

**THE HEALTH STATUS AND LIFESTYLE BEHAVIOURS OF UNIVERSITY  
STUDENTS IN NIGERIA BY SEX AND ETHNICITY**

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## **Abstract**

**Background:** The health determinant model indicates that certain sociocultural, socio-demographic, environmental, and lifestyle factors influence health status and wellbeing of any population group in any given nation (Dahlgren & Whitehead, 1991). Previous studies have suggested the need for regional and interregional comparison of health inequalities due to the interaction of these factors. However, few studies have undertaken such investigation, especially among university students in developing countries. The aim of this study was to investigate the health status and lifestyle behaviours by sex and ethnicity among university students in Nigeria.

**Method:** The study was cross sectional. Full time university students were recruited from six universities within three ethnic groups in Nigeria for the study. Data collection was both subjective and objective. The subjective data was based on an anonymous questionnaire, while the objective data involved direct measurements of height in (m) weight in (kg), and blood pressure (mmHg). Ultimately, 1549 responses were valid, while 563 responses were rejected for various reasons including missing data especially sex and ethnicity. The variables examined were, socio-demographic, general health, mental health, cognitive resources and lifestyle behaviours. Descriptive tests, chi-square tests and analysis of variance (ANOVA) tests were conducted.

**Results:** Regarding regional characteristics in socioeconomic status, the result indicated sex and ethnicity effects, and irrespective of ethnicity, female students had better monthly income than male students did. The result suggested that students from the Hausa ethnic group reported better monthly income than students from the other ethnic groups. There is evidence that income have a significant effect on health determinant factors. For example, income affects the choice of residential location, ability to pay for health care services, register for gym for physical activity, afford healthy lifestyles, (e.g. eating fruits and vegetables),

participate in social activities and maintain positive self-esteem (WHO, 2006; Varela-Mato *et al.*, 2012). With regard to social support, the result indicated sex\*ethnicity effects, where female students from the Hausa and Igbo ethnic groups reported better social support than male students, in contrast to the Yoruba ethnic group, where male students reported better social support than females. Students from the Hausa ethnic group saw their GPs more often, had regular medications and had depression more than other ethnic groups. In addition, the result indicated higher prevalence of smoking and the use of psychotic drugs among students from the Hausa ethnic group than other groups. On the other hand, the Yoruba ethnic group had the lowest monthly income, saw their GPs few times and had less frequent medication than the other ethnic groups. In addition, students from the Yoruba ethnic group had low consumption of fruits and are more physically inactive compared to other ethnic groups.

Regarding sex characteristics, the study suggested that irrespective of ethnicity female students are less healthy when compared to male students. In addition, significant sex \*ethnic interaction effects ( $P < 0.001$ ) were observed, in most variables examined in the study, indicating that the students health and lifestyles are both sex and ethnicity dependent. The study suggested that female students from the Hausa ethnic group reported better income and social support, compared to students from the other ethnic groups; however, they also reported regular medication, overweight or obesity, mental health problems, and poor cognitive health than female students from Igbo and Yoruba ethnic groups. In addition, the Hausa male students' preferred smaller female body size compared to male students from the other ethnic groups.

On the other hand, Igbo female students had a better cognitive health and preferred small female body size than female students from the other ethnic groups. The Yoruba female students are less overweight or obese, but had the highest preference for big female body size

and are the least depressed group in the sample. With regard to male students, the result suggested that Igbo male students had regular medication and depression more than other male groups. They also preferred bigger female body size and had better cognitive health than other male groups. On the other hand, Yoruba males reported overweight or obese, than the other male groups.

**Conclusion:** The findings indicated that the health of female students in the sample was poorer than the health of male students; with female students from the Hausa ethnic group, demonstrating the worst possible health outcome. The result also suggested that both high and low socioeconomic statuses are associated with health compromising behaviours among university students in Nigeria. The findings indicated that high cognitive health appraisal might be related to students reporting better mental health especially depression in both male and female students. This study is the first to report that there is an interaction between the different layers of health, in the health determinant model proposed by Dahlgren and Whitehead (1991). Secondly, this study has made a major contribution to the understanding that people who live among regions with conflict and violence may report poor health (both physical and mental) compared to those that live in a conflict free zones. Consequently, the results of the present study suggest that conflict and violence be included among the health determinant factors in the health determinant model proposed by Dahlgren and Whitehead (1991).

**AUTHOR’S DECLARATION**

I declare that this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other educational institution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University of Gloucestershire.

Signed-----

Date-----

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Sometimes I feel discouraged and I think my works in vain;

Then, the **HOLY SPIRIT** revives my soul again.

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## LIST OF ABBREVIATIONS

Title	Abbreviations
World Health Organization	WHO
Body Mass Index	BMI
Higher Education Institute	HEI
Beck Depression Institute	BDI
Higher Education Students	HES
American College Health Association	ACHA
United States Departments of Health and Human Services	USDHHS
National Bureau of Statistics	NBS
Non Communicable Disease	NCD
Central Intelligence Agency	CIA
National Health Insurance Scheme	NHIS
Socioeconomic Status	SES
General practitioner	GP
Sense of Coherence	SOC
Locus of Control	LOC
Powerful Others Locus of Control	POLOC
Internal Health Locus of Control	IHLOC
Federal Government of Nigeria	FGN
International Physical Activity questionnaire	IPAQ
United States Department of Agriculture	USDA
Blood Pressure	BP
National University Commission	NUC

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## **DEFINITION OF TERMS**

Ethnic group: “A social formation of people, distinguished by the communal nature of their boundaries and distinct in terms of language, culture, or both” (Nnoli, 1978, P. 4).

Ethnicity: “A social phenomenon that is associated with interactions among members of different ethnic groups” (Nnoli, 1978, P. 4).

Health Behaviour: “Those personal attributes such as beliefs, expectations, motives, values, perceptions, and other cognitive elements; personality characteristics, including affective and emotional states and traits; and overt behaviour patterns, actions, and habits that relate to health maintenance, to health restoration, and to health improvement” (Gochman, 1997, p. 54).

Lifestyle: “A behavioural pattern stemming from interaction between personal characteristics of an individual and his/her life’s circumstances: It reflects social values, attitudes and activities of a person” (Westerberg *et al.*, 1995, p. 145).

Health- risk behaviour: “Actions taken by an individual that increase the possibility of experiencing a health compromising condition” (Garrusi, *et al.*, 2008, p. 207).

## CHAPTER 1

### 1.1 Introduction

According to the World Health Organisation (WHO, 1946, p. 100), “*Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.*” Conversely, Huber *et al.* (2011) argued that the WHO definition of health as “complete wellbeing” is no longer fit for purpose given the rise of non-communicable diseases (NCDs) like obesity, hypertension and depression. Consequently, Huber, *et al.* (2011, p. 343) proposed an alternative definition, which includes changing the emphasis towards “*the ability to adapt and self-manage in the face of social, physical, and emotional changes and to function with fulfilment and a feeling of wellbeing with a chronic disease or disability.*”

Although, WHO (2006) in order to include both the communicable and non-communicable diseases, have elaborated on their earlier definition of health, by adding, “*Wellbeing is the optimal stage of health of individuals and groups.*” This concept of wellbeing is significant, because it encompasses the realization of the fullest potential of an individuals’ health, physically, mentally and socially, in accordance with the World Health Organisation definition of health (WHO, 1946).

However, the realization of health for all, by the year 2020, projected by the World Health Organisation, have being challenged by the high epidemics of NCDs (Baker, 2004; Ezzati, *et al.*, 2005). Consequently, the public health implication for non-communicable diseases was re-emphasized by the World Health Organization that “*Without adequate action, based on research evidence and intervention, an estimated 388 million people, will die from various NCDs, in less than 10 years*” (WHO, 2005, p. 30).



Although, there is evidence that the onset of certain health conditions such as depression, stress, obesity and hypertension are lifestyles dependent, and can be prevented by certain lifestyle behaviours, such as physical activity, healthy diets, moderate alcohol consumption and smoking (WHO, 2004; Lynn *et al.*, 2004; Hicks *et al.*, 2013; Al-Naggar *et al.*, 2013). Moreover, the World Health Organization (WHO, 2004) pointed out that 60% of an individual's health and quality of life depends on his or her lifestyle behaviours. Quality of life on the other hand, was defined as “an individual perceptions of their position in life, in the context of the culture and value systems in relation to their goals, expectations, standards and concerns” (WHO, 1998, p.1570).

On the other hand, 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, based on research evidence, the WHO (2011), suggested that engaging in four key health behaviours mentioned above, 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.

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 fruit 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;
- 2.6 million die because of overweight or obese;
- 7.1 million die because of raised blood pressure.

There is evidence that lifestyles based on healthy behaviour maximises the quality of life by helping people to avoid diseases, remain strong, and maintain their physical and mental health (Van Rensburg & surujlal, 2013). Consequently, others (e.g. Schmidt, 2012; Epton *et al.*, 2013; Sabbah *et al.*, 2013) pointed out that healthy choices today influence health for the rest of one's life. In other words, new behaviours and lifestyle patterns (e.g. excessive alcohol use, tobacco use, inactivity, and unhealthy dietary practices) formed during university life are likely to be sustained into adulthood.

Similar views above, were upheld by Wang *et al.* (2013, p.1) that "*healthy lifestyles depend on the early adoption of healthy living habits; unhealthy lifestyles among youths are strongly linked to unhealthy habits in adulthood.*" 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; Onyезugbo, 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:

- **Convenience sample:** In this case, the researcher might select participants based on those that are easily available and by virtue of their easy accessibility to him (Bryman, 2008). In other words, it has been noted that if the method used to select the sample is not random, there is the probability that human judgement will affect the selection process, making some members of the population more likely to be selected than others (Polit & Hungler, 1995, Saunders *et al.*, 2000; Bryman, 2008). When a study is based on such a bias, Bryman, (2008, P. 183) maintained that “*the findings may be valuable, but the problem with convenience sampling strategy is that it is impossible to generalize.*”

Consequently, there is a need to repeat studies that are not based on a nationally, randomly selected probability sample, that can be generalized to the students population in Nigeria. Moreover, Hicks *et al.* (2013) warned that when studies are conducted from sample taken from a single university, that special care should be taken not to generalize the findings of such a study to other students population that are not similar in nature. The current study is based on a nationally representative sample among university students in Nigeria.

