high consumption of fast/processed foods and drinks may be linked to monthly allowance of students which increases the affordability of such food. A previous study states that students from private schools with better economic status engage in unhealthy dietary practices and sedentary lifestyle (Ojofeitimi et al., 2011).

This study observes that sedentary risk behaviour among respondents is very high and that the most common behaviours exhibited by respondents are using the internet and Computer/Phone games. This is consistent with the findings from Ejike and Ijeh, (2012) and Oyeyemi et al., (2017) who report that sedentary behaviour among Nigerian students is high. American Academy of Paediatrics (2001) and Saunders, Chaput and Tremblay, (2014) recommend that sedentary behaviour should not exceed 2 hours daily. Use of information communication technology gadgets for long duration promotes low energy output and use of energy that is not higher than the resting level (Lepp et al., 2013; Al-Subhi, Bose and Al-Ani, 2015). Increased utilization of information and communication technology such as watching television, and engaging in digital and computer games, including various games on mobile phones and use of internet among students increase sitting time and sedentary behaviours ((Mahfouz et al., 2011).

This study reveals no significant association of participant's consumption of other fast/junk food and sugar containing drinks monthly allowance. This indicates that student's allowances influence their consumption of junks and fast food. This is consistent with the findings of a study among Norwegians which show that students who are from parents with higher financial status engage in healthy eating habits than those from lower financial status (Skardal et al., 2014). The difference in the finding may be attributed to the difference in study settings. Students from the former setting may have better knowledge of the harmful effects of fast food being a developed country. In Nigeria, fast food is a westernized diet and people with higher economic status may consider eating it as a way of living foreign life and showing off their wealth (Olutayo and Akanle, 2009).

Conclusion and recommendation

Findings from this study reveal that obesity risk behaviour is low among students of the private university under study although the rate of consumption of Shawarma and carbonated drinks were high. Majority of students consume fast foods and sugar-containing drinks on a daily basis and engage in activities that increase sedentary behaviour daily. This increases the risk of obesity and its comorbid conditions. The best time to reinforce healthy behaviour is at a young age because it will be beneficial at a later age. There is the need for full implementation of effective school health programs, in Nigeria. This should not just be adopted in high schools but also in universities with the aim of targeting and addressing unhealthy eating habits among youth and improving sedentary lifestyle. There should be targeted health education programs for youths and counselling by public health nurses. This will improve student's knowledge and perception about healthy eating and increased physical exercise in order to reduce obesity among undergraduate students.

References

Abdelaal, M., le Roux, C.W. and Docherty, N.G., 2017. Morbidity and mortality associated with obesity. Annals of translational medicine, 5(7).

Aucott, L., 2014. Mental Well-Being Related To Lifestyle and Risky Behaviours in 18-25 Year Old: Evidence from North-East Scotland. International Journal of Public Health Research, 4(1), pp.431-440.

Al-Hazzaa, H.M., Abahussain, N.A., Al-Sobayel, H.I., Qahwaji, D.M. and Musaiger, A.O., 2011. Physical activity, sedentary behaviors and dietary habits

among Saudi adolescents relative to age, gender and region. International Journal of Behavioural Nutrition and Physical Activity, 8(1), p.140.

Allafi, A., Al-Haifi, A.R., Al-Fayez, M.A., Al-Athari, B.I., Al-Ajmi, F.A., Al-Hazzaa, H.M., Musaiger, A.O. and Ahmed, F., 2014. Physical activity, sedentary behaviours and dietary habits among Kuwaiti adolescents: gender differences. Public health nutrition, 17(9), pp.2045-2052.

Al Subhi, L.K., Bose, S. and Al Ani, M.F., 2015. Prevalence of physically active and sedentary adolescents in 10 Eastern Mediterranean countries and its relation with age, sex, and body mass index. Journal of Physical Activity and Health, 12(2), pp.257-265.

