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Influence of Breakfast Habit on Body Mass Index: Case Study of Undergraduates of Abia State University Uturu.

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Abstract

The study investigated the effect of breakfast consumption on Body Mass Index (BMI) of undergraduates of Abia State University, Uturu (ABSU). It determined: the socio demographic characteristics of respondents, their breakfast consumption pattern and types of food they consumed at breakfast. It also ascertained reasons for skipping breakfast and if it had any influence on the body mass index of the undergraduates. A random sample of 120 undergraduates was drawn from the Faculty of Education, ABSU. Questionnaire was used for data collection and anthropometric measurements of weight and height were taken. BMI was calculated. Data were analyzed using descriptive statistics. The results showed among others, that some (16.6%) of the undergraduates skipped breakfast due to time constraints , others (14.6%) to prevent weight gain. It recommended among others that undergraduates should be enlightened on the importance of eating nutritious breakfast to help maintain adequate and normal body mass index.

Keywords: Breakfast, habit, body mass index, undergraduates.

Introduction

Globally, the prevalence of high body mass index (BMI) among young adults have remarkably increased over the past decades (Ogden, Carroll and Flegal 2008). Flegal (2013) had estimated that 10 percent (10%) of school age children are either

overweight or obese worldwide. With Americas leading at (32%) followed by Europe (20%) and the Middle East (16%) (Jonas, Thompson-McComick,Thomas, Bainvualiku, Khan and Becker (2010); Lobstein, Baur, Uauy and IASO (2014). Some scholars (Cho, Dietrich, Brown, Clark and Block 2008; Fujiwara 2006) have suggested that a definition of breakfast should include all the elements that make it up, such as the component of time, type of food eaten as well as the portion size. Although there is no universal definition that included all these elements. Okpala and Okponibuot (2013) defined it as the first meal of the day often eaten early in the morning after rising from night's sleep before undertaken work for the day.

Breakfast has been described as the most important meal of the day and a good indicator of a healthy lifestyle (Mahoney, Taylor, Kanarek and Samuel 2005). This is because it breaks the overnight fast, replenishes the supply of glucose and gives energy to the body. According to Okpala and Okponibuot (2013), the gap of about twelve hours between dinner and breakfast, may lead to energy depletion which results in glucose deprivation. If this deprivation occurs in sufficient degree, it can result in a rapid disturbance of the cerebral functions. In spite of its importance, research (Nicklas, Reger, Myers and O'Neil 2000; Gross, Bronner, Welch, Dewberry-Moore and Paige, 2004; Ndukwe 2014) have shown that it is the most frequently skipped meal. Breakfast skipping is on the increase globally among all ages. In Nigeria, Umairah, Yahya, Datin and Yusof (2012) reported over half (55.1%) and Ndukwe (2014) reported 33.4 percent breakfast skipping among pupils in primary schools. For the secondary school students, Onyiriuka, Umoru and Ibeawuchi (2012) reported that 48.1percent skipped breakfast. While Oladapo, Roland Ayodele, Quadiiri and Oluranti (2014) reported 52 percent of Nigerian undergraduates do skip breakfast.

Various authors have indicated reasons why people may skip breakfast to include lack of time for preparing and consuming meals (Cho *et al*. 2008), insufficient feeding allowance and busy schedule (Oladapo *et al*. 2014) as well as stress, lack of parental control (example when parents work outside the town or when they are divorced or separated (Mullie, De-Ridder, Deriemeaker, Davingeaud and Hobbelink 2006).

The university age has been identified by Arnette (2009) as the age (18 -25years) of emerging adulthood and unique developmental period because individuals may be at risk of a range of adverse health behaviours which may affect them later in life. According to Freitas, Araujo, Lima, Peereira, Alencar and Damasceno (2013), the age range of 18 – 25 years corresponds to probably the first time many young adults leave home for the first time and will have to take

responsibility of their own housing, feeding and managing their own finances. This may expose them to inappropriate lifestyle habits such as skipping of meals, consumption of fast foods, and eating nutritionally inadequate diets which can result in a number of non- communicable diseases including obesity later in life (Salvaro, 2009) .

Research (Enwere and Obidiora 2006; Sandercock, Voss and Dye 2010) reported that students who skipped breakfast battle with low energy level, feel tired before mid day, are irritable, apathetic, weak, dull, dizzy, lack concentration, feel sick and sleepy at school as well as experience low cardio-respiratory fitness level. Eberechukwu, Eyam-S, and Nsan (2013) noted that skipping breakfast increases the risk of hypoglycemia or low blood sugar. This condition can bring symptoms such as dizziness, weakness and decline in physical activities. More so, breakfast skipping has been associated with negative dietary practices such as over-eating which exposes individuals to obesity. The work of Balvin-Frantzen,, Trevino, Echon and Garcia-Dominic and Dimarco 2013) disclosed that children, adolescents and college students who habitually consume breakfast including ready-to-eat-cereal (RTE) have reduced likelihood of being overweight.