- **Sample size:** Literature shows that most previous studies on university students population employed small sample size even far below 300 participants (e.g. Chhabra *et al.*, 2006; Steger & Kashdan, 2007; Alkandari, *et al.*, 2008; Onyechi & Okolo, 2008; DeRoma *et al.*, 2009; Biro *et al.*, 2010; Schmidt, 2012). Sample size is important because it is related to effect size; which is the ability of a test to detect the probability level at which result outcomes are said to be statistically significant. It is also related to the power of a test, which is the ability of a test to detect even the smallest effect size, (Boslaugh & Watters, 2008; Field, 2009) and large sample size

increases power (Cohen, 1992). The current study is based on a very large sample (n = 1549) of students from six different universities from different regions in Nigeria.

- Health variables: Most of the previous studies among university students in Nigeria tended to emphasize on specific behaviours. For example, Adewuya *et al.* (2005) examined alcohol use; Makanjuola *et al.* (2007) examined substance abuse, while Onyechi & Okolo (2008) examined only nutritional habits. The research implication for these type of studies was broadly emphasized by (Hicks *et al.*, 2013, p.1) that “*any single behaviour is influenced by other health risk behaviours among young people, and that there is an interrelationship among multiple behaviours such as: alcohol abuse and smoking, sedentary habits and unhealthy nutrition.*”

Consequently, there is a need to examine different health risky behaviours concurrently with different health conditions associated with risky behaviours, to establish a valid report of their association (Mikolajczyk *et al.*, 2008; El Ansari *et al.*, 2013). In the present study, various health indicators and lifestyles was investigated.

- Non-validated instruments: Most of the previous studies employed measurements that were specially designed for their particular study. Because such measures have not been generally validated in other student’s sample, it becomes difficult to compare results from such studies with others.
- Cultural comparative studies: None of the studies in Nigeria examined regional differences with regard to student’s lifestyles and health status. Most of the studies are based on a single region with no investigation of interaction for inter or intra ethnic effect (e.g. Adewuya, *et al.*, 2006; Onyechi & Okolo, 2008; Onyeczugbo, 2010). The need for inter-cultural studies have been emphasized based on the reported differences in health across ethnic groups (Erens *et al.*, 2001).

- Lack of objective measurement: Most of the previous studies that examined students body weight related conditions (e.g. Adams & Rini, 2007; Achinihu, 2009; Banwell *et al.*, 2009; Gan *et al.*, 2011), were based only on self-reported data. Studies has shown that female students tend to report poor health and body weight higher, when compared to male students (McDonough & Walters, 2001; Steptoe *et al.*, 2002; Mikolajczyk *et al.*, 2008). Consequently, the use of self-reported data alone in studies of obesity among university students may yield data that are not reliable for comparative studies. In the current study, direct measurements of body mass index indicators (height and weight) and blood pressure (systolic and diastolic) was carried out among a large sample of (n = 1549) students in order to ensure reliability and validity of the current study.

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). Similarly, Bradley *et al.* (2013) postulated that efforts to improve school performance that ignored the student's health and wellbeing are ill conceived, similar to health improvement efforts that ignored health education.

Consequently, uninformed, the university students could formulate inaccurate and incomplete notions regarding health and/ or lifestyles such as physical activity and fitness as well as practice non-recommended methods of weight loss dietary habits, alcohol and drug uses (Dawson *et al.*, 2007). 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 (von Ah *et al.*, 2004; Adlaf *et al.*, 2005). However, despite all evidence of poor health and prevalence of risky health behaviours, literature indicates that university students are the most under-researched group, with regard to their health and lifestyle patterns (Keller, 2008; Laska *et al.*, 2009; Jackson *et al.*, 2009; Van Rensburg & Surujlal, 2013). Moreover, university students represent a major segment of the young adult population (Akandari & Vidal, 2007; Wang *et al.*, 2013). They typically enter a dynamic transitional period of new independence from their parents that is characterised by rapid, interrelated changes in body, mind and social relationships (Mikolajczyk *et al.*, 2008; Pullman *et al.*, 2009).

In addition, they experience a new environment that generally involves increased workload and stress, altered patterns of life, which are significant contributors of unhealthy lifestyles (Rozmus *et al.*, 2005; Ulla-Diaz & Perez Fortis, 2010). There is evidence that majority of university students are minimally engaged in health promoting behaviours and exhibit behavioural health risk, such as tobacco use, alcohol and drug abuse, unhealthy diet and sedentary habits (Steptoe & Wardle, 2001; Yeh *et al.*, 2005; Hasihasanoglu *et al.*, 2011; Aldeen & Ibrahim, 2014).

More so, health risk associated diseases such as depression, obesity, and hypertension, has been widely reported among university students in many countries (Adewuya, *et al.*, 2006; Lee & Loke, 2005; Mikolajczyk *et al.*, 2009; Krueger & ). Consequently, inter-cultural comparative studies on student's lifestyle and health status will contribute to the improvement of health of university student's. However, for several reasons the current study is based on Nigerian university students and the data analysis focused on regions and gender.

## 1.2 Background of the study

Nigeria is the most populous country in sub-Saharan Africa with an estimated area of 923,773 km<sup>2</sup> (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. It is between Benin in the west and Cameroon in the east, in the north is Chad in the north east and Niger in the north-west.

The diversity of climates observed in Nigeria are aridity in the north, tropical in the centre, and equatorial in the south, with a maximum temperature above 32 degrees Celsius in the north (Walker, 2008). The annual rainfall is more in the south 2000 millimetres than in the north 500-700 millimeters (Aregbesola, 2011). Therefore, the northern region is exposed to a prolonged heat, prolonged drought, and dry seasons, these harsh environmental conditions are expected to affect growing of crops, vegetation, and grazing of animals, sources of domestic water and sanitation and farming among others.

Consequently, it is assumed that the environmental conditions will affect both the physical health and psychological health of Nigerians living in the northern region, differently from those living in the other two regions (Terrass & Benjelloun, 2010). However, no comparative cultural study exists in Nigeria that examines the health and lifestyle differences of the three regions, by gender across any selected population group. Nigeria is multi-ethnic, organized into three major ethnic groups that included Igbo in the east, Yoruba in the west and Hausa/Fulani in the north (Bangdiwala *et al.*, 2010; Ucha, 2010).

Half of the population of Nigeria is Muslim 50% 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 psychological health and quality of life (O' Connor, 2003; Miller, 2004; Ying, 2009; Idehene & Ojewumi, 2010). However, no study exists in Nigeria that compares the health of the Muslim north, with those of the Christian south, by region 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](http://mans.com) [Date of accessed 20<sup>th</sup> July, 2014].**

In Nigeria, each of the three regions constitutes a corporate entity, with its unique culture, religion, lifestyle, language, political and administrative arrangements until 1914 when the British colonial administrator (Sir Fredrick, Lord Lugard) amalgamated the multi-ethnic tribes to form the Federal Republic of Nigeria (Mustapha, 2005; Aregbesola, 2011).



Consequently, each of these three regions retains its socio-cultural, socio-political and religious identities. In Nigeria, ethnic groups have strong regional base and identity: 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). However, the unification of the three ethnic groups in Nigeria into one republic, brought with it inter-tribal competitions for power, religious violence, boundary disputes, political domination, social exclusion and economic exploitation (Salawu, 2010; Olumide & Ekanade, 2011; Fafowora, 2011). These unhealthy relationships among Nigerians from different regions, different ethnic groups and different religious orientations led to persistence socio-economic inequality, gender inequality and ethno-tribal inequality in Nigeria (Hembe, 2003; Akuva, 2010).

However, the socio-political and socio-economic inequalities in Nigeria have been well documented, and exploited for political reasons (e.g. Olumide & Ekanade, 2011, Fafowora, 2011; Ogbeidi, 2012). On the other hand the health of Nigerians by gender and region has never being considered (Ucha, 2010; Ekpenyong, 2012), despite the evidence that environment and cultural differences contributes to social determinants of health of both individuals and population groups (Dahlgren & Whitehead, 1991; Bird, 2012).

It is assumed that conducting a cross-cultural study in Nigeria for the first time will be a good contribution to literature, by providing a baseline data for future research. Secondly, the findings will provide information to public health departments in Nigeria, to ensure that health services and interventions are expanded and directed to populations and regions, where there is a health need or social need. More so, there is evidence that ethnicity is associated with social, cultural and biological differences that may influence how individuals interpret their health status (Kaplan & Bennett, 2003; Kuk & Ardern, 2014). For example, there are

studies that reported low levels of physical activity among different ethnic groups in Asia (Hayes *et al.*, 2002; Dawson *et al.*, 2005). The factors underlying these differences are still debatable. However, some researchers have postulated that health inequalities due to cultural differences are principally determined by socio-economic inequalities (Erens *et al.*, 2001; Mackenbach & Baker, 2002). However, Braveman and Tarimo (2002) stated that the social and economic inequalities actually make minimal or no contribution to ethnic inequalities in health. Therefore, there is a need for proper evidence on the relation between socioeconomic status and cultural differences in health inequality. Similarly, Dawson *et al.* (2005) maintained that little is known about the ethnic differences in health. Consequently, conducting a study to provide information on the ethnic and gender interaction effects for a population group such as the university students will be of need to the public health community in Nigeria. More so, the available current literature in Nigeria shows that no similar study exists.

The current study also focuses on gender differences in health status and lifestyle behaviours. The female gender in Nigeria has been subjected to various degrees of discrimination, isolation, intimidation and stigmatization in comparison to their male counterparts (Csapo, 1981; Mancini, 2009) and this may have a detrimental effect on mental and physical health (Martin *et al.*, 2000; Alexander & Link, 2003). For instance, the first question people usually ask with regard to a newborn child in Nigeria is: “Is it a boy or a girl?” (Omoriegbe & Ihensekhien, 2009). Such a question carries a great deal of significance for the child’s entire life.

