Lifestyle Behaviours, Among University Students in Nigeria by Gender and Ethnicity

Ezenna Micheal Agwu[1], Mark De Ste Croix[2], Slyvanus, Nuria Nwachukwu[3]

[1]Department of Public Health, Mother Teresa Public Health Research Centre, Aba , Nigeria
[2]Department of sports Physiology, Faculty of Applied Sciences, university of Gloucestershire, Glouceter, United Kingdom
[3]Department of Public Health, Faculty of Allied Medical Sciences, University of Calabar, Calabar, Nigeria

ARTICLE INFO	ABSTRACT
Published Online: 08 June 2018	**Introduction:** Previous studies on students' health have suggested the need for exploring the ethnic and gender differences of health status and lifestyle behaviours. There is enough evidence in other populations study to show that lifestyles predict health status. However, the current study is the first to examine lifestyle behaviours by gender and ethnicity among university students in Nigeria. **Method:** the study was cross sectional. Full time students were recruited from six universities within three ethnic groups in Nigeria. Data collection was by questionnaire and 1549 responses were valid. **Result:** With regard to unhealthy lifestyles such as drug use and smoking, students from Hausa ethnic groups reported higher than others. On the other hand, students from Igbo ethnic group reported better than other groups with regard to healthy lifestyles such as fruit consumption.. **Conclusion:** The result indicated that healthy lifestyle is a better rating of health.
Corresponding Author: **Ezenna Micheal Agwu**	

1. INTRODUCTION

Lifestyle behaviours have been implicated in individual's health status and wellbeing. Whereas positive health behaviours such as physical activity, eating five serving of fruits and vegetables per day is linked with wellbeing, health risk behaviours such as cigarette smoking, excessive alcohol intake, and physical inactivity, are linked with poor health outcome such as obesity, hypertension and diabetes. Health risk behaviour was defined generally, as the activities that increase a person's vulnerability or susceptibility to negative health outcome (Garrusi *et al.,* 2008).

In contrast, health-promoting behaviours are a positive approach to living and a means of increasing well-being and self-actualization (Manwa, 2013; Aldeen & Ibrahim, 2014). More so, there is evidence that engaging in four key health behaviours such as being physically active, avoiding smoking, drinking alcohol moderately, and consuming at least five portions of fruit and vegetables a day may prolong one's life (WHO, 2011).

On the contrary, Higgins and Dale (2009) argued that it is wrong to assume that eating five portions of fruit and vegetables a day is a predictor of healthy diet in general. In their study, Higgins and Dale (2009), concluded that there is not enough evidence to support the assumption of a positive correlation between healthy eating of fruits and vegetables with wellness and recommended more studies on the debate,

to establish the association between good health and the consumption of fruits and vegetables if any.

However, there is evidence that fewer people eat healthily and engage in regular physical activity (Awosan *et al.,* 2014; Hicks *et al*., 2013). In fact, along with tobacco and alcohol use, poor diet and physical inactivity were among the leading causes of death reported worldwide (Mokdad *et al.,* 2004; Aghaji, 2008; Garrusi *et al.,* 2008; Asekun-Olarinmoye *et al.,* 2013; WHO, 2013b). World Health Organisation (WHO, 2005) statistics indicated that each year at least: 4.9 million die because of tobacco use; 1.9 million die because of physical inactivity; 2.7 million die because of low fruit and vegetable consumption.

Several studies have examined student's lifestyle behaviours and health status in Nigeria (e.g. Omigbodun *et al.,* 2004; Adewuya *et al.,* 2006; Onyechi & Okolo, 2008; Onyezugbo, 2010; Aldeen & Ibrahim, 2014). However, while these studies have provided valuable data about university student's health issues, most of these studies have considerable limitations that necessitated further studies. Some of these limitations are: the use of convenience sample**:** use of small sample size: use of non-validated instruments: and lack of comparative studies.

However, despite the above limitations, there is enough evidence to show that university-aged students have a high risk of making unhealthy lifestyle choices that could affect their health and wellbeing. In the context to fulfil the goal of

university education, promoting health and wellbeing of students means promoting effective learning and human development (Mikolajczyk *et al.,* 2008; El Ansari & Stock, 2012). Therefore, as far as university students are vulnerable, with regard to lifestyle choices, there is a need to provide research based evidence to educate young university students on the lifelong implications of their choice, which might later influence their health behaviour (Adlaf *et al.,* 2005). Consequently, inter-cultural comparative studies on student's lifestyle and wellbeing will contribute to the improvement of health of university student's. This study examines students lifestyle behaviours (e.g. Fruits and vegetable consumptions, Cigarette smoking, and Drug uses)

2. BACKGROUND OF THE STUDY

Nigeria is the most populous country in sub-Sahara Africa with an estimated area of 923,773 km^2 (National Bureau of Statistics (NBS) 2010; Aregbeshola, 2011), comprising of 36 states and a population of 152 million people (Ucha, 2010; Akuede *et al.,* 2012). Based on natural landscape, Nigeria is divided into three regions namely: Northern region, Western region and Eastern region, by the intersection of the River Niger and the River Benue before terminating into the Gulf of Guinea (Philips, 2004). The geographical location of the Federal Republic of Nigeria is on the Gulf of Guinea in the West Africa

. Nigeria is multi-ethnic, organized into three major ethnic groups that included Igbo, Yoruba and Hausa/Fulani (Bangdiwala *et al.,* 2010; Ucha, 2010). In Nigeria, ethnic groups have strong regional base and identit: The Hausa/Fulani in the North, predominantly Muslims; the Igbo in the East, mostly Christians and the Yoruba in the West, a mixture of Christians and Muslims (Anugwom, 2000; Shehu *et al.,* 2010).