Breakfast skipping among students have been associated with poor academic performance, low cognitive performance as well as poor mental functioning (Copper, Bandelow, and Nevill, 2013). Researches (Wesnes, Pincock Richardso Helm, and Hails 2003; Wesnes, Pincock Richardso Helm and Hails 2008;) have also demonstrated that breakfast consumption positively affects children's cognitive performance, particularly in the area of memory and retention. Widdenhorn-Muller, Hille, Klenk and Weiland (2008) also showed that breakfast skipping negatively impacts on students ability to effectively solve problems . Their work showed that students who consumed breakfast tested higher in a standardized test score, were less absent from school, and were more in time to class. A study by Fujiwara, Sato, Awaja and Nakata (2007) observed menstrual irregularities among female undergraduates who skipped breakfast. The irregularities included severity of painful menses and irregular menstrual bleeds. According to Fujiwara (2003) and (Fujiwara 2006), young women who skipped breakfast have a significantly higher degree of dysmenorrheal symptoms and constipation than young women who ate breakfast suggesting a correlation between skipping breakfast and menstrual disorders.

Consuming breakfast can aid in maintaining a normal body mass index (BMI). De la Hunty, Gibson, and Ashwell, (2013) reported that adolescents and young adults who habitually consumed breakfast (including ready-to-eat-cereals) have

reduced likelihood of being over weight. Cross sectional (Berkey, Rockett, Gillman, Field and Colditz 2013) and longitudinal studies (Affenito, Thompson, Barton, Franko, Daniels, Obarzanek, Schreiber and Striegel-Moore 2015) have shown that regular skipping of breakfast is associated with greater BMI in all age groups. Jonas *et al.* (2010) reported that among some of the numerous behavioural changes contributing to overweight in youths residing in nations under going rapid economic and social changes, meal skipping has not been examined as a potential factor. Various degrees of overweight and obesity have been observed among undergraduates of Abia State University Uturu, yet, there are no published studies that have examined the influence of breakfast consumption on their BMI.

Objectives of the Study

This major objective of this study was to investigate the breakfast habit and its influence on the body mass index (BMI) of undergraduates of Abia State University, Uturu. Specifically the study:

1. Identified weekly breakfast consumption frequency of the respondents.
2. Determined common foods undergraduates consumed as breakfast.
3. Identified the reasons for skipping breakfast.
4. Determined the influence of breakfast skipping on the BMI of undergraduates.

Research Questions: The following research questions guided the study:

1. What is the socio demographic characteristics of the respondents?
2. What foods were undergraduates consuming at breakfast?
3. How frequent does undergraduates consume breakfast in a week ?
4. What are their reasons for skipping breakfast?
5. What is the BMI classification of the respondents and does breakfast skipping have any influence on it.

Methodology

***Area of study*:** The study was carried out in Abia State University, Uturu . The university was established in 1981. It has two main campuses, its main campus is in Uturu and the faculty of Agriculture and veterinary medicine is housed by the campus in Umuahia, Abia State capital. ABSU offers undergraduates, graduates and doctorate degrees with about 20,389 students (18,940 undergraduates, 1139 post graduates and 300 doctoral students).

***Design of the study*:** The study was a descriptive cross sectional study.

***Population of the Study*:** The population for the study comprised all the regular undergraduates of the university. ABSU is made up of 10 faculties (Agriculture and Veterinary Medicine, Biological and Physical Sciences, Business Administration,

College of Medicine, Education, Environmental Studies, Basic Medical Sciences, Clinical Medicine, Health Sciences, Humanities and Social Sciences)(ABSU , 2016) .

***Sample of the Study*:** The stratified random sampling technique was used to select 10 percent of the undergraduates of the Faculty of Education (made up of 6 departments : Curriculum and Teacher Education, Educational Foundations, Psychological Foundations, Educational Management and Planning, Science Education and Vocational Education with about 1005 students (statistics from Faculty office) which was approximated to 130 undergraduates for ease of calculation and to accommodate drop outs.

***Instrument for Data Collection*:** The instrument for data collection was a questionnaire and anthropometric measurements. The questionnaire was development by two lectures in the department of Department of Vocational Education (ABSU) and validated by two lecturers in Home Economics Unit (AIFCEO). Cronbach Alpha Statistics was used to determine the internal consistency of the items and reliability coefficient of 0.91 was obtained.

Method of Data Collection

***Questionnaire*:** The questionnaire was made up of 3 sections with 8 questions (4,3 and 1 respectively).130 questionnaires was distributed through direct approach by hand. This was to ensure maximum return of the questionnaire. However 120 (60 males and 60 females) duly filled questionnaire was used for the study.