In the northern region of Nigeria, women are banned from receiving western education for both cultural and religious reasons (Omoriegbe & Ihensekhien, 2009; 2013). Moreover, depriving women of basic education may contribute to the socioeconomic disadvantage enjoyed

among Nigerian men over their women (Amasuomo, 2006; Iloegbunam, 2006; Otite, 2006). However, no study was found that compared the health of male and female by region in Nigeria. Although, empirical research provides evidence that women experience more ill health than men, and social theory locates its origin in reduced access, on average, to the material and social conditions of life that foster health (Braveman & Tarimo, 2002; Omoregie & Ihensekhien, 2009). On the contrary, it has been suggested that one of the reasons for women's greater morbidity is researchers' tendency to focus on health conditions more commonly reported by women (McDonough & Walters, 2001). In direct challenge to the view of women's higher levels of ill health (WHO, 2005) argued that social inequality, poverty and inequitable access to resources, including health care, result in a high burden of chronic diseases among women worldwide, particularly very poor women.

However, the evidence is still not clear, whether gender differences occur in student's health status or not in Nigeria. For example, some studies have reported that male students appear to have better cognitive health (e.g. Ebert *et al.*, 2002; Jorm *et al.*, 2004) and mental health (Zawawi & Hamaideh, 2007) compared to female students. On the contrary, others have found no gender differences in cognitive health (e.g. Hilari *et al.*, 2006; Mikolajczyk *et al.*, 2008) and mental health (Bayram & Bilgel, 2008). These conflicting results suggested that further study of sex differences in student's health status might benefit from the examination of students health status and lifestyles in non-western culture such as Nigeria, especially health evidence of sex-ethnic interaction.

Measuring the health status of university students in Nigeria is important to ascertaining health intervention effectiveness, monitoring progress, and as a critical step in measuring the health of the general population. Moreover, in Nigeria, the population of young adults in the university are significant about (8.1%) of the total age group (15-64) that constitute about

(54.9%) of the total population of Nigeria (NBS, 2010). These are young adults, and the attitude and lifestyle behaviours of university students are not only important for them, but also relevant to policies concerning health. In addition, students are young, and there is evidence that risky lifestyle at an early age can reflect the health of the society they are going to live in the coming years (Steptoe *et al.*, 2002; Garrusi *et al.*, 2008) and university years may present a unique opportunity to develop healthy lifestyle behaviours in a particular manner. Also, Nigeria is a developing economy (CIA, 2002) and in recent times have been designated the largest economy in Africa (WHO, 2012; Aregbeahola, 2011), consequently, she will require a large percentage of healthy intellectuals who will contribute to the development of Nigeria.

Furthermore, students are future leaders and potential policy makers, their health and wellbeing need to be guided at this most important phase of their development, and equipped with the right knowledge to be able to distinguish between healthy and unhealthy lifestyles (Garrusi *et al.*, 2008; Brunt & Rhee, 2008; Schmidt, 2012). The Nigerian demographic statistics showed that the age group (15-64) constitute about 57% of Nigerian population (NBS, 2014). However, only 8% of that age group are engaged in university education (Okebukola, 2008; WHO, 2009). Their health status and lifestyles are important, as this will reflect the future health of Nigerian society. More so, Okebukola, (2008, p.100), observed, *“higher education provides high level human resources for driving the economy and ensuring rapid societal transformation.”*

With regard to university students in Nigeria, there is evidence that the transition to university is difficult (Omokhodion, 2003; Omigbodun *et al.*, 2004; Adewuya, 2006). There is evidence that conditions in colleges and campuses are poor, with problems of accommodation, overcrowded lecture halls, unavailable learning materials, irregular electricity, poor transport facilities and poor health facilities (Jegede, 2009; Onyeizugbo,

2010; Salami, 2010). These stressors are linked to high prevalence of unhealthy risk behaviours (Adewuya, 2006; Shehu *et al.*, 2010). The present study is expected to be of great benefit to researchers and intellectuals, public health community, student's body, the political class and policy makers in Nigeria, because it is the first study to focus on region-sex interaction effect using multiple variables, randomly based sampling strategy, large and nationally representative sample size. In addition, the study is expected to reflect findings that will be of great help to other researchers who may be interested in the regional and gender differences of student's lifestyles and health status in Nigeria. In addition, the findings will be of interest to students, helping them to know their stance with regard to health. Furthermore, the result will also help both student and health workers to observe correct healthy lifestyles such as regular physical activity, eating recommended vegetables and fruits daily, avoid smoking, and drug use.

More so, the findings will provide at the same time both regional and national data on students health status and lifestyles, which will be of benefit in community health based research. Sixth, the result will also be of importance to the university student's body and public health departments to provide health education on the identified areas of health concern. Seventh, the study will provide data for cross-cultural comparative studies for international organizations. According to WHO (2005) the financial allocation for students health in developing countries are grossly inadequate and hence the organization recommended that research on students health and lifestyles should be encouraged so as to identify areas where early interventions will be needed.

### **1.3 Theoretical review of ethnicity, culture and race with regard to the present study**

This section intends to offer a concise description of and discussions about notions of ethnicity, culture, and race as they are used in the present study within the Nigerian context,

and how this may differ from the academic mainstream. Although, there is no universally agreed definition of ethnicity (Eriksen, 2002; Huntington, 2004), social scientists have several distinct approaches to using this term. According to Bulmer (1995, 54): “An ‘ethnic group’ is an identifiable group within a larger society, with a real or putative common ancestry, memories of a shared past, and a cultural focus on one or more symbolic elements which define the groups identity, such as kinship, religion, language, shared territory, nationality or physical appearances.”

However, Eriksen (1993) noted that ethnicity has something to do with classification of people and group relationships. He noted further that ethnicity refers to aspects of relationships among groups that regard themselves as culturally different and are considered by others to be distinct as well. On the other hand, Crawford (2001) observed that ethnic groups are social groups that are divided according to their origin, history, language and culture. He argued further that “ethnicity is a matter of social organisation and beyond questions of empirical cultural differences: it is about the social organisation of cultural differences” (p.36). Similarly, Eriksen (1993; 2002) pointed out that either ethnicity by definition must arise from a process of social differentiation within a population, which is divided into two or more groups, or by an expansion of system boundaries that create contacts with these groups.

In the present study, Nigeria is divided into three ethnic groups, within three regions: Hausa (northern region), Igbo (eastern region), and Yoruba (western region). This division is supported by the objective definition of ethnicity that is based on the cultural commonness in language, historical background, religion and common territory (Smith, 1986). In Nigeria, each ethnic group has a unique cultural identity distinguished by the markings identified by Smith (1986) such as: unique cultural identity, religious identification, common ancestry,

common origin, language, tribal mark, typical dressing patterns, food choices and preparations. In addition, each ethnic group in Nigeria has a long established form of government, a typical market system, and custom, a typical form of judiciary for settling disputes among members, a unique physical appearances and custom. Similarly, Hutchinson (1996) outlined four characteristics that can be used to define an ethnic group. According to Hutchinson (1996, P.17) an ethnic group:

- “Is largely biologically self-perpetuating;
- Shares fundamental cultural values, realized in overt unity in cultural forms:
- Makes up a field of communication and interaction and
- Has a membership which identifies itself, and is identified by others, as constituting a category distinguishable from other categories of the same order.”

Similarly, Parens (1994), noted that ethnic groups were defined as social groups that are divided according to their shared origin, history, language, and culture. On the other hand, the concept of race has tended to refer to a biologically and genetically distinct sub-population of a species (Erikson 1993). More so, race was associated with distinct hereditary characteristics, so that differences in intelligence and sexuality, for example, were to be understood to be racial in character (Huntington, 2004).

Although the terms ‘ethnicity’ and ‘race’ are sometimes used interchangeably and together, some analyst have offered analytical distinctions between the two: Smith(1996), Eriksen (1993), for example, makes a clear-cut distinction between the two terms. Race is said to be “socially defined but on the basis of physical criteria” whereas an ethnic group is “socially defined on the basis of cultural criteria” (Eriksen, 2002). However, Bulmer (1995) had earlier observed that “ethnicity” is a more “inclusive” term than “race”, because while “race” is predicted on biological membership of a particular group, ethnic groups are

generally seen as having more fluid and blurred boundaries”. However, in the present study, the concept of ethnicity is based on the fact that ethnic groups are endowed with a given set of cultural values and practices, rather than concurring of ethnicity as something which is continually in process, negotiated, renewed and subject to a variety of social, economic and political forces. In addition, in the present study, the term race is not used as a substitute to ethnicity; rather it may be employed with regard to the black race or the white race. In the current study, Nigerians are grouped among the black race, with three ethnic groups namely: Igbo, Hausa and Yoruba, constituted in three distinct regions namely eastern region, northern region and western region respectively.

Consequently, the present study is based on ethnic groups “ethnicity” and not on race. Although Nigeria as a nation based on her biological traits and characteristics (e.g. skin colour, eye colour, hair colour) is classified among the black race (WHO, 2006; 2010) whereas the indigenes of Nigeria are divided into three groups on the basis of similar cultural identity, religion, common history and origin. Consequently, understanding the differences in health status and lifestyles among the university students in the three ethnic groups in Nigeria constitutes the main aim of the present study.

#### **1.4 Research aims:**

1. To survey the health status of university students in Nigeria;
2. To assess the life style behaviours of university students in Nigeria;
3. To investigate the differences in health status among university students in Nigeria by sex and ethnicity;
4. To investigate the differences in health behaviours among university students in Nigeria by sex and ethnicity.



## 1.5 Summary

The public health evidence of unhealthy lifestyles and consequent failing health of young adults especially university students are alarming. Consequently, failing to understand the lifestyle behaviours of university students will make clinical interventions very difficult, and the future health status of today's youths will not be guaranteed tomorrow. In addition, most of the previous studies failed to provide evidence of health inequalities by sex and ethnicity in Nigeria, that might convince the policy makers and stakeholders to strategize for a broad health intervention.

Nigeria is in tropical Africa with a very hot temperature of more than 40<sup>0</sup>C. In addition, by nature of its large population and large economy, migration and education, Nigeria shares most of the civilization and cultural characteristics of the western world. Consequently, Nigerians are prone to non-communicable diseases (e.g. stress, depression) and unhealthy lifestyles (e.g. drugs use and smoking). Therefore, for adequate health policy and interventions, Nigeria requires a constant and an updated research evidence on the health status and lifestyle behaviours of every sector of the Nigerian population.