Nigerian population is 50% Muslims while 40% of the population are Christians, and the rest 10% of the population follows the traditional African religion (Paden, 2008; Fafowora, 2011). Although, there is sufficient evidence to show that peoples religious orientation, religious affiliations and practice, are associated with lifestyles behaviours. (O' Connor, 2003; Miller, 2004; Ying, 2009; Idehene & Ojewumi, 2010). However, no study exists in Nigeria that compares the lifestyle behaviours of the Muslim north, with those of the Christian south, by ethnicity and gender, in any population group.
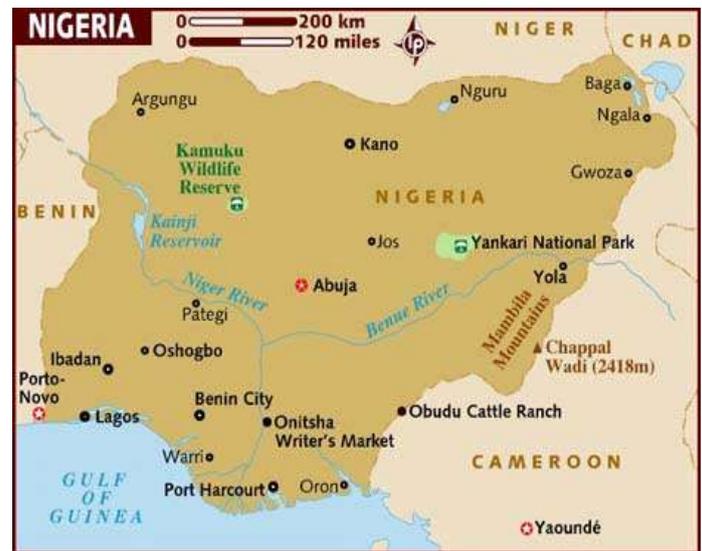

Figure 1.1 Map of Nigeria showing the three regions by the intersection of the Niger River and Benue River. Available at: http//: mans.com [Date of accessed 20th July, 2014].

3. MAIN BODY

3.1. Fruits and Vegetable consumption:

Dietary patterns of adolescents and young adults has been widely studied and reported in the literature as being associated with obesity, frequent snacking and meal skipping particularly breakfast (Onyechi & Okolo 2008; El Ansari *et al.,* 2011). There is need to study the level of awareness of the student's nutritional needs through their diets especially in a very difficult economic situation in Nigeria (Onyechi & Okolo, 2008; Achinihu, 2009). Moreover an earlier study conducted by Healthy people (2010) found that dietary intake plays a key role in four out of the ten leading causes of death in the United States and contributes to numerous health problems such as hypertension, osteoporosis and obesity (USDHHS, 2000).

Consequently, promoting healthy diets especially diets rich in fruits and vegetables among students are important for growth and development (Lytle, 2003). However, there is evidence that the majority of university students were not consuming enough fruits and vegetables to prevent diet-related diseases (Huan *et al*., 2003). Previous studies indicated that students dietary habits are influenced by culture, gender and religion. There is evidence that fruits and vegetables consumption of more than five servings per day, correlates very strongly with a decreased risk of developing chronic diseases such as depression, obesity heart diseases hypertension and cancer (WHO, 2005; Achinihu, 2009). More so, evidence is still emerging about a positive role for fruits and vegetable consumption in reducing the risk of cataracts, chronic obstructive disease and hypertension (Riboli & Norat, 2003; WHO, 2006). Although gender plays a prominent role on the quality and quantity of what people eat in addition to how the food is prepared (Onyechi & Okolo, 2008; Achinihu, 2009). However, the few studies that examined the gender differences in student's fruit and vegetable consumption are

inconclusive. In a study among university, students in Australia by Scully *et al.* (2007) majority of students do not consume the appropriate quantities or the recommended fruits and vegetables. According to Scully *et al.* (2007), only one in five students consumed an adequate amount of vegetables, while less than half of the students consumed the daily-recommended servings of fruits.

In addition, the study observed gender differences in the consumption of fruits and vegetables, with male students more likely to consume the recommended servings of vegetables, while the female students are more likely to consume the recommended quantity of fruits daily. On the other hand, Onyechi and Okolo (2008) in their study among students in Nigeria found that (27%) of students met the recommended servings of fruits and vegetables. In contrast, others found the percentage of students that met the recommended servings of vegetables and fruits to be less than one-quarter (DeBate *et al.*, 2001; El Ansari *et al.*, 2011).

El Ansari, *et al.* (2011) examined the gender differences in eating behaviour and dietary intake among (n =584) university students in Malaysia. The result showed that male students consumed higher frequency of fruit juices, fruits, vegetables and milk compared to females. In a similar study, DeBate *et al.* (2001) examined racial and gender differences in dietary practices among college students in US. The result showed that only (1.3%) of respondents consume the recommended (3-5) servings of fruits and vegetables with (29%) of male compared to (26%) of female students.

Conversely, El Ansari *et al.* (2012) found that less than half of students in their sample reported frequent consumption of fruit, and vegetables. In addition, higher percentage of female students consumed more recommended quantity of fruits and vegetables. However, Beech *et al.* (1999) postulated that the gender differences in fruit and vegetable consumption may be attributed to gender differences to health awareness in nutrition knowledge, and recommended the need for health promotional campaign among university students. The National Health and Medical Research Council recommended that adults should consume a minimum of 5 servings per day of vegetables and two servings per day of fruits, to ensure that at least (70%) of the average adult requirements of protein, vitamins and minerals are met (Morgan, 2009). With regard to cultural differences in nutrition, only DeBate *et al.* (2001) in their study examined the racial differences in dietary consumption among university students. Their study showed evidence that dietary habits are associated with ethnicity. In the study, higher percentage of Caucasians than black- American students consumed the recommended servings of food items. In contrast, more students from black American origin reported a higher percentage consumption of meat than white American students. However, despite the health implication of ethnic differences in dietary choices, still only few studies examined the important of cultural and cross-cultural studies among students.

3.2. Drug habits

Substance abuse is becoming a global health problems and it correlated positively with other unhealthy behaviours such as smoking, addiction and high-risk sexual behaviour (WHO, 2006). In addition, drug abuse has been linked to adverse health effects such as liver cancer, depression, mental illness, including social consequences such as rapping, drink driving, armed robbery, unemployment, poverty and family related problems (WHO, 2006). Worldwide, drug use causes about (3%) of deaths 1.8 million annually, which is equal to (4%) of global disease burden (WHO, 2005). The abuse of drug among university students contributes to a worldwide public health problem and is one of the main causes of poor academic performance and drop out among both male and female students (Abolfotouh *et al.,* 2007; Lihan *et al.,* 2008).