***Anthropometric measurements* :** Anthropometric measurements of height and weight were also taken to determine the BMI of undergraduates with the help of two trained research assistants. (The assistants were taught to master how to take adequate height and weight measurements). The weight of the subjects was measured to the nearest 0.1kg using a portable bathroom scale (HARSON EMPERORS, model H89 BLACK). Height was measured to the nearest 0.1cm using a wooden heightometer. Body mass index (BMI) was calculated by dividing the weight measurement with the height measurement squared. Obesity was therefore classified as BMI greater than 30kg/m^2.

***Data analysis technique*:** Data was analyzed using frequencies, percentages and chi-square.

Findings and Discussion

The demographic characteristics of the respondents showed that many (52.5%) were in the 20-23 years age range. The mean age was 22.8 years, 85% of the respondents were single while 45% reside in the school hostels.

Table 1: Common Foods Undergraduates Consumed as Breakfast (n = 120, the respondents were allowed to choose more than one option).

Foods	**>5times F (%)**	**3- 5 times f (%)**	**<1 -2times f (%)**
Beverages	111 (92.5)	9 (7.5)	0 (0.0)
Meat/Fish	110 (91.6)	10 (8.4)	0 (0.0)
Sweetners	105 (87.5)	15 (12.5)	0 (0.0)
Snacks	99 (82.5)	21 (17.5)	0 (0.0)
Margarine/ butter	80 (66.7)	3 (29.2)	5 (4.1)
Cereals	68 (56.7)	42 (35.0)	10 (8.3)
RTE	65 (54.0)	50 (41.5)	5 (4.5)
Meat products	80 (66.7)	35 (29.2)	5 (4.2)
Roots /tubers	10 (8.3)	101 (84.2)	9 (7.2)
Nuts	8 (6.7)	95 (79.2)	17(14.2)
Fruit	3 (2.5)	5 (4.2)	105 (87.5)
Legumes	17 (14.2)	35 (29.2)	68 (56.6)

Table 1 shows the foods respondents consumed as breakfast. Beverages (92.5%), meat/fish (91.6%), sweetners (87.5%), snacks (82.5%) including processed oils like margarine on bread and milk /egg (66.7%) respectively were consumed more than five times in a week. Roots/ tubers (84.2%) and nuts (79.2%) were consumed between 3 – 5 times in a week. Fruits (87.5%) and legumes (56.6%) were rarely consumed between <1 – 2 times in a week.

Table 2: Frequency of Breakfast Consumption in a Week

Variables	Female F (%)	Male f (%)	Total (f) (%)
Everyday	25 (41.7)	20 (33.3)	45 (37.5)
5-6 times	12 (20.0)	11 (18.3)	23 (19.2)
3 -4 times	17 (28.3)	19 (31.7)	36 (30.0)
1 – 2 times	6 (10.0)	10 (16.7)	16 (13.3)
Total	60 (50.0)	60 (50.0)	120 (100)

Table 2 shows how frequent the respondents consumed breakfast in a week. Few (37.5%) of the respondents indicated that they ate breakfast everyday, the remaining skipped breakfast. Some (30.0% and 13.3%) consumed breakfast only 3 – 4 and 1 – 2 times in a week respectively.

Table 3: Reasons for Skipping Breakfast

Variables	Female f (%)	Male f (%)	Total f (%)
Time constraint	10 (16.7)	10 (16.7)	20 (16.6)
Prevent weight gain	10 (16.7)	7 (11.7)	17 (14.6)
Woke up late	7 (11.6)	7 (11.7)	14 (11.6)
No money	2 (3.3)	11 (18.3)	13 (10.7)
Dislike breakfast	4 (6.6)	3 (5.0)	7 (5.7)
Not hungry	2 (3.3)	2 (3.3)	4 (3.3)
Never skipped breakfast	25 (41.7)	20 (33.3)	45 (37.5)

Table 3 showed some of the reasons given by the respondents for skipping breakfast. This include: time constraint (16.6%), prevent weight gain (14.6%), woke up late 11.6% and no money 10.7%.

Table 4: Comparison of BMI of Regular Breakfast Eaters and Non Breakfast Eaters.

Class	Regular breakfast eaters f(%)	Regular breakfast skippers f(%)
Underweight	1 (1.5)	3 (5.7)
Normal	42 (61.7)	8 (15.4)
Overweight	18 (26.5)	18 (34.6)
Obese	7 (10.3)	23 (44.2)
Total	**68 (100)**	**52 (100)**

Chi – square 53.1243. p value is < 0.00001. Significant at p <0.05

When a comparison of BMI of regular breakfast eaters with non- regular breakfast eaters was done in Table 4, it was revealed that 26.5% and 10.3% of regular breakfast eaters were overweight and obese whereas 34.6% and 44.2% of regular breakfast skippers were overweight and obese. The Chi- square showed there is a significant difference between the BMI of regular breakfast eaters and regular breakfast skippers.