Although there are evidence of large volumes of research on health in Nigeria, but these studies are concentrated around old peoples and children, with few studies addressed to students. In addition, the multi- ethnic nature of Nigerian requires an understanding of the health status and lifestyle behaviours of each ethnic group, and between ethnic groups. The present study is the first study in Nigeria to be based on interaction effects and main effects especially in the study of health status and lifestyle behaviours of university students. Consequently, the study will contribute to knowledge, especially as a baseline reference for similar studies in Nigeria, as well as to health policy makers

## **CHAPTER 2**

### **STUDY SETTING: NIGERIA**

#### **2.1 Introduction**

In the present section, the aim is to provide socio-demographic baseline information on population characteristics, educational, health care system, agriculture and national economy of Nigeria. It is important to understand the development and distribution of these factors, and how they contribute in determining the state of health and well-being in Nigeria. The public health impacts of socio-demographic factors are well-documented (Dahlgren & White head, 1991; Sen, 1999; WHO, 2006; Mamort, 2006). For example, high quality of education for the individual adds skilled work force that works to improve productivity and creates jobs and employment, which improves the income both for the individual and for the state. Conversely, poor health care is counterproductive which may create a public health problem. Consequently, there is a need to examine these factors in a study that deals with health status and lifestyle behaviours of young adults especially university students, to understand the baseline factors that may have contributed to the students state of health and lifestyles.

#### **2.2 Population characteristics of Nigeria**

Nigeria lies between 40° and 140° north of the equator and longitude 30° and 140° east of the Greenwich Meridian (Aregbesola, 2011). Nigeria is in West Africa, the south of the Sahara. The country lies entirely within the tropical zone and occupies about 923, 773 km<sup>2</sup> (about 8% of Africa's landscape) (Aregbeshola, 2011; National Bureau of Statistics (NBS, 2010). The actual population of Nigeria is debatable. However, the Federal Government Statistics based on the official census figure of 2006, puts the Nigeria population to about 140 million people, with 72 million males and 68 million females (Aregbeshola, 2011; NBS, 2010). Nigeria is the

most populous country in Africa (CIA 2014), with a population projected to reach 203 million by 2025 and 273 million by 2050 (Kalu, 1996). Nigeria population increased from 1990 to 2008 by 57 million, a 60% growth rate, of which about 51.7% are rural and (48.3%) are urban dwellers (NBS, 2010). Nigeria is the seventh most populous country in the world, with a population density of 167.5 people per square kilometre (NBS, 2010; Central Intelligent Agency (CIA, 2014).

In addition, the 2006 census in Nigeria showed 42.3% of the population is between 0-14years, 54.6% was between 15-64 years of age (this is the age group that university students belong) (Okebukola, 2006). Nigeria is composed of about 250 ethnic groups of which the three most populous and politically influential are Hausa/Fulani 29% Yoruba 21% and Igbo 18% and others added up to 20%. According to CIA (2014), while 50% of Nigerians are Muslims, 40% are Christians. However, the exact size of the population and its growth rate have long been a contentious issue in Nigeria because of their implications for ethnic balance, electoral competition and the allocation of federal revenue (National Bureau of Statistics, 2010; Aregbeshola, 2011).

### **2.3 Education in Nigeria**

Education of individuals plays a great role in determining the health status and life style behaviour of that population (Okojie, 2007; Ajadi, 2010). Good and quality education is a priority of both the government and the people of Nigeria. The Federal Government of Nigeria Launched the Universal Basic Education (UBE) in 1999. With the introduction of UBE, which is a 6-3-3-4 system, in which the student is expected to spend six years in primary school, three years in junior secondary school, three years in senior secondary school, and a minimum of four years in tertiary institution (Schultz, 2002). In Nigeria, primary and secondary school education is free from tuition fees, compulsory. In Nigeria, the

law stipulates a 9-year formal schooling, adult literacy and non-formal education, skill acquisition programs and the education of special groups such as nomads, girls and the physically challenged persons, (Schultz, 2002). Nigeria has 99,000, Primary schools, 32,000, secondary schools and over 154 universities excluding polytechnics and colleges of education (NBS, 2011). There are three categories of university in Nigeria: the federal universities, funded by the federal government, the state universities funded by the state government and the private universities funded by individuals or organizations as a non-governmental enterprise (Aregbeshola, 2011). In Nigeria, 9.5 million 68% of the population are literate with more male 76% than female 61% in addition 29% of the population are in secondary school education, of which 32% are males and 27% are females, while 8% of the population within 15-64 year group are in the universities (NBS, 2010).

There are 605,068 students in the federal universities in Nigeria, 339,364 students in the state owned universities and 218,861 students in the private owned university in Nigeria (NBS, 2010). In Nigeria, university categories differ in quality and provision of infrastructure (e.g. student's hostel, sanitation, source of water supply, quality and affordable food on campus, regular water supply and electricity) and tuition fees (Schultz, 2002; Okebukola, 2004; Okojie, 2007). Funding of education in Nigeria involves the federal, states and local governments' appropriation and releases as capital and recurrent expenditure for the education sector (Okojie, 2007; Ajadi 2010; NBS, 2010). It also includes Donor Agencies, as well as scholarship awards by federal, states and local government (Okojie, 2007; NBS, 2010). However, higher education tuition fees in Nigeria is recorded to be one of the highest in Africa and the quality of education has been affected by poor infrastructure, campus violence and cultism in addition to regular teachers strikes (Schultz, 2002; Ajadi, 2010). Evidence shows that huge educational gaps exist within as well as across regions in Nigeria,

with the northern region having a higher inequality than the southern region (Olibie *et al.*, 2013). In their study Umar *et al.* (2012) and Olibie *et al.* (2013) found that, the northern region has an average educational attainment of (3.66), below the Nigeria's standard average of (5.08), while the Western region and the Eastern region recorded the average educational attainments of (7.40) and (7.21) respectively, far above the country's average. Consequently, the magnitude of regional differences in the educational attainment and distribution, still suggest that in terms of access to and equity of education in Nigeria that the Northern region is still lagging behind (CIA, 2002; Aregbesola; 2011) and this may affect the health and lifestyle behaviours of people from this region.

However, the existing inequality between the north on one hand, and the east and west on the other hand, is rooted in both historical and cultural backgrounds that are quite distinctive with each region as explained in the last chapter. Historically, western education in Nigeria came through the southern region, which is a coastal area and later on extended to the hinterland (i.e. northern region). For many scholars, this lag, in addition to the cultural differences between the Christians and the Muslims are responsible for the educational gap and inequality between the regions and between gender (Mancini, 2009; Olibie *et al.*, 2013).

Moreover, long before the coming of the Europeans, to the area called Nigeria today, Islam has arrived in the northern region of Nigeria, through north Africa, and this made western education very unpopular at the beginning as the people then equated western education with Christianity (Okebukola, 2004). However, studies have shown a positive correlation between educational attainments, improvements of health and healthy lifestyle choices (Mikolajczyk *et al.*, 2008; Wang *et al.*, 2009; Chukwuonye *et al.*, 2013). In addition, education is very important, because the socio-political and economic development of a nation depends on the quality and level of educational attainment of the population (Olibie *et al.*, 2013).

## **2.4 Health and health care system in Nigeria**

Although the Nigerian economy has expanded to become the biggest in Africa but the country still lags behind other African countries on various health indicators (Aregbeshola, 2011; CIA, 2014). There are some evidence that the federal government of Nigeria has made some considerable efforts to improve the health care system in Nigeria, but these efforts are limited by a narrow coverage of the national health insurance scheme, weak education and enlightenment schemes in addition to poverty and illiteracy (CIA, 2014; NBS, 2014). Consequently, childhood and maternal mortality are relatively high and average life expectancy at birth is male 46.21 years and female 47.29 years (NBS, 2014).

The Federal Government of Nigeria (FGN) made several positive attempts to improve the countries health care system. For example, in May 1999, the government created the National Health Insurance Scheme (NHIS) that covers government employees, the organized private sector and the informal sector (UNICEF, 2007, CIA, 2014). The NHIS scheme also covers children less than five years of age, permanently disabled persons and prison inmates (CIA, 2014). In addition, the majority of mental health services are provided by eight regional psychiatric centres, University Teaching Hospitals and few general hospitals (NBS, 2014).

The federal government allocation to the health care sector in Nigeria in 2010 was to the excess of £300 billion (Aregbeshola, 2011). Despite the interest to improve health care system in Nigeria, by the government, there is still evidence for poor health indicators in Nigeria. For example, under-5 mortality rate was 189 per 1000 live births, neonatal mortality rate was 47 per 1000 live births, maternal mortality was 800 deaths per 100,000, while life expectancy for men was 47.2 and 48.2 for women which compares unfavourably to most other African countries such as South Africa, Egypt and Libya (NBS, 2014). CIA (2014) reported that in 2012, the HIV prevalence rate among young adults (15-49) years of age was

(3.1%). Consequently, Nigeria has the second largest number of people living with HIV in the world, with youths and young adults more vulnerable, while young women are at higher risk than young men (CIA, 2014; NBS, 2011; United Nations population Fund (UNPF) 2011). Life expectancy in Nigeria has shown a regular decline. In 2006, the life expectancy was 57.9 years for men and 56.4 years for women while in 2007 it dropped to 47.2 for men and 48.2 for women, which represents a percentage fall of 18.48% for men and 14.54% for women (NBS, 2010). Equally, Nigerian health care system is affected by lack of well-trained health care specialists, as result of consistent mass exodus (brain drain) of qualified medical and public health specialists in Nigeria to western European countries in search of better wages (NBS, 2011).

The NBS (2010) report showed that Nigeria has only 61,000 qualified medical personal that is expected to care for over 140 million Nigerians, at a poor ratio of (1: 2, 295) persons (NBS, 2010). Health funding in Nigeria relies on a mixture of government budget, health insurance (social and private), external funding and private out-of-pocket spending. The level of spending on health is relatively low at less than 5% of GDP. It is estimated that on average health care consumes more than half of total household expenditure in Nigeria because of high cost of medical care 12% (NBS, 2010; CIA, 2012). Nigerian society reflects the lifestyles of those of advanced western countries (e.g. UK, USA, France, Germany) with reports of excessive consumption of sugar, fats, alcohol, drug and cigarette (WHO, 2011). Consequently, Nigerians have to pay with their health for their newly adopted lifestyles. There are evidence of increased obesity, hypertension, depression, diabetes mellitus, heart diseases including stroke and cancer in Nigerian; with a great public health concern (WHO, 2011; Fawibe & Shittu, 2011).The next section examines the agricultural sector in Nigeria,

with regard to staple crops and animal products, which provides nutritional requirements for the population.