Consequently, there is a need to understand the factors that motivate students into drug taking. For instance, Turisi *et al.* (2006) examined problems of substance abuse among university students in a university in the USA. The study provided evidence that university students engage in high-risk drinking which is responsible for assaults, serious injuries and arrests. The study concluded that more studies are needed to understand the reasons behind substance abuse and the type of interventions needed. In addition, Turisi *et al.* (2006, p. 401) also postulated that: *each year, substance abuse is responsible for assaults, serious injuries, and arrests that occur among college students.*" .Studies showed that higher percentage of male students reported the use of illicit substances than female students (e.g. Makanjuola *et al.*, 2007; El Ansari *et al.*, 2011). A study conducted among university students in Brazil by (Pillon *et al.*, 2005) indicated that (84%) of male students reported the use of marijuana, compared to only (16%) of female students in the study. However, Pillon *et al.*, 2005) argued that the prevalence choice of marijuana among students may be based on the students belief that marijuana is a light drug with little or no consequence on health. Similarly, gender disparity was also found among substance users. For instance, most of the studies from EU countries and USA found that more male students compared to female students reported drug use (e.g. Delva *et al.*, 2004; Keller *et al* 2007; El Ansari *et al.*, 2011). However, none of the aforementioned studies advanced any why more male students use drugs despite studies suggesting that more female students reported stress and depression.

Conversely, Adewuya *et al.* (2006) in a study among students in Nigeria found that more females than males reported a higher frequency of substance dependence, but called for more studies. On the other hand, Studies showed racial differences in both alcohol and drug uses among university students. For instance, Webb *et al.* (1996) found that while about (80%) of black students reported never used

Cannabis, only (39%) of white students in the same study reported the same. On the other hand, there is evidence that drug use correlated positively with unhealthy behaviours. For instance, El Ansari *et al*. (2011) reported that drug use was related to low participation in vigorous physical activities. Other studies found an associated between tobacco smoking, marijuana and other drug uses with other unhealthy lifestyles such as alcohol use, poor diets and inactivity (Alexandre & Bowen, 2004; Vickers *et al*., 2004; Stock *et al.,* 2009; El Ansari *et al.,* 2011).

3. 3. Cigarette smoking

Tobacco smoking is an unhealthy lifestyle with a great public health impact. About five million people die each year from tobacco consumption (WHO, 2005). It has been observed that Tobacco smoking is the largest preventable risk factor for morbidity and mortality in developed countries, where at least one in four adults smoke cigarettes (Nawaz & Naqvi, 2008). Tobacco smoking is a major health hazard that influences the risk for many different diseases such as cancer, coronary heart diseases and congenital defects in children whose mothers smoke during pregnancy (Carroll *et al., 2006;* Garcia *et al., 2007).*

Among the university students population, there is enough evidence to show that cigarette smoking is on the rise for both male and female (Steptoe *et al.,* 2002; Kennedy & Holahan, 2008; Erdogan & Erdogan, 2009; Fawibe & Shittu, 2011). However, limited studies on the use of cigarette among university students has also limited the much needed evidence critical in planning intervention programmes for student population. Consequently, Prokhorov *et al.,* (2008) in conclusion of their literature review recommended that conducting future research is necessary to understand the factors associated with cigarette smoking among university students. However, there is evidence that greater percentage of smokers among university students are male students. For instance, Fawibe and Shittu (2011) examined the prevalence and characteristics of cigarette smoking in (n = 1754) students in a Nigerian university. The result showed (7.7%) of males as smokers with an average of 1-20 cigarettes per day, compared to (2.0%) of female students are current smokers with an average of two cigarettes per day.

However, the authors argued that their result was similar to the national prevalence rates reported for the general population in Nigeria by (WHO, 2008). Similarly, higher prevalence of male smokers was also reported by (Steptoe *et al*., 2002), whereas Erdogan & Erdogan *et al*., 2009) found no gender differences among students who are on the occasional smoking category. The perception by many students that cigarette smoking can reduce weight, stress, depression and anxiety (Steptoe *et al*., 2002, Adewuya 2006; Garcia *et al.,* 2007) is a wrong information and potentially dangerous.

On the contrary, smoking is associated with psychological problems, which include stress and depression (Kenney & Holahan, 2008). There is evidence that many female students initiate smoking as a means of reducing body weight (Honjo & Siegel., 2003; Garcia *et al.,* 2007). Similarly, a study by Carroll *et al*. (2006) found that smoking was associated with weight loss. There is a public health need to challenge the idea that smoking can reduce weight and that girls with thin body is better appreciated in the society (Honjok & Siegel, 2003; Carroll, *et al*., 2006).

However, Piko (2002) found that student's wrong impression about smoking and health may be due to poor knowledge about the health implications of smoking. He recommended in his study that students should be taught about the health risk of smoking and the link it has in the initiation of psychological problems and cancer. On the other hand, Steptoe *et al*. (2002) argued that health education about other unhealthy behaviours such as alcohol use, unprotected sex and drinking and driving, which has diminished the importance of campaigns to reduce smoking. Consequently, Carroll, *et al*. (2006) postulated that smoking should not be considered as independent health behaviour, since there is evidence that smoking correlates positively with other unhealthy behaviours such as alcohol and drug abuse (Wechsler *et al.,* 1998; Hashim, 2000). However, the need for more studies on student's perception of smoking and frequency of smoking was called by many studies (e.g. Wechsler *et al*., 1998; Steptoe *et al.,* 2002; Carroll *et al*., 2006).

4. RESEARCH METHODS

The research questions addressed by the present study are as follows:

- What is the health behaviour of university students in Nigeria?
- Are there differences in health behaviour among university students in Nigeria by sex and by ethnicity?

4.1. Participants

The sample for the current study was university students, drawn randomly from universities across Federal Republic of Nigeria. The health survey was administered to 2500 students of which (n = 1549) respondents completed their questionnaire with the required data and were consequently entered for the analysis.

4.2. Ethical considerations, consent and confidentiality

The permission to conduct the study was obtained from the Vice Chancellor in each participating University. However, the present study involved only healthy and non-vulnerable adults from the age of 18 years, and no stage of the data collection involved any invasive procedure, emotional or psychological impact. Prior to data collection, the researcher explained the content of the research and what it takes to participate in each classroom and lecture venues before distributing the questionnaire to the students.

Each questionnaire was attached with consent for each participant to feel before ticking the questionnaire. It is important to note that participating in the study was

voluntary. The participants were informed that their personal identity will be secretly guarded and their confidentiality will be sacred. To achieve this, the questionnaire was made completely anonymous which means it contained no names, no personal addresses, no email nor phone numbers.