Alley, S., Wellens, P., Schoeppe, S., de Vries, H., Rebar, A.L., Short, C.E., Duncan, M.J. and Vandelanotte, C., 2017. Impact of increasing social media use on sitting time and body mass index. Health Promotion Journal of Australia, 28(2), pp.91-95. http://dx.doi.org/10.1071/HE16026

Akpotu, N.E. and Akpochafo, W. P., 2009. An analysis of factors influencing the upsurge of private universities in Nigeria. Journal of Social Sciences, 18(1), pp.21-27. https://doi.org/10.1080/09718923.2009.11892663

Akindele, I., 2013. Evolution of private universities in Nigeria: Matters arising and the way forward. Educational Research and Reviews, 8(2), p.41. doi:10.5897/ERR11.119

ALFaris, N.A., Al-Tamimi, J.Z., Al-Jobair, M.O. and Al-Shwaiyat, N.M., 2015. Trends of fast-food consumption among adolescent and young adult Saudi girls living in Riyadh. Food & Nutrition Research, 59(1), p.26488. doi: 10.3402/fnr.v59.26488

American Academy of Pediatrics., 2001. Children, adolescents and television. Pediatrics, 107, p.423-426.

Apovian, C.M., 2016. Obesity: definition, comorbidities, causes, and burden. Am J Manag Care, 22(7 Suppl), 176-85.

Bickham, D., Walls, C.E., Shrier, L.A., Blood, E.A. and Rich, M., 2012. 4. Characteristics of Screen Media use Associated With Higher Body Mass Index in Young Adolescents. Journal of Adolescent Health, 50(2), 11.

Buowari, Y., 2010. Obesity among students attending a tertiary institution in Nigeria. The Internet J Trop Med, 7(1).

Ejike, C. E. and Ijeh, I.I., 2012. Obesity in young-adult Nigerians: variations in prevalence determined by anthropometry and bioelectrical impedance analysis, and the development of% body fat prediction equations. International archives of medicine, 5(1), p.22. doi: 10.1186/1755-7682-5-22.

Feyzabadi, V.Y., Mohammadi, N.K., Omidvar, N., Karimi-Shahanjarini, A., Nedjat, S. and Rashidian, A., 2017. Factors associated with unhealthy snacks consumption among adolescents in Iran's schools. International journal of health policy and management, 6(9), p.519. doi: 10.15171/ijhpm.2017.09

Forman, H., Kerr, J., Norman, G.J., Saelens, B.E., Durant, N.H., Harris, S.K. and Sallis, J.F., 2008. Reliability and validity of destination-specific barriers to walking and cycling for youth. Preventive medicine, 46(4), pp.311-316.

Gupta, N., Goel, K., Shah, P. and Misra, A., 2012. Childhood obesity in developing countries: epidemiology, determinants, and prevention. Endocrine reviews, 33(1), pp.48-70. http://press.endocrine.org/doi/abs/10.1210/er.2010-0028.

Hammond, R.A. and Levine, R., 2010. The economic impact of obesity in the United States. Diabetes, metabolic syndrome and obesity: targets and therapy, 3, p.285. doi: 10.2147/dmsottis7384.

Hill, J.O., Wyatt, H.R. and Peters, J.C., 2012. Energy balance and obesity. Circulation, 126(1), pp.126-132.

Lateef, O.J., Njogu, E., Kiplamai, F., Haruna, U.S. and Lawal, R.A., 2016. Determinants of overweight and obesity among adolescent students in public secondary schools in Kwara State, Nigeria. Current Research in Nutrition and Food Science Journal, 4(2), pp.96-106. http://dx.doi.org/10.12944/CRNFSJ.4.2.03

Lepp, A., Barkley, J.E., Sanders, G.J., Rebold, M. and Gates, P., 2013. The relationship between cell phone use, physical and sedentary activity, and cardiorespiratory fitness in a sample of US college students. International Journal of Behavioral Nutrition and Physical Activity, 10(1), p.79.https://ijbnpa.biomedcentral.com/articles/10.1186/1479-5868-10-79

Mahfouz, A.A., Shatoor, A.S., Khan, M.Y., Daffalla, A.A., Mostafa, O.A. and Hassanein, M.A., 2011. Nutrition, physical activity, and gender risks for adolescent obesity in Southwestern Saudi Arabia. Saudi journal of gastroenterology: official journal of the Saudi Gastroenterology Association, 17(5), p.318. doi: 10.4103/1319-3767.84486.