## **2.5 Agriculture in Nigeria**

Agriculture plays a dominant role for the Nigerian economy. It provides employment for over 70 million people and contributes 31% to the Nigerian GDP, second only to oil revenues (NBS, 2010). The Agricultural sector in Nigeria comprises of crops, fishing, livestock and forestry. The main cash crops for Nigeria include Millet, Guinea/Corn, Groundnut, Beans, Yam, Cotton, Maize, Cassava, Rice, Mellon, Cocoyam and Soya beans (UNPF, 2011). On daily basis, Nigerians staple food includes Cassava, Rice, Yam, Cocoyam Corn and Soya beans (WHO, 2009).

In 2010, Nigeria produced about 43 metric tons of cassava, 37 metric tons of Yam and 29 metric tons of Cocoyam, for local consumption and for exports (WHO, 2009). The livestock sector in Nigeria includes different varieties of animals such as chicken, cattle, goats, sheep and pigs, in addition to different varieties of fish. However, farming in Nigeria is a great challenge due to poor and inadequate government incentive and motivations to farmers, poor storage facilities, mass illiteracy, and high cost of bank loans and lack of mechanized farming systems (WHO, 2009; CIA, 2014). In Nigerian the demand for animal products such as meat, egg, milk, and dairy products are very high (Kale, 2011). These animal products are consumed locally and the excess are exported to generate funds for the Nigerian economy (NBS, 2010; UNPF, 2011). However as a result of Nigeria large population and lack of incentive to farmers the number of those willing to participate in farming has decreased, and consequently national demand for crops and animal products are regularly not met (WHO, 2009; NBS, 2011). These under production are linked to under nutrition and consequently to ill health such as kwashiorkor, obesity, and marasmus (Chukwuonye *et al.*, 2013).



## 2.6 Nigerian economy

Nigeria has the biggest economy in Africa (Aregbeshola, 2011; CIA, 2014). The energy sector is the driving force of Nigerian economy. Nigeria is the largest oil-producing country in Africa, and in the first digit in the world (World Bank, 2012 & 2013). However, Nigeria rates far better than most sub-Saharan African countries in terms of business constraints, with main challenges lying in electricity supply, access to finance and transportation (Okoro, 2012). However, apart from the mainstream economic growth that comes from oil sector, there is evidence that growth in the non-oil sector in Nigeria, is expected to remain buoyant, especially in sectors such as agriculture, telecommunication and construction industry (Nellor, 2008).

The Nigerian Economy is dominated by Agriculture, with over 60% of the population being engaged in this section with a GDP turnover of about 41% (NBS, 2011). Despite the dominance of Agriculture, the crude petroleum sub sector contributes over, 80% of Nigeria's foreign exchange (Aregbeshola, 2011). However, despite these impressive economic developments of Nigeria, the records still show that there is over 24% of national unemployment in Nigeria, with female 23% higher than male 17% and 70% of the Nigerian population is below poverty line (NBS, 2010; NBS, 2011; CIA, 2014). Unemployment increases poverty, and poverty leads to poor quality of education, which crates poor health status and unhealthy lifestyle choices (Okoro, 2012; Awosan *et al.*, 2014). Sen (1999) urged that economic growth should be measured by the capabilities and opportunities that people are able to enjoy rather than through material output measures like the gross national income (GNI) per capital. Similarly, North (2005) proposed that some measurable indicators of a nation's level of economic development must revolve around human development. He argued further that a country cannot be regarded as economically developed without a corresponding

improvement in its citizen's quality of life (North, 2005). Consequently, the quality of education in Nigeria can be improved by improving the quality of life of university students, through research evidence and through poverty alleviation schemes and provision of infrastructure and amenities.

## **2.7 Summary**

Nigeria has a very large population and remains under populated when compared to the vast acres of land that constitute the Federal Republic of Nigeria. Consequently, there are potential opportunities for development and wealth. However, some of the challenges of population growth will include the challenges of public health, food, accommodation and the provision of basic infrastructure (e.g. constant electricity, drinking water, basic playgrounds and adequate security). Nigeria has more than 250 tribes, divided into North and South, Christians and Muslims. Consequently, these divisions make Nigeria a multicultural nation, which creates people with different lifestyles and different patterns of health and illness.

However, Nigerians health care system is not a match to health demands of the large population. The Nigerian Health Insurance Scheme (NHIS) patterned after the British (NHS), has not being successful. There is chronic shortage of drugs, specialist doctors and public health scientists. The health expectancy in Nigeria have been on gradual decline, and increased mental health problems with few centres for counselling. The young adults are usually the victims, as most of them will into depression and anxiety. Nigeria has only eight centres that provide help for mental health problems of over 150 million people. In contrast, the Nigerian economy is among the best in Africa, based mainly on petroleum and Agricultural products. The tropical climate in Nigeria favours the production of cash crops such as cassava, beans, rice, yams, wheat, and consumables such as tomatoes, oranges, banana, mangoes and different varieties of vegetables.

However, transport and storage facilities, affects the distribution of these products to the masses across the entire nation. Similar problems affect livestock, and consequently, some areas in Nigeria have food and meat and milk in abundant while some areas are in starvation. In addition, security concerns affect the distribution of farm products across Nigeria, in addition to cultural concerns and demands. Finally, education is another important factor that can contribute to health inequality in Nigeria. Good education ensures a good job and good income in Nigeria.

However, the cost of education in Nigeria is very high and good schools very competitive. There is evidence that only 8% of young adults are in universities, though a large proportion of Nigerians are literate. In Nigeria, cultural orientation and religious affiliation also determines the type of education the individual can have. For example, more Muslims usually prefer Islamic education, and oppose western education preferred by Christians. Consequently, there is a need to understand how these socio-demographic factors, contribute to health inequality in Nigeria, especially among university students, whose health and lifestyles are supposed to be a mentor for other non -students.

## **CHAPTER 3: LITERATURE REVIEW –Health status**

### **3.1 Theoretical framework**

The theoretical framework for the current thesis was formulated primarily within the context of the social determinants of health. The WHO (2013) defined the social determinants of health as “the circumstances in which people are born, grow up, live, work, and age, and the systems put in place to deal with illness. The health and well-being of individuals and populations across all age groups is influenced by a range of factors both within and outside the individual’s control (Azevedo *et al.*, 2007; Dugdill *et al.*, 2009; Murphy *et al.*, 2009). These multiple factors include demographic, biological, emotional, cultural variables, social attributes and environmental factors (Trost *et al.*, 2002; Cavill *et al.*, 2006).

One model, which captures the interrelationships between health determinant factors, is the Dahlgren and Whitehead (1991) ‘Rainbow Model’, which describes the layers of influence on an individual’s potential for health. These factors are classified into two: those that are fixed (core non- modifiable factors), such as age, sex, ethnicity and genetic factors on one hand and on the other hand is a set of potentially, modifiable factors expressed as a series of layers of influence including, personal lifestyle, the physical and social environment and wider socio-economic, cultural, and environmental conditions. Dahlgren and Whitehead’s (1991) model explained how a range of different factors can influence personal and community health.

Although, an individual has no control over his or her age, sex, ethnicity, and genetics representing the inner core of the health determinants model (Figure 3.1), still, wider determinants of health can influence the likelihood of a person developing disease, or even dying prematurely. According to Dugdill *et al.* (2009, P. 7), “*health is shaped by multiple*

*factors including personal lifestyle and the social, cultural and physical environments within which a person is lives.”* Criticisms of Dahlgren and Whitehead (1991) model, especially (Marmot, 2005) argued that it provided no explanations on how the factors interrelate within the same layer, or how each layer may influence another distal layer. Marmot (2005) argued further that the model failed to note that places with different population structure, under different conditions (e.g. war and violence) would show a very different picture of health.

However, Dahlgren and Whitehead (1991) model provided evidence, lifestyle factors that have being useful in explaining the risk factors that are associated with ill health. The health determinant model, postulated that each individual is unique (at the centre) with a certain un-modifiable health properties related to as hereditary factors that include gender age, ethnicity and race that play role in health inequality (Dahlgren and Whitehead (1991). Moving out from the centre of the circle are layers of influence that are potentially modifiable by manipulation of either the environment or the individual behaviours.

The innermost layer represents individual lifestyle factors such as physical activities, sedentary behaviour, dietary habits, substance abuse which have the potential to promote or to damage health. The next layer focuses on living and working conditions including education, housing, employment and access to health care (Earle & O'Donnell, 2007). The final outer layer highlights broader socioeconomic, cultural and environmental forces such as social forces and structures and can include physical environmental conditions that have been linked to health (Murphy *et al.*, 2009).



*Dahlgren and Whitehead (1991) pictorially illustrated the main determinants of health.*

Fig. 3.1 Dahlgren and Whitehead (1991, p.20)

However, most importantly for the present study, this model recognises the important of the broader social, cultural and environmental determinants of health and their inter-relationship with lifestyle choices of individuals. There is a link between the health determinants model with the variables investigated in the current study. The inner core of the model considers the association of un-modifiable factors such as gender and race/ethnicity, with health inequality (e.g. overweight, obesity, depression and hypertension).

The present study is analysed by gender and ethnicity in order to determine if this two independent variables are related to health inequality among university students in Nigeria. The choices of these two variables are determined by the hypothesis of the health determinant model, that people's health and behaviour may differ by gender and by ethnicity or race among other independent factors such as hereditary or genetics. In addition, the first outer

layer of the model (i.e. the individual lifestyle factors), contains the main dependable variables of the present study (e.g. physical activity, dietary habits, alcohol and drug use, smoking). The social determinant model suggested that there is a potential for an inter-relationship (i.e. a possible association) with the lifestyle behaviours and independent variables of interest with regard to the present study, that are related to other layers of the social determinant of health model.

First, gender and ethnicity which are contained within the core centre of the model (i.e. age, sex, and hereditary) factors at the centre (Fig.3.1). Secondly, educational attainment and socioeconomic status, which are related to the living and working conditions layer, may also influence the lifestyle behaviour factors or vice versa. Thirdly, school type and area of residence, which are located in the general socioeconomic, cultural and environmental conditions outer layer, may also have an association with the individual lifestyle.