4.3. Data collection procedure

Multistage data collection procedure was employed for the current study. The Universities in Nigeria were stratified into three categories: Federal Universities, State Universities and Private Universities. To achieve a national student's representative sample, this study sampled students from each of these three university categories. A total of (n =2500) students sample of both male and female was targeted. To ensure that these samples have equal representation by institution, course and year of study the researcher took the following steps:

First, the intended sample (n = 2500 ± 300) was shared equally among the three university categories resulting in (n = 833) participants estimated from each university category (Federal, State and Private). Second, since two universities were recruited from each category, consequently, (n = 833) participants were shared into two, allowing a sample of (n = 416) from each participating university. Third, since two disciplines were sampled from each participating university, consequently (n = 416) was shared into two, allowing (n = 208) participants to be recruited from each academic discipline.

Table 1: Sampled universities and courses of study

University categories	Federal Universities	State Universities	Private Universities
Sampled Universities	Obafemi Awolowo University University of Uyo	Osun State University Akwa Ibom State University	Obon State University Oduduwa State University
Sampled courses	Medicine History	Accounting Agriculture	Microbiology Economics

Finally, since four academic years was shortlisted (cut off point) from each academic discipline, consequently, the sample (n =208) was shared among four academic years, allowing (n = 52) students to be recruited from each academic year (e.g. 1, 2, 3, & 4).The universities in Nigeria were then stratified into three categories, and two Universities were recruited from each University category by random sampling (see Table 1).

Stage 2 Sampling of students' disciplines: in each university category, participating in the current study, students courses were adjusted for similarities, by merging different but similar departments together Two courses of study were randomly selected from each university category for the study (Table 1). Finally, students' year of study were stratified into (1st, 2nd, 3rd, 4th, 5th, 6th) academic years. However, the cut-off year was fixed at 4th year. In other words, the researcher selected students' participants from academic years (1-4). This cut-off point enabled participants to show similar characteristics.

For example, while department of medicine has students up to years (1-6) whereas microbiology and accounting departments have students only and up to years (1-4) academic programmer. Therefore fixing a cut-off year at (1-4) ensured identical sample with similar experiences. Other studies (e.g. EL-Gilany *et al*., 2008) applied similar cut-offs in students population.

5. DATA COLLECTION PROCEDURES FOR THE PRESENT STUDY

The data collection was by anonymous self-reported questionnaire. The questionnaire was given to the participants during lecture with all the student's on-sit. Giving to students on hand in this form was a good strategy as it recorded a very high participation and completion rate. All the students in the class were given the questionnaire and the strategy-protected students who did not wish to participate from being embarrassed, as they gently returned the questionnaire when everybody was busy without any body noticing them. On the front page of every questionnaire was attached the consent form which the participants were asked to read very carefully and sign if they accept to participate in the study before completing the questionnaire.

5.1 Statistical data analysis for the present study

Student's responses to the questions in the present study were transferred to the SPSS statistical package, 20.0 versions. Preliminary data analysis was conducted with descriptive tests. descriptive statistics made it possible for the description of the characteristics of the sample in percentage, mean, and standard deviation, thereby providing an answer to research question 1. To answer research question 2, Chi square test was employed to explore the relationship between categorical variables. It was possible to examine the relationship between sex or ethnic as an independent categorical variable with other categorical dependent variables such as drug use smoking or dietary choices.

6. RESULTS

Table 2. Chi-square analysis showing frequency (%) of lifestyle behaviours by sex and ethnicity

Variables	Sample	Female	male	P/ PHI	Hausa	Igbo	Yoruba	P/ PHI
Daily food								
Fruit								
Met>2-4	1029 (66%)	538(63%)	491(70%)	**0 .006*/ .079**	357(67%)	372 (67%)	301 (63%)	**0 .006*/ .070**
Unmet<2-4	520 (34%)	310(37%)	210 (30%)		173 (33%)	171(33%)	176 (37%)	
Vegetables								
Met>3-5	966(62%)	527(62%)	439 (63%)	**0 .847/ .005**	335(63%)	352 (65%)	280 (59%)	**0. 117/ .053**
Unmet<3-5	583(38%)	521(38%)	262 (37%)		195 (37%)	191(35%)	197(41%)	
No smoking on								
Campus								
Strongly disagree	152 (10%)	92 (11%)	60 (9%)	**0.001*/ .077**	42(8%)	7 3(13%)	37(8%)	**0.001*/ .167**
Disagree	63 (4%)	24 (2%)	39(6%)		16 (3%)	21(4%)	26 (5)	
Agree	292 (19%)	160 (19%)	132 (19%)		96 (18%)	71(14%)	128 (26%)	
Strongly agree	1042 (67%)	572 (68%)	470 (66%)		376 (71%)	378 (69%)	289 (61%)	
Smoking habit								
Current smoking	92 (5%)	34(4%)	59 (8%)	**0.001*/ .092**	45 (9%)	15 (3%)	33 (7%)	**0 .001*/ .014**
Non-current smoking	1448 (95%)	814 (96%)	642 (92%)		485(92%)	528 (97%)	444 (93%)	
Awareness of								
Smoking to								
Lung cancer								
Yes	1310 (85%)	711 (84%)	599 (86 %)	**0.361/ .023**	451 (85%)	465 (86%)	395 (85%)	**0.550/ .028**
No	233 (15%)	134 (16%)	99 (14%)		79 (15%)	76 (14%)	78 (17%)	
Drug uses								
Yes regularly	137(8%)	76 (9%)	9(9%)	**0 .761/ .035**	53(10%)	42 (8%)	40 (9%)	**0.001*/ . 012**
Only few time	403(24%)	218 (27%)	185(27%)		166 (32%)	109 (21%)	128 (27%)	
Never	983(67%)	536 (64%)	447(65%)		302 (58%)	378 (72%)	304 (64%)	