Discussion

Information gathered from this study showed that 50% of the respondents were females and 50% males. About 45% reside in the hostel, and majority (85%) were single. The mean age of the respondents was 22.8 years. This agreed with the age of emerging adulthood identified by Arnette (2009) and Freitas *et al.* (2013), corresponding to probably the first time young adults will have to take responsibilities of their own welfare including their feeding habit. The breakfast consumption pattern of

undergraduates showed high intake of beverages (92.5%) , sweetners (87.5%), snacks (82.5%) and margarine/ butter (66.7%). Perry (2011) opined that these were empty calory foods that was high in fat but low in nutrients, vitamins, minerals, anti-oxidants and fiber. These foods were highly processed and have added sugars, examples include cake, biscuits, meat pie, doughnuts and soft drinks. Regular consumption of these foods and eating nutritionally inadequate diet including low consumption of fruits can result in a number of non communicable diseases including obesity (Salvaro, 2009). This may have contributed to the high prevalence of overweight and obesity (30% and 25%) observed among the respondents respectively.

The study confirmed that breakfast consumption is an important indicator of a healthy lifestyle but a cumulative percentage (62.5%) of the undergraduates skipped it at one time or the other within the week. The finding was similar to the work reported by Oladapo *et al.* (2014) that 52% of Nigerian undergraduates skipped breakfast. This is not a positive attitude as observed by Eberechukwu *et al.* (2013) because the brain makes use of the blood sugar (glucose) stored up overnight and if breakfast is skipped, by mid day, the sugar gets used up and people grow tired and irritable. Nadeem and Umair (2014) opined that students who skip meals are lazy, lose weight, often wake up late and miss lectures. Skipping breakfast create a state of hunger, which can diminish the ability to learn and concentrate in class. Giovannihi, Agustinia and Shamir (2010) affirmed that students who ate breakfast are active, early to class, have enhanced memory retention, concentrate and participate actively in class.

The reasons undergraduates gave for skipping breakfast include: time constraint (16.6%), to prevent weight gain (14.6%), woke up late (11.6%) and no money (10.7%). Okpala and Okponibuot (2013) in a similar study had observed that the primary reason why undergraduates skipped breakfast was lack of time. Skipping breakfast to prevent weight gain was another major reason given by undergraduates. On the other hand Balvin-Frantzen *et al.(* 2013) had shown that meal skipping is not very effective in preventing weight gain, rather it contributed to the development of poor eating habits such as snacking on high sugar and fat diets which eventually leads to overweight (Salvaro 2009). When the BMI of the regular breakfast skippers was compared with the BMI of regular breakfast eaters in the study, the breakfast skippers were found to have a significant high BMIs (34.6% and 44.2%), overweight and obese than the non breakfast skippers (26.5% and 10.3%) respectively. The Chi-square statistics also showed a significant difference between the BMI of regular breakfast eaters and regular breakfast skippers at < 0.05. This gave credence

to the fact that skipping breakfast cannot be regarded as a good dietary practice when one wants to lose weight. Similar observations by Okpala and Okponibuot (2013) showed that a higher percentage of overweight and obese students were found among non breakfast eaters when compared with regular breakfast eaters. The third National Health and Nutrition Examination Survey (2010) reported that adolescents and young adults who skipped breakfast had significantly higher body mass index than those who ate breakfast. This has been explained to be due to the fact that breakfast eaters tend to make healthier decisions in food choices than breakfast skippers. Breakfast is important in the overall health of the undergraduates and can improve performance and participation during studies.

Conclusion

The study revealed that many undergraduates of the Faculty of Education ABSU skipped breakfast regularly. Those who ate breakfast consumed mainly beverages (softdrinks, cocoa drinks and tea), sweetners, snacks (cakes, buns, doughnuts, biscuits, meat pie) and processed oils (margarine or butter as spread on bread and biscuits). These are empty calory foods that may not provide all the nutrients needed for the normal functioning of the body, but have been identified as predisposing factors to diseases. This may have contributed to the high prevalence of overweight and obesity observed among the respondents.

Recommendations

1. The findings recommend the introduction of nutrition education (including adequate breakfast consumption and healthy feeding habit) as part of the orientation programmes organized for fresh students because it will go a long way to help the undergraduates make informed decisions on their breakfast habits which will in turn help reduce the risk of obesity with its accompanying health challenges.
2. The department of Home Economics can launch training and awareness campaigns in the campus to point out the dangers of breakfast skipping among undergraduates.
3. More professors of Home Economics and nutrition should be given slots for nutrition education seminars during the monthly inaugural lecture series presently championed by the present administration in the university.

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