Furthermore, a range of other variables could be considered that are related to each of these layers of the model. For example, variables such as social support and social contact, which would be related to the social and community networks, layer of the model. In order to simplify the social determinants of health model, Cavill et al. (2006) proposed three levels of influence namely: (1) intrapersonal level (2) socio-cultural (interpersonal) and physical-environmental. Collectively, these three levels are more commonly referred to as the 'ecological framework/model' (Sallis & Owen, 2002).

At the intrapersonal level, the ecological framework/model suggests that behaviour is influenced by demographic and biological factors (e.g. gender, age, ethnicity, education, and social class) and psychological, cognitive and emotional factors (e.g. personal confidence). Therefore, the factors of interest to the present study such as gender, region, ethnicity, race, socioeconomic status and educational attainments, income status, could be aligned to this

level (as they are all 'demographic' factors). With regard to the socio-cultural (interpersonal) level, which suggests that behaviour is influenced by factors including social support, social contact, from both family members and peers. Finally, physical-environmental level, suggests that behaviour is influenced by factors such as residential density, climate and seasonal factors (El Ansari *et al.*, 2011). With regard to the current study, these factors are aligned to school type (such as private universities versus state/ federal universities) as they are both environmental factors.

Conceptualising the health determinants model in the three levels proposed by (Cavill, *et al.*, 2006) aids in understanding how the aforementioned demographic and environmental factors could potentially interact with students lifestyles (e.g. physical activity, dietary habits, alcohol and drug use, smoking). There is evidence that studies that investigate student's health and lifestyle behaviours (e.g. Akinpelu *et al.*, 2008; Adebayo *et al.* 2008; Al- kandari *et al.*, 2008; Achinihu, 2009; Abdullahi *et al.*, 2011) were based on the health determinants model, specifically on the three levels proposed by Cavill, *et al.* (2006). However, research investigating health status and lifestyle behaviours of university students by gender and by ethnicity is more limited, although evidence is developing that has suggested that the health determinant model would be useful for understanding this behaviours (Erens *et al.*, 2001; Van Ransenburg & Surujlal 2013). The next section will examine previous studies with regard to health status indicators among students.

### **3.2 Mental health condition**

There is no universally accepted definition of mental health. However, according to Keyes (2002), "*mental health is operationalized as a syndrome of symptoms of an individual's subjective well-being*" (p. 207). On the other hand, the WHO (2005) defined mental health as: "*a state of well-being in which the individual realizes his or her own abilities, can cope with*



*the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”* (p.27). However, Stewart-Brown (2002) argued that the determinants of both positive mental well-being and mental health problems include a mix of biological, psychological, social and environmental factors that are difficult to determine. Most of these factors are already discussed in the theoretical model that underpins the current study presented in the last section.

There is evidence that demographic factors (e.g. gender and ethnicity) together with student's lifestyles (e.g. physical activity, diet, alcohol consumption and smoking), correlated with students mental health status (Mikolajczyk *et al.*, 2008; Wang *et al.*, 2009; Schmidt, 2012; Sabbah *et al.*, 2013; Kuk *et al.*, 2014). Similarly, studies has shown that the rates of psychological ill-health among university students are increasing and identifying modifiable risk factors for students psychological health becomes increasingly important, given the persistence of students psychological health into adulthood (Kaya *et al.*, 2007; Zawawi & Hamaideh, 2007).

Consequently, the mental health condition of university students is a public health issue in both developed and developing countries and many young adults may experience their first psychiatric episode during their time at the university (Bayram and Bilgel, 2008; Adewuya, *et al.*, 2006). In a large study conducted by the American College Health Association – National College Health Association [ACHA] (2006), with a population of (n = 47000) students from 74 American colleges. The result showed a significant increase of students' mental health, from 8% to 23% with 10% contemplated suicide 14% reported depression while 63% reported feeling of hopeless.

Although, several studies examined the factors associated with students mental health, however, only few studies examined how these factors are distributed by gender and ethnicity,

despite the evidence that these two demographic factors contributes to health inequality (Nazroo, 2003; Varela-Mato *et al.*, 2012). The following section examined previous studies with regard to the various factors that are association with student's mental health.

**3.2.1 Depression and stress:** According to the World Federation for Mental Health “*depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration*” (2009), p. 3. Consequently, an individual who has good mental health will be able to realize his or her own abilities, can cope with the stress of everyday life, be able to work productively and contribute to his or her community (WHO, 2001; 2005). On the other hand, Hinkle (1987) defined stress as: “*All physical, psychological or social phenomena that tax or exceed an organism in such a way that physical, psychological or social change results*” p. 556. However, the factors associated with depression and stress are well documented among the elderly population (Keyes, 2002; WHO, 2007), why the factors associated with depression among young adults in the university has not been established, especially with regard to gender and ethnicity.

Students commonest challenge to depression is stress (Omigbodun *et al.*, 2004; Dusselier *et al.*, 2005; Seyedfatemi *et al.*, 2007; El Gilany *et al.*, 2009), and several factors have been reported to increase stress among university students. These factors include: Academic workload (Bayram & Bilgel 2008; DeRoma *et al.*,2009) chronic illness (Kaya et al., 2007; Zawawi et al.,2007; Lindsey *et al.*, 2009), financial problems (Kaya et al., 2007; Bayram & Bilgel, 2008; Mikolajczyk *et al.*, 2008).

Although, many factors contributing to students stress have been wildly reported, however, most of the findings are contradictory or inconclusive. Omigbodun *et al.* (2004) in a cross sectional study examined the sources of stress among a convenience sampled medical

students (n = 77) in a university in western Nigeria. The result showed that 48% of students reported stress related to academic workload, and another 38% reported stress due to financial problems. Other studies by (Lo, 2002; Seyedfatemi *et al.*, 2007; El Gilany *et al.*, 2008; El Gilany *et al.*, 2009) reported similar findings. The important of income status as a major contribution in students stress and depression was also highlighted in a study among (n = 492) students in a university in Iran by Zawawi and Hamaideh (2007). The result showed that (48%) of the total sample reported major depression, of which (44%) of the students indicated that their depression was related to financial problems. However, stress and depression regarding to students' academic workload was not reported. Also, a study by Marshall *et al.* (2008) among a convenience sampled pharmacy students in US (n = 109), found that stress as a result of academic related problems correlated negatively with students depression and mental health status.

Marshall *et al.* (2008) argued that their result may be due to the young age and good physical health of their participants, which may serve as a cushion for stress. Conversely, Marshall *et al.* (2008) noted that their study has some limitations. They attributed their findings to small sample size, and consequently called for more studies with a larger sample of university students. Other studies (e.g. Hafen *et al.*, 2006; Wang *et al.*, 2009) reported that though university students have significant degrees of recorded stress, which was associated more to student's year of study and not due to their academic workload or a quest for high performance.

More so, there is evidence that first-year undergraduates have elevated risk of depression and stress than other students (Dyson & Renk, 2006; Hafen *et al.*, 2006; Wang *et al.*, 2009). This finding was explained on the basis that transition to adulthood represents a stressful period to young students and this may present a high risk for the onset of depression (Mikolajczyk *et*

*al.*, 2008). On the contrary, higher frequency of depression among students in higher academic years was reported by other studies (e.g. Lindsey *et al.*, 2009; Bostanci *et al.*, 2005). However, there is a need to understand the group of factors that contribute to students' academic related stress and depression. More so, most of the studies examined called for more investigations so as to understand the direction of this important association (e.g. Mikolajczyk *et al.*, 2008; Lindsey *et al.*, 2009).

On the other hand, there is evidence that certain health conditions like, obesity, hypertension and body image perception are associated with students stress and depression (e.g. Lepore *et al.*, 1997; Kaya *et al.*, 2007; Zawawi *et al.*, 2007; Lindsey *et al.*, 2009). For example, an earlier study by Lepore *et al.* (1997) which investigated the correlation between chronic stress, depression and general health problems among (n= 150) students from a university in America. The result revealed a positive correlation between students stress, depression and hypertension. However, the study recommended the need for objective measurement of blood pressure indicators, and not to rely on self-report alone, and called for more studies.

Similarly, Eller *et al.* (2006), examined symptoms of depression among a sample (n = 64) of Estonian medical students with sleep problems. The result showed a positive correlation between sleeps disturbances (e.g. insomnia) with depression, which was attributed to the fact that mental disorders may have a negative effect on the course of physical illness. The study also reported no association between students' body weight and depression. The study argued that overweight is not the cause of depression, but the stigma and isolation associated with overweight people. Eller *et al.*, (2006), argued further that the behaviour motivated by the desire to avoid overweight (e.g. dieting) may contribute to the negative psychological consequences of being overweight. They recommended new studies that will examine stress, depression, overweight and cognitive behaviours concurrently, to establish the role of

cognitive factors in the resistant of stress and depression among students with overweight and obesity. In addition, there is evidence that substance abuse and smoking are associated with stress and depression among university students. However, the direction of this association has been controversial and research findings sometimes inconclusive. Adewuya *et al.* (2006), in a cross sectional study, examined the socio-demographic correlates of depressive disorder among (n = 1,206) students in a university in western Nigeria. Student's depressive disorder was identified using the Mini International Neuro-psychiatric Interview (MINI). The result showed that overall 8% of students met the criteria for depressive disorders, with 3% having major depressive disorders and 6% having minor depressive disorders. The study also reported that students lifestyles especially alcohol and smoking were significantly associated with students reported depression. With regard to their findings Adewuya *et al.* (2006, p. 674) recommended that:

*“Depression is common among Nigerian university students and significantly associated with socio-demographic factors. An effective model for the prediction of the development of depression in university needs to be developed and evaluation and interventions aimed at reducing the incidence of depression among this population nee further research.”*

On the other hand, Vickers *et al.* (2004) examined the association between depressive symptoms and alcohol consumption, among a convenience sample of (n = 412) female university students in US, students information was collected with the Centre for Epidemiologic Studies of Depression Scale (CES-D). The result showed that student's depression was not associated with alcohol use, contrary to what was reported in Nigeria by (Adewuya, 2006). However, the two studies cannot be compared because the items used are different.