However, the result showed that students from the Yoruba ethnic group had the lowest number of students that met the recommended daily fruits intake, while Igbo and Yoruba ethnic groups had similar percentages of students that met the daily fruits intake. These analyses are presented graphically in (Figure 1). The graph also indicated that while Igbo ethnic group had the lowest, whereas Hausa and Yoruba showed no significant differences.
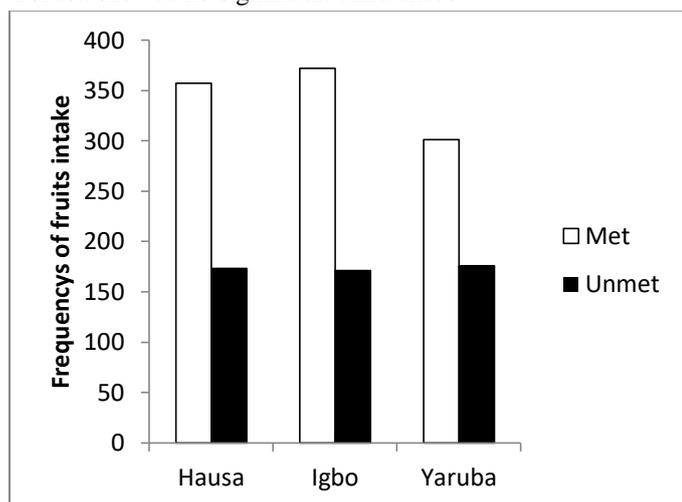

Figure 1. Frequency of met and unmet daily intake of fruits by ethnicity

With regard to daily servings of vegetables, the result showed no significant differences between male and female students in the sample, (Table 2). However, the overall assessments showed that more than (60%) of students met the required recommendation for daily consumption of vegetables. Similarly, regional consumption of vegetables among students showed no regional differences (Table 2), with more than half of the students in all regions reportedly met the daily-recommended consumption of vegetables and fruits.

With regard to current smoking, there was significant differences by sex and ethnic (Table 2) and the result shows that only very few students are current smoker compared to non- smokers. Overall, male students smoked more than females, the effect size indicated that the association of smoking with males was much compared to females (r = .092). Hausa males smoked more while Igbo males smoked the least. On the other hand, while Hausa females smoked more, Igbo females also smoked the least. These analysis are presented graphically in (Figure 2) showing frequency of current smokers by sex and ethnic groups. The graph shows that while Hausa ethnic groups had more students in both male and female that are current smokers, The Igbo ethnic

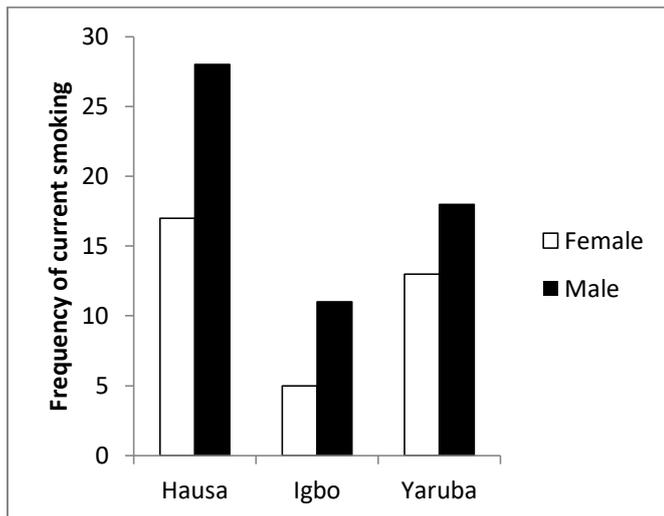group had the lowest number of students in both male and female that are current smokers.

Figure 2. Current cigarette smoking by sex and ethnicity

In addition, the study indicated that a higher number of students in the sample are aware that smoking is dangerous to health, and is associated with very serious diseases such as cancer compared to students that reported not being aware that smoking is dangerous to health (Table 2). However, there was no significant difference between male and female (P > 0.05), similarly, there was no significant difference among the three ethnic groups (P > 0.05).

With regard to drug use (Table 2),

the analysis of the overall sample showed that less than (10%) reported using drug regularly. However, when the analysis was conducted by sex, the result showed that only (9%) of students indicated regular drug use, without any significant differences. When the analysis was conducted by ethnic origin, the result showed that drug use among students was significantly difference by ethnicity, where more students from the Hausa ethnic group reported regular drug use and students from the Igbo ethnic group reported the least. This analysis is shown in (Figure 3) with Hausa showing highest use of drugs and Igbo the least. Igbo also had more students who had not tested drug.
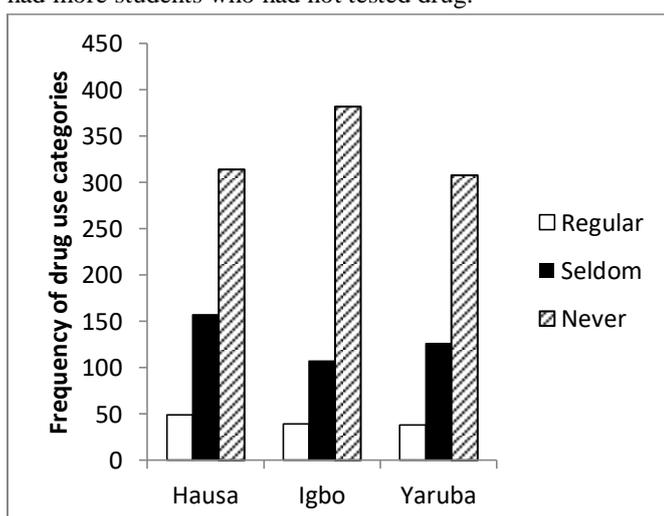

Figure 3. shows drug use categories by ethnicity

7. DISCUSSION OF THE RESULTS
7. 1.Fruits and vegetables consumption

In the current study, the result suggests that a reasonable number of students (66%) met the recommended number of fruits and vegetables consumptions (Table 2). The study indicated main effects for sex and ethnicity, with more male students indicated more fruits consumptions than females. The uniqueness of the present study makes it difficult to be compared with other previous studies in Nigeria. However, Onyechi and Okolo, (2008), in a study among students in Nigeria found that only (28.2%) and (26.7%) reported intake of fruits and vegetables respectively. Their study is not comparable to the present study because of their small sample and recruiting participants from one region and one university in Nigeria.

However, in recent times Nigerian famers were given incentives such as interest free loans by the federal government of Nigeria, as a motivation for many people to be engaged in Agriculture, and farming, both mechanized and subsistence farming. Consequently, by encouraging mechanized farming, increased production of foods, including fruits and vegetables was the result with the population having abundant fruits and vegetables at an affordable prizes. Similarly, students in the present study indicated better consumption of fruits and vegetables than most other African countries. For example, Dris (2005) noted generally that, there is a low consumption of fruits and vegetables among students in North African countries (Libya, Tunisia, Algeria, and Morocco). This low consumption was attributed to the lack of a clear and efficient strategy to develop agriculture, in addition to over population growth, pollution, hash climatic conditions, and other natural disasters and crop diseases. More so, low consumption of fruits and vegetables among university students may be due to food shortages in addition to poor income, and students' preferences to sugar and fat foods, observed among students in developed countries.