Ogunbodede, A.M., Ladipo, M.M.A., Ajayi, I.O., Fatiregun, A.A. 2011. Obesity: An emerging disease. Nigerian Journal of Clinical Practice, 14(4),.390-394.doi: 10.4103/1119-3077.91741

Olutayo, A.O. and Akanle, O., 2009. Fast food in Ibadan: an emerging consumption pattern. Africa, 79(2), pp.207-227. doi: https://doi.org/10.3366/ E0001972009000692

Okafor, P.N., Ukegbu, P.O., Godfrey, O.C., Ofoegbu, M.C. and Uwaegbute, A.C., 2014. Assessment of lipid profile in middle- and upper-class individuals in Abia State, Nigeria based on life-style and dietary habits. Journal of Medical and Biomedical Sciences, 3(3), pp.1-8. doi: http://dx.doi.org/10.4314/jmbs.v3i3.1

Odili, V.U., Egor, F.O., Osarenmwinda, I.M. and Obieche, A.O., 2014. Prevalence of overweight and obesity among pharmacy students in a

University in Benin city, Nigeria. Tropical Journal of Pharmaceutical Research, 13(12), pp.2109-2114. http://dx.doi.org/10.4314/tjpr.v13i12.23

Olusanya, J.O. and Omotayo, O.A., 2011. Prevalence of obesity among undergraduate students of tai Solarin University of Education, Ijagun, Ijebu-ode. Pak J Nutr, 10(10).

Ojofeitimi, E.O., Olugbenga-Bello, A.I., Adekanle, D.A. and Adeomi, A.A., 2011. Pattern and determinants of obesity among adolescent females in private and public schools in the Olorunda Local Government Area of Osun State, Nigeria: a comparative study. Journal of public health in Africa, 2(1). doi: 10.4081/jphia.2011.e11

Pêgo-Fernandes, P.M., Bibas, B.J., Deboni, M. 2011. Obesity: the greatest epidemic of the 21st century? Sao Paulo Medical Journal, vol 68, no.5, p. 283-284. http://dx.doi.org/10.1590/S1516-31802011000500001

Poobalan, A. and Aucott, L., 2016. Obesity among young adults in developing countries: a systematic overview. Current obesity reports, 5(1), pp.2-13.

Popkin, B.M., Adair, L.S. and Ng, S.W., 2012. Global nutrition transition and the pandemic of obesity in developing countries. Nutrition reviews, 70(1), pp.3-21. doi: 10.1111/j.1753-4887.2011. 00456.x.

Purnell, J.Q., 2018. Definitions, classification, and epidemiology of obesity. In Endotext [Internet]. MDText. com, Inc. Available from: https://www. ncbi.nlm.nih.gov/books/NBK279167

Seidell, J.C. and Halberstadt, J., 2015. The global burden of obesity and the challenges of prevention. Annals of Nutrition and Metabolism, 66(Suppl. 2), pp.7-12.
doi: 10.1159/000375143

Singh, A.S. and Masuku, M.B., 2013. Fundamentals of applied research and sampling techniques. Int J Med Appl Sci, 2(4), pp.123-124.

Stroud, C., Walker, L.R., Davis, M. and Irwin Jr, C.E., 2015. Investing in the health and well-being of young adults. Journal of Adolescent Health, 56(2), pp.127-129.

Saunders, T.J., Chaput, J.P. and Tremblay, M.S., 2014. Sedentary behaviour as an emerging risk factor for cardiometabolic diseases in children and youth. Canadian journal of diabetes, 38(1), pp.53-61. doi: https://doi.org/10.1016/j.jcjd. 2013. 08.266

Skårdal, M., Western, I.M., Ask, A.M. and Øverby, N.C., 2014. Socioeconomic differences in selected dietary habits among Norwegian 13–14 year-olds: a cross-sectional study. Food & nutrition research, 58(1), p.23590. doi: 10.3402/fnr.v58.23590

Ukegbu, P.O., Uwaegbute, A.C., Echendu, C.A., Ejike, C., Anyika-Elekeh, J.U., Asumugha, V.U., Kuyik, S.A., Omodamiro, S., Nwofia, B., Uzokwe, C. and Oluchi-Nliam, C., 2017. Obesity and associated factors in young adults attending tertiary institutions in south-eastern Nigeria. South African Journal of Clinical Nutrition, 30(2), pp.43-48.

Vella-Zarb, R.A. and Elgar, F.J., 2009. The 'freshman 5': a meta-analysis of weight gain in the freshman year of college. Journal of American College Health, 58(2), pp.161-166.

Yahia, N., Achkar, A., Abdallah, A. and Rizk, S., 2008. Eating habits and obesity among Lebanese university students. Nutrition journal, 7(1), p.32. https://doi.org/10.1186/1475-2891-7-32

Yousif, M.M., Kaddam, L.A. and Humeda, H.S., 2019. Correlation between physical activity, eating behavior and obesity among Sudanese medical students Sudan. BMC Nutrition, 5(1), p.6.