More so, (Vickers *et al.*, 2004) based their sample on only female students. However, other studies have shown that the association between depression, substance abuse and smoking is controversial. For example, Lindsey *et al.* (2009) observed that lack of association between alcohol use and depression in their study might be due to higher rates of alcohol consumption on the college campuses, which may be masking the possibility of detecting a relationship between the two variables. In contrast, Allgower *et al.* (2001) believed that the lack of relationship between alcohol use and depression in their study might be due to a low level of alcohol consumption among the students. They called for more studies, in order to understand how student's lifestyles may be related to depression.

Furthermore, gender differences in student's perception of depression and stress have been reported but the findings were controversial. While some studies found that female students reported depression more than male students (e.g. Dahlin *et al.*, 2005; Mikolajczyk *et al.*, 2008). In contrast, Bayran & Bilgel (2008) found no significant differences between male and female students. On the other hand, Aniebue and Onyems (2008) examined the prevalence of depressive symptoms among a convenience sample of (n = 262) students in a university in Nigeria. The result showed that (23.3%) of the total sample reported depression. In addition, the study also showed that female students reported higher rate of depression than male students. However, Zawawi & Hamaideh (2009) suggested that the higher ratio of female students (in sample size) to male students in most studies might help to explain the observed higher frequency of female students reporting depression than male students. They recommended that in conducting research that involves analysis by gender, that the researcher must ensure similarity of the sample.

Dahlin *et al.* (2005) examined the prevalence of stress and depression among medical students in a university in Norway (n = 342). The result showed that with regard to

depression, more female students compared to male students, reported depression but with regard to stress, the study showed no gender differences. Dusselier *et al.* (2005) postulated that gender differences in stress and depression among university students might be due to women's stronger determination to succeed academically, which might give rise to a greater level of stress. Secondly, that women report more illness than men do, because of men's reluctance to admit illness rather than to the actual incidence of illness among women.

However, there was no study found in the present review, which examined the health inequality among university students based on ethnic or cultural differences in Nigeria. However, differences in mental health across ethnic groups have been reported especially among the non-university students population such as the elderly (Nazroo, 2003; Nazroo & Williams, 2006). The factors underlying these differences in the elderly population are still debatable (Nazroo *et al.*, 2006) and needs to be investigated in other population groups (Rosenthal & Schreiner, 2000). An earlier study by Nolen- Hoeksema (1990) examined sex differences in depression among hospital patients in Uganda. Their study supported the hypothesis that the culture of a country is a significant determinant of female-male differences in depression, with western Europeans displaying higher levels of depression.

In addition, Lewisohn *et al.* (1999) reported that race, ethnicity, socio-demographics, culture and religion have been associated with depressive disorders in adolescents. Alternatively, Nolen-Hoeksman (1990) found that higher income countries had a significant gender differences in depression, whereas low-income countries had no significant gender differences in depression. Consequently, Rosenthal and Schreiner (2000) emphasized that the evidence for gender and ethnic differences in depression is limited and that more studies with students sample from different ethnic backgrounds are inconclusive, and recommended for more studies.

### **3.2.2 Life satisfaction and quality of life**

Life satisfaction was postulated as a subjective evaluation of the overall quality of life (Diener *et al.*, 2005; Seligman, 2002). On the other hand, it is a general indication of how a person perceives his or her life has been and how he or she may feel about where it is going in the future. There is evidence that low life satisfaction and poor quality of life can predict the onset of depression, and psychological disorder up to two years prior to diagnosis (Gilman & Huebner, 2003; Huebner, 2004). On the other hand, there is evidence that good mental health correlated positively with high scores in student's life satisfaction and quality of life (Viren *et al.*, 2007).

Few studies examined life satisfaction among university students. These studies showed that ethnicity, gender and socio-demographic factors (e.g. financial worries, concerns for future careers and personal illness), are among the factors that more commonly affects student's rating of their life satisfaction (e.g. Stock *et al.*, 2007; Marshall *et al.*, 2008; Sabbaah *et al.*, 2013). David (2001) in a cross-cultural study examined self-reported life satisfaction among students from Europe, Asia and Africa with a sample (n = 304), shared among the three races. The result showed that overall, majority of student's reported good satisfaction with life.

The study provided evidence of cultural differences in student's satisfaction with life, with students from America and North America being more satisfied than students from Asia and Africa. The study argued that the socio-economic status of a nation may be a factor in people's rating of their life, and countries with well-developed economy like the US, Germany, and the UK, tend to rate their quality of life and life satisfaction better than countries with developing economy like Nigeria, Mali, Sudan (Monteiro *et al.*, 2004; NBS, 2010). The study also provided evidence that student's life satisfaction might be related to stress, social contact, and financial status.



On the contrary, (Mathney *et al.*, 2004) found among university students in Turkey, that life satisfaction, perceived stress and coping resources showed no differences with ethnicity and culture. However, the study found a significant gender differences among the students (n = 312) in life satisfaction, stress and coping resources in both the American and Turkish students in the sample with male students scoring higher than female student's does.

Similarly, Steger and Kashdan (2007) conducted a study using a longitudinal design with students from one university in the United States (n = 82). The result of the study indicated gender differences, with more male students reporting satisfaction with life than female students. There was no reason for the gender differences observed by the researchers; however, this study has some limitations. First, the study was based on convenience sample, which restricted the application of the results to the general students' population. Second, Steger and Kashdan (2007) employed a very small sample size, which may affect power and effect size and may narrow wider statistical analysis. It is not clear if these limitations are responsible for the observed gender differences in the study.

More so, the use of longitudinal design on students sample may be affected by attrition of students from the study occasioned by graduation from the university and this may contribute to the gender differences. Although a study among students in a university in southern Lebanon (n = 282) by (Sabbah *et al.*, 2013) also found that male students reported higher scores in quality of life than female students. However, the gender differences in student's quality of life, have been explained by the fact that female students usually experience a wider range of stressful life events compared to male student's (Sabbah *et al.*, 2013; Schmidt, 2012). Moreover, there is evidence that male students had better self-perceived health especially mental health than female student's, which in fact correlates positively with quality of life and life satisfaction (Chow, 2010; Salami *et al.*, 2010).

Furthermore, there is evidence that student's lifestyle behaviour (e.g. smoking, alcohol use and physical activities), correlated with life satisfaction (Mikolajczyk *et al.*, 2008; Schmidt, 2012; Sabbah *et al.*, 2013). For example, Sabbah *et al.* (2013) in their study among Lebanese students, find that smokers and alcoholics rated their health as poor and low compared to non-smokers and non-alcoholics. However, this is not surprising, given the negative impact of smoking and alcohol abuse on health. More so there is evidence that students uses smoking and drugs as a coping strategy for mental health dysfunction, as anxiolytics (Adewuya *et al.*, 2006; Kenney & Hollahan, 2008).

On the other hand, Sabbah *et al.* (2013) found in their study that physical activity is an important determinant of quality of life and life satisfaction, among university students. Their result was supported by other studies (e.g. Salami *et al.*, 2010; Schmidt, 2012). These studies provided a collateral explanation for the gender differences in quality of life. For example, there is evidence that women are less likely to be physically active than men, and will rather participate in home-based activities or unsupervised exercise such as walking (Schmidt, 2012; & Sabbah *et al.*, 2013). Consequently, men are more engaged in vigorous physical activities such as running, or weight lifting than women (Huang *et al.*, 2003; Quadros *et al.*, 2009; El Ansari *et al.*, 2011).

However, various socio-demographic factors (e.g. financial worries, concerns for future careers and personal illness), may be implicated but not studied in students rating of life satisfaction and quality of life. There is an immediate need for more studies to explain the factors that determine how students rate their quality of life and life satisfaction (Department of Education and Skills, 2013; National Union of Students of Scotland, 2010). Understanding the socio-demographic and behavioural characteristics that affect student's quality of life and life satisfaction will help in planning for an effective health -promoting actions, social

support and counselling services that should be implemented in the campus towards improving the overall quality of life of university students.

### **3.2.3 Body image perception**

Body image has a profound impact on behaviours of individuals, and body dissatisfaction affects individuals of all ages. It is important to understand how body dissatisfaction affects adolescents and young adults because their feelings about their bodies can have an effect on their behaviours into their adult years (Wilkosz *et al.*, 2011). Data from the Youth Risk Surveillance Report indicate that 28% of high school students in the United States described themselves as slightly or very overweight (WHO, 2004). The prevalence increased as students moved from the ninth grade in the twelfth grade. A total 44% reported that they were trying to lose weight, and this percentage was higher for girls than for boys (WHO, 2004). This is consistent with the findings of a recent study that adolescent females reported a greater size discrepancy from their actual body size than did their male counterparts (Jones *et al.*, 2007).

Consequently, body image dissatisfaction and negative body image perception may serve as an impetus for young adults to engage in strict dieting and unhealthy eating behaviours to lose weight, detrimental to health (Mikolajczyk *et al.*, 2007 & 2008). For instance, there is evidence that eating disorder is becoming a major health issue for women in the US, and among most European countries, with thinness regarded as a beauty ideal (Woodruff *et al.*, 2008). On the contrary, developing countries still associate fatness with economic powers (Cassidy, 1991). For instance, research has shown that certain ethnic groups, such as the nomadic Moors in Mauritania, and the Annang people in Nigeria still practice force feeding for girls to enable them develop big body (Brink, 1991).

Similarly, evidence still shows that in most West African nations such as Nigeria, Ghana, Mali, Gambia, Cameroon, to describe someone as “being fat” is regarded as a complement implying wealth, strength and beauty (Sobal & Stunkard, 1989). However, despite the evidence that negative body image perception is detrimental to psychological health (Szabo *et al.*, 2006; Jones *et al.*, 2007; El Ansari *et al.*, 2010), studies regarding body image perception especially among the young adults and university students population is still very limited (Kostanski *et al.*, 2004; El Ansari *et al.*, 2010).

Though very few studies examined body image perception among university students there is evidence that body image is associated with many factors, such as SES, ethnicity and cultural differences, health status and gender. With regard to SES, Lynch *et al.*, (2007), found that people with higher SES have a smaller ideal body size. However, while Lynch *et al.* (2007) found that SES did not influence perception of personal body size, a survey of more than 87,000 high school students in Minnesota found that those from low-income families tended to underestimate their own weight (Park, 2011). There is evidence that ethnicity can affect the way a person perceives his/her body image.