Most studies exploring sex differences in dietary behaviour among students indicated a trend for females to have more frequent intake of fruits and vegetables than males (Rasmussen *et al*., 2006; Mikolajcyzk *et al*., 2009; El Ansari *et al*., 2011). However, Scully *et al.,* (2007) found that in their study, males were more likely to consume the recommended quantity of fruits and vegetables than females, which supported the finding of the current study. However, it is difficult to offer any conclusive explanation for this trend. Consequently, there is a need for more studies with regard to dietary habits among students in Nigeria. Main effects for ethnicity suggested that Yoruba ethnic group reported the lowest consumption of fruits compared to Igbo and Hausa ethnic group (Table 2). The Yoruba ethnic group are the most westernized among all the ethnic groups in Nigeria, it may be possible that their diets was a reflection of western culture.

Another possible explanation may be on affordability of fruits since the Yoruba ethnic group had the lowest monthly income among the ethnic groups in Nigeria (Table 2). There is no previous study on students' fruits and vegetables consumption in Nigeria based on ethnicity to compare with the present study. However, studies conducted by Healthy people (2010) found that fruits and vegetables intake plays a key role in four out of the ten leading causes of death in the United States, and contributing to numerous health problems such as hypertension, osteoporosis and obesity. Therefor there is a need for more studies among students in Nigeria that will examine students fruits and vegetables consumptions by ethnicity, so as to plan an appropriate interventional strategies that will motivate students on healthy diets in Nigeria.

7.2. Smoking habits and drug use

The result of the current study indicates that only few students about (5%) are current smokers and only (8%) take drugs (Table 2). The study provides evidence that smoking is not a public health issue among students in Nigeria. Similar findings was reported by WHO (2008) and Fawibe and Shittu, (2011) among university students in Nigeria. However, Fawibe & Shittu (2011) attributed low smoking among university students in Nigeria to income insufficiency, strong religious attachments and cultural orientations. On the other hand, (84.6%) of students in the present study, indicated being aware of the health implications of smoking (Table 2). Consequently, the low rate of smoking and drug use among young adults in Nigeria especially university students may be attributed to a regular public health campaign by both governments and religious organizations in Nigeria (Idehene & Ojekwumi, 2010; Fawibe & Shittu, 2011).

More so, when drug use and the health effect of smoking was compared by region and sex, the result showed no significant differences. Absence of any differences by sex and ethnicity may be an indication that the regular smoking campaign in Nigeria have the same positive impact in both regions and sex. Main effects for sex and ethnicity was found for current smoking, With more males than females reported current smoking in a male to female ratio of (2: 1). A similar finding among students in Nigeria was reported by (Awotedu & Martinez; 2006; Fawibe & Shittu, 2011).

In addition, the World Health Organization (WHO, 2008) reported in a study among the general population in Nigeria, that the smoking rate of Nigerians in general was low with females lower than males. Similar studies in other countries also provided evidence of high prevalence of smoking among males than females. For example, studies in Saudi Arabia, by Hashim, (2000) and among students from different European countries by (Steptoe *et al.,* 2002). Smoking is viewed in many countries, especially African countries as a males activity based on cultural norms. With regard to ethnicity, the result suggest that Hausa both males and females smoke more than other groups, while Igbo both male and females smoked less than other groups.

However, high rate of smoking among the Hausa ethnic group might be related to high stress and depression especially among Hausa females. Studies have shown that stress and depression are associated with smoking initiation, continuation and frequency (Adewuya, 2006; Kenney & Holahan, 2008). In the current study, higher number of students from the Hausa reported more stress and depression than students from other regions. The current study recommends that more studies should be carried out on the association of stress and depression with smoking among university students in Nigeria.

7.3. Use of psychotic drugs

The analysis indicated main effects for ethnicity and not for sex. Further analysis suggest that Hausa ethnic group reported more in both the seldom and regular drug use categories than other ethnic groups. The Igbo ethnic group had the lowest drug use in both the seldom and the regular drugs use categories. The result suggest that only within (10%) of students in each region indicated regular use of drugs and the Hausa ethnic group takes drugs regular than other ethnic groups and Igbo ethnic groups the least. The possible explanation for drug use among Hausa ethnic group might be related to high stress and depression reported by students from that region.

Other studies have also reported positive association among these variables with increased drug use (Vickers et al., 2004; Adewuya 2006; Makanjuola *et al.,* 2007; Mikolajczyk *et al.,* 2008; Stock *et al.,* 2009; El Ansari *et al.,* 2011). However, the sources of high stress among Hausa ethnic group in the present study is attributed to high rate of violence, killings and kidnappings of students by Boko Haram militants (Adebayo, 2014). Due to the uniqueness of the present study, comparison with previous studies is difficult as there is no previous study among university students in Nigeria based on ethnicity.

However, Makanjuola *et al*. (2007) with a convenience sample of (n = 906), in a single university in Nigeria, found that a (38%) of the sample were in current use of psychotic drugs. Similarly, a study among university students in Brazil (n = 200) by (Pillon *et al*., 2005), found that (30%) of students are on regular use of marijuana. There are several possible reasons that might be responsible for the different findings between these studies and the present study, such as: religious activities and affiliations, cultural differences, sample size and recruitment methods economic situations and environmental conditions (e.g. violence, kidnappings, terrorist activities).

Moreover, the above two studies were based on convenience samples and small sample sizes. The low percentage of students that reported regular use of drugs in the present study may be due to the effects of religious devotions and affiliations. There is a need for more studies on drug use among students in Nigeria before a reasonable

conclusion can be drawn, on the drug habits among university students in Nigeria.

8. CONCLUSION

This study focused on the life style behavior of university students in Nigeria by sex and ethnicity. This is the first time a study was based on ethnicity and sex among university student population in Nigeria, consequently literature evidence indicate that the findings from this study have not yet been presented in Nigeria, w3hich makes comparison with previous studies difficult. However due to the multi – ethnic and multi- cultural composition of Nigeria there is a need to understand how these factors inter reacts to produce health inequality in Nigeria by ethnicity and gender especially among university students in Nigeria. The result shows without doubt that there is health inequality in Nigeria between male and females, and also between ethnic groups./ these findings are unique as it suggest that a linear intervention plan for students health in Nigeria will not be effective unless it is based on specific targeted groups either by gender or by ethnicity.

Cover Letter.

This study was the first to suggest that the health status of Nigeria university students is dependent on gender and ethnicity. This study for the first time indicated that the health of female students within the Hausa ethnic group was the poorest compared to other ethnic groups. The public health important for this paper is that health intervention for university students in Nigeria should not be generalized, but should be based on providing the health need for a specific group, such as gender or ethnicity. More so the fundamental message from this paper is that the main determinants of health among university students in Nigeria are dependent more on ethnicity (cultural differences) than on gender.

Contributors

Dr. Dr. Agwu M. E., originated the study, collected data performed analysis and led the writing. Dr. S.B Drapper, contributed immensely on the SPSS analysis and the interpretation of the results, Why Mr. S. N Nwachukwu S. Coordinated the entire draft for spelling and other mistakes.**.**

Acknowledgement

REFERENCES

1. Garrusi, B., Safizadch, H., & Pourhosseni, O. (2008). A study on the Lifestyle of the Iranian university students. *Iranian Journal of psychiatry and Behavioural Sciences,* 2(2).

2. Garcia, D., Sanchec, V., Casares, V., Presa, C., Martinen, E. & Gonzalez, Z. (2007). Tobacco uses amongst nursing and physiotherapy students a cross sectional questionnaire survey. *International Journal of Nursing Students*, 44, 780-785.

3. Manwa, L. (2013). University students dietary patterns: A case of a University in Zimbabwe. *Journal of Emerging trends in Educational research and policy studies*, 4(1): 191-197.

4. Mikolajczyk, R. T, Maxwell, A. E, Naydenova, V, Meier, S., & Ansari, W. (2008). Depressive symptoms and perceived burdens related to being a student: Survey in three European countries. *Journal of Clinical Practice and Epidemiology in Mental Health 4, 19.*

5. Miller, E. D. (2004). The development and validation of a new measure of spirituality. *North America Journal* of *Psychology, 6(3), 423-430.*

6. Morgan, E. (2009). Fruit and vegetable consumption and waste in Australia. Recommendation towards a food supply system framework that will deliver healthy food in a sustainable way. Victorian Health Promotion Foundation in Australia. Retrieved on August, 11, 2008 from http://www.vichealth.vic.gov.au.

7. Aldeen, L. D., & Ibrahim, C. (2014). Knowledge and practice of dietary and healthy lifestyle in a sample of medical and non-medical college students in Baghda. *World Family Medicine Journal*, 12 (3).

8. Awosan, A. K., Ibrahim, M. T. O., Essien, E., Yusuf, A. A., &, Okolo, A. C. (2014). Dietary Pattern, lifestyle, nutrition status and prevalence of hypertension among traders in Sokoto central market, Sokoto, Nigeria . *International Journal of Nutrition and metabolism,* 6(1). Pp. 9-17.

9. Aghaji M., N. (2008). Hypertension and risk factors among traders in Enugu, Nigeria. *Journal of College Medicine,* 13(2), 111-115.

10. Asekun-Olarinmoye, E., Akinwusi, P., Adebimpe, W., Isawunmi, M., Hassan, M., Olowe, O., Mankanjuola, O., Alebiosu, C., Adewole, T. (2013). Prevalence of hypertension in the rural adult population of Osun State, South-western Nigeria. *International Journal of General Medicine*, 6, 317-322.

11. Adewuya, A. O., Ola B., A., Aloba, O. O., Mapayi, B. M., & Oginni, O. O. (2006). *Depression amongst Nigerian university students. Journal of Social Psychiatry and Psychiatry Epidemiology, 41; 674-678.*

12. Adlaf, E. M., Gliksman, L., Demers, A., & Newton-Taylor, B. (2001). The prevalence of elevated psychological distress among Canadian undergraduates: Findings from the 1998 Canadian

campus survey. *Journal of American College Health, 50(2), 67-72.*

13. Aregbeshola, R. A. (2011). The political, economic and dynamics of Nigeria: A synopsis. *Asian Briefing,* 39, 1-7.

14. Akuede, O., Idogho, P.O., & Imonikhe, J. S. (2012) Increasing access to university education in Nigeria: Present challenges and suggestions for the future. *The African symposium,* 12(1), 3-12.

15. Anugwom, E. E. (2000). Ethnic conflicts and democracy in Nigeria: the marginalization question. *Journal of social development in Africa*, 15(1) 61-78.

16. Abolfotouh, M. A. Bassiouni, F. A., Mounir, G. M., & Fayyad, R. C. (2007). Health-related lifestyles and risk behaviours among students living in Alexandria university hostels in Egypt. *Eastern Mediterranean Health Journal. 13(2).*

17. Achinihu, G. (2009). Nutritional status of university students in South-Eastern states of Nigeria. *Journal of Research in National Development, (7)2.*

18. Alexander, L. H., & Link, B. G. (2003). The impact of contact on stigmatizing attitudes towards people with mental illness. *Journal of Mental Health*, 12, 271-289.

19. WHO. (2013). Nigerians wake up to high blood pressure. *Bulletin of the World Health Organization,* 91:242-243.

20. World Health Organization. (WHO, 2011). *The Global economic burden of non-communicable disease*. A report by the World Economic Forum and the Harvard School of Public Health, PP. 1-37. Retrieved on May, 11, 2013, from http://www.weforum.org.

21. World Health organization. (WHO, 2005). *Preventing chronic diseases: a vital investment.* WHO global report. Geneva: World Health Organization. Retrieved on May, 21, 2013, from http://www.who/chp/chronic_disease_report/fo

22. World Health Organization. (WHO, 2006). WHO Health Promotion Glossary: new terms. *Geneva Health Promotion International,* 21(14), PP. 340-345.

23. Webb, E., Ashton, C. H., Kelly, P., & Kamali, F. (1996). Alcohol and drug use in UK university students. *Lancet, 348, 922-25.*

24. Higgins, V., & Dale, A. (2009). *Ethnic differences in physical activity and obesity.* Understanding population Trends and process, Vol.3: ethnicity and integration. Retrieved on August, 4, 2010, from http:// www.CCSr..ac.uk.

25. Huang, T. T. Y., Harris, K. J, Lee, R. E, Nazir, N, Born, W., & Kaur, H. (2003). Assessing overweight, obesity, diet and physical activity in college students. *Journal of American College Health 52(2): 83-86.*

26. Delva, J., Smith, M. P., Howell, R. L., Harrison, D. F., Wilke, D., Jackson, D. L. (2004). A study of the relationship between protective behaviours and drinking consequences among undergraduate college students. *Journal of American College Health, 53(1).*

27. Awosan, A. K., Ibrahim, M. T. O., Essien, E., Yusuf, A. A., &, Okolo, A. C. (2014). Dietary Pattern, lifestyle, nutrition status and prevalence of hypertension among traders in Sokoto central market, Sokoto, Nigeria . *International Journal of Nutrition and metabolism,* 6(1). Pp. 9-17.

28. Aghaji M., N. (2008). Hypertension and risk factors among traders in Enugu, Nigeria. *Journal of College Medicine,* 13(2), 111-115.

29. Asekun-Olarinmoye, E., Akinwusi, P., Adebimpe, W., Isawunmi, M., Hassan, M., Olowe, O., Mankanjuola, O., Alebiosu, C., Adewole, T. (2013). Prevalence of hypertension in the rural adult population of Osun State, South-western Nigeria. *International Journal of General Medicine*, 6, 317-322.

30. Adewuya, A. O., Ola B., A., Aloba, O. O., Mapayi, B. M., & Oginni, O. O. (2006). *Depression amongst Nigerian university students. Journal of Social Psychiatry and Psychiatry Epidemiology, 41; 674-678.*

31. Aldeen, L. D., & Ibrahim, C. (2014). Knowledge and practice of dietary and healthy lifestyle in a sample of medical and non-medical college students in Baghda. *World Family Medicine Journal*, 12 (3).

32. Omigbdum, O. O., Onibokun, A. C, Yusuf B. O., Odukogbe, A. A., & Omigbodun, A. O.(2004). Stressors and counselling needs of undergraduate Nursing students in Ibadan , Nigeria. *Journal of Nursing Education 43(9).*

33. Onyechi, U. A., & Okolo, A. C. (2008). Prevalence of obesity among undergraduate students, living in hall of residence, university of Nigeria, Nsukka campus Enugu state. *Animal Research International 5(3), 928-931.*

34. Onyezugbo, E. U. (2010). Self-efficacy and test anxiety as correlates of academic performance. *International Research Journal 1 (10), 477-480.*

35. Onyechi, U. A., & Okolo, A. C. (2008). Prevalence of obesity among undergraduate students, living in hall of residence, university of Nigeria, Nsukka campus Enugu state. *Animal Research International 5(3), 928-931.*

36. EL Ansari, W, Stock, C., & MikolaJczyk, T. R. (2012). Relationships between food consumption and living arrangements among university students

in four European countries: A cross-sectional study. *Nutritional Journal 11:28.*

37. El Ansari, W., Stock, C., John, J., Deany, P., Phillips, C., Snelgrove, S., Adetunji, H., Hu, X., Parke, S., Stoate, M., & Mabhala, A. (2011). Health Promoting behaviours and lifestyle characteristics of students at seven universities in the UK. *Central European Journal of Public Health, 19(40), 197-204.*

38. Erdogan, N,, & Erdogan, 1. (2009). Smoking at school. Views of Turkish university students. *International Journal* of *Environmental Research in Public Health, 6, 36-50.*

39. Ucha, C. (2010). Poverty in Nigeria: some dimensions and contributing factors. Global majority. *E-Journal,* 1(1), pp. 46-56.

40. Philips, D. A. (2004). *Nigeria geography.* Philadephia; Chelsea House

41. Pillon, S. C., O' Brien, B., & Chavez, K. A. P. (2005). The relationship between drug use and risk behaviour in Brazilian university students. *RevistaLatino-American de Enfermagem, 13 (2).*

42. Shehu, A. R., Abdullahi, A. A., & Adekeye, D. S. (2010). Sedentary lifestyle and Wellness in Kaduna State, Nigeria, *Journal of Ethno Med. 4 (1), 15-19.*

43. Fafowora, D. (2011). The ethnic factor in Nigeria polities, The Nation Politics. Retrieved on May, 12, 2012 from http:// www.thenationonuneorg.net.

44. Fawibe A. E., Shittu, A. O., (2011). Prevalence characteristics of cigarette smokers among undergraduates of the University of Ilorin. *Nigerian Journal of Clinical Practice, 14, 201-205.*

45. Idehen, E. E., & Ojewumi, A. K. (2010). Religiosity and the preventive health behaviour. *Journal of LIfe Psychologia.* Retrieved on April 16, 2012 from,

http://readperiodicals.com/201003/19732388//.html

46. Lytie, L. A., & Black, M. A. (2003). Nutritional issues for adolescents: Best practice and research. *Journal of Clinical endocrinology and Metabolism,* 17(2), p. 177-189.

47. Lihan, O., Yildrim, F., Demirabas, H., & Dogan, B. (2008). Alcohol use prevalence and scio-demographic correlated of alcohol use in a university students sample in Turkey. *Social Psychiatry and Psychiatric Epidemiology*, 43(7), 575-583.

48. Vickers, K. S., Patten, C. A., Bronars, C., Lane, K., Stevens, S. R., Croghan I.T., Schroeder, D. R., & Clark, M. M. (2004). Binge drinking in female college students: The association of physical activity, weight concern, and depressive symptoms. *Journal of American College Health, 53(3).*

49. Nawaz, A., & Naqvi, S. (2008). Attitudes, perceptions, habits of smoker, non-smoker general practitioners and why they fail to motivate patients to quit smoking. *Pakistan Journal of Medical Science*, 24(1), 152-156.

50. Carrol, S., Lee, R., Kaur, H., Harris, K., Strother, M., & Huang, T. (2006). Smoking, weight loss intention and obesity-promoting behaviours in college students. *Journal of the American College of Nutrition*, 25(4), 348-353.

51. Keller, S., Maddock, J. E., Hannover, W., Thyrian, J. R., & Basler, H. D. (2007). Multiple health risk behaviours in German first year university students. *Journal of Preventive Medicine*, 46, 189-195.

52. Kenney, B. A., & Hollahan, C. J. (2008). Depressive symptoms, and cigarette smoking. *Journal of American College Health*, (56) 4.