The Youth Risk Surveillance Report (WHO, 2004) indicates that 33% of Hispanic students, 26% of white students, and 23% of black students describe themselves as overweight (WHO, 2004). This finding is consistent in multiple recent studies indicating that white adolescent girls are more likely to feel dissatisfied with their bodies than black adolescent girls (Jones *et al.*, 2007; Neff *et al.*, 2004). An earlier study by Cogan *et al.* (1996) found that students of African origin preferred bigger body size in both male and female, while the Caucasians preferred a smaller female size. On the other hand, male and female students of Asian origin, indicated for a bigger body size than the Caucasians (O’Dea, 1999). However, they called for more studies that will provide information on the cultural differences of body image among

university students. With regard to health status, studies have shown that body dissatisfaction is associated with low self-esteem, stress and depression (Presnell *et al.*, 2004). Depressive symptoms among students have been associated with a perception of not being the appropriate weight (Daniels, 2005). Girls tend to report more depressive symptoms associated with weight than boys (Martyn- Nemeth *et al.*, 2009). In fact, girls report more depression and low self-esteem than do boys, regardless of their weight and body size (Swallen *et al.*, 2005).

The desire to control weight can escalate to dangerous levels when adolescents engage in other health compromising behaviours while engaging in unhealthy weight control behaviours. Neumark-Sztainer *et al.* (1998) found a significant relationship between unhealthy weight control behaviour and suicidal ideation in the young adult population. With regard to gender, previous studies have reported that male students are less likely to try to lose weight compared to female students (Wardle *et al.*, 2006). Unfortunately, the desire to be thin creates a pressure on female students to lose weight continuously and this might promote unhealthy weight control behaviours such as fasting, skipping meals, taking laxatives or diet pills and food restrictions (Tiggeman *et al.*, 2006; Pomerleau *et al.*, 2007).

Although, the body image perception may be different across gender, however, researchers maintained that the psychological health importance of body image dissatisfaction is of concern for males as well as females (Kostanski, *et al.*, 2004; El Ansari *et al.*, 2010). Pariya *et al.* (2010) examined body image perception among female medical students in a university in India. Students sample was selected by convenience sampling strategy (n = 147). The result showed that 98 (66.7%) felt they were satisfied with their body image, whereas 40 (33.3%), felt dissatisfied with their body image, while 42 (28.6%) were skipping meals because they felt bad with their body image. However, the use of only female sample

restricted the interpretation of the results beyond female students. In addition, the study was limited by small sample size, which the authors believed to have affected wider statistical analysis, while the use of non-random sampling may create selection bias limiting the generalization of the study. The recommended for more studies on student's body image that will include both male and female students based on a larger sample size.

### **3.3 Physical health status**

#### **3.3.1. Body mass index (BMI)**

Body mass index (BMI) was defined as the weight in kilograms divided by the square of the height in meters  $\text{kg/m}^2$  ((WHO, 2006, p. 6). It was classified into four different categories: Normal weight, BMI (18.5-24.99  $\text{kg/m}^2$ ), underweight ( $<18.5 \text{ kg/m}^2$ ), overweight (25.0 - 29.9  $\text{kg/m}^2$ ) and obesity (BMI  $> 30 \text{ kg/m}^2$ ). Overweight and obesity are important determinants of health and has been associated with adverse metabolic changes such as increased blood pressure, unfavourable cholesterol levels, hypertriglyceridemia, increased resistance to insulin, greater prevalence of metabolic syndromes (Willem, 2002; Ali & Crowther, 2009). Similarly, some heart diseases, stroke, type 2 diabetes mellitus and many forms of cancer (e.g. liver, stomach) are also associated with overweight and obesity (WHO, 2006; Lytle & Kubik, 2003).

The rising prevalence of obesity is a worldwide problem. Obesity is believed to be due to excess body fat deposition, caused by an imbalance between energy intake and energy expenditure (Wang *et al.*, 2003; Ali & Crowther, 2009). This balance between energy output and energy input can be affected by many factors like biological factors, lifestyle factors, socioeconomic factors, and demographic factors (Ali & Crowther, 2009; Piers *et al.*, 2003). Why the biological and genetic causes of obesity are beyond the scope of the current study,

on the other hand, the lifestyle factors, socioeconomic factors demographic factors and psychological factors are examined below. The non-biological causes of obesity are related to food intake and physical inactivity (Banwell *et al.*, 2009; Achinihu, 2009). Food intake can be affected by many factors, including the price, portion size, taste, variety, and accessibility of foods. The method by which the food is prepared is also important. There are also strong cultural influences on the types of food consumed with some societies abstaining from particular types of food or only eating food if it has been prepared in a specific manner. A diet that is high in calories, lacking in fruits and vegetables, full of fast food, contributes to weight gain (WHO, 2006; Scully *et al.*, 2014). Modern diet of developed and developing nations has been found to contain more fat and considerably less fibre than the recommended levels (Willemten, 2002; Cordain *et al.*, 2005).

For instance, a study in Nigeria by Chukwuonye *et al.* (2013) showed that fat constituted (38%) of the total energy intake compared to a recommended level of less than (30%) whilst fibre intake was 8.6g/1000 kcal per day compared to a recommended intake of 14g/1000 kcal. More so, there is evidence that food containing saturated fat results in greater weight gain compared to food containing unsaturated fatty acid (Soriguer *et al.*, 2003; Piers *et al.*, 2003; Ali & Crowther, 2009; Chukwuonye *et al.*, 2013). Evidence show that modern life in addition to western culture brought with it more food with high caloric density and better taste, while new technology has made life easier and less active which resulted in a worldwide epidemic of obesity and its associated disorders (Ali & Crowther, 2009). Due to lifestyle changes and modernisation, overweight and obesity are on the increase in Nigeria (Mbada *et al.*, 2009; Awosan, *et al.*, 2013).

Similarly, Onyechi and Okolo (2008), examined the prevalence of obesity among undergraduates students (n = 620; males, n = 200; females, n = 420) in a university in Eastern

Nigeria. The result showed overall, (16.9%) of the students reported overweight, while over (20%) reported different categories of obesity. The study recommended that the increase of student's obesity in Nigeria is related to poor and unhealthy dietary choices. However, the study recommended for more studies that will include students from several universities in a larger sample. There is evidence that sedentary lifestyle and inactivity are one of the major causes of obesity and overweight (Belahsen & Rguibi, 2006; Ali & Crowther, 2009). In inactivity, a person takes in more calorie every day and burn little. Studies have revealed that inactive people may spend long hours watching television, browsing internets, eating snacks and sitting long hours in cars or sleeping long hours daily (Ali & Crowther, 2009; Chukwuonye *et al.*, 2013). These unhealthy behaviours are becoming a common routine among university students.

For instance, Huang et al. (2003) found that more than (30%) of American students in their sample, reported physical inactivity. In Egypt, Abolfotouh *et al.*, (2007) found that (34%) of students reported inactivity. In Nigeria, Onyechi and Okolo (2008) found that (40%) of students who participated in their study reported not engaging in physical activity, giving reasons of excessive academic work. Consequently, the obesity prevalence in Nigeria ranges from (8% - 22%) causing public health problems (Achinihu, 2009). However, Achinihu (2009), recommended for more research on the factors that are associated with students overweight and obesity in Nigeria.

In addition, Studies have shown that BMI is significantly higher among low socio-economic than middle and high socio-economic groups (O' Dea *et al.*, 2003), with lower socio-economic status (SES) being associated with accelerated weight gain during adulthood (Ali & Crowther, 2009; Scully, 2014). There is evidence that the effect of socioeconomic status (SES) on the prevalence of obesity may be mediated by low income which will limit the



availability of the more healthy options (O' Dea *et al.*, 2003). However, this finding is contradictory. In a study in Eastern Nigeria by Chukwuonye *et al.* (2013), they found that the prevalence of obesity has a direct relationship with income status. According to them, this relationship arises through greater ability of the rich to afford better and excess amount of food, and been better educated with tertiary education, they tend to have sedentary jobs (in office) and stay longer in cars. While the poor walk to their farms, and actively do their farm work and walk back home, due to lack of vehicles and therefor engaging more in physical activity than the rich do.

On the contrary, similar studies in eastern Nigeria by (Onyechi & Okolo, (2008) and Mbada *et al.* (2009) found that SES was inversely related to obesity and overweight- that people in the low socioeconomic class had a higher prevalence of obesity and overweight. However, Mbada *et al.* (2009) called for more studies on the relation of socioeconomic status with obesity among young adults in Nigeria. Furthermore, there is indication that gender is associated with obesity. However, these findings are controversial. For example, Oken and Gilman (2003), Onyechi and Okolo (2008) found that female students have higher prevalence of obesity than male student's does in a study among university students in Nigeria. According to Onyechi and Okolo (2008), the gender differences in obesity may be attributed to the fact that female students have a higher risk of physical inactivity, and about 1.7 times higher chances of relapsing into physical inactivity than the male students.

On the contrary, Mikolajczyk *et al.* (2010) in their study that examined the relationship between perceived body weight and body mass index among students selected from seven European countries. Found that more male students reported both overweight and obesity compared to female students. However, they called for more studies among the university, to investigate the gender differences in student's body mass index. Similarly, cultural

differences in obesity have been noted in other population groups especially among the elderly (e.g. WHO, 2013a; WHO; 2013b). However, very few studies examined the effect of body weight perception among the university students population. In a cross sectional study, DeBate *et al.* (2007) examined racial and gender differences in weight status among students in an American university (n = 630). The result showed that female students of African origin, reported higher BMI score compared to their white counterparts.

On the contrary, the study showed no significant racial differences in body weight among the male students. However, the study recommended for more studies among different ethnic groups to explore the cultural influences of body weight among the young adults. An earlier cross cultural study that examined body mass index and body dissatisfaction among students (n = 628) in a university in South Africa (Wassenaar *et al.*, 2000) found that white students reported higher BMI than students of black African origin. However, there is a need for more cultural studies on student's population that will help to explain the cultural effects on student's body weight.

Few studies examined the association of psychological health with obesity among university student's. However, there is evidence that psychological status (e.g. stress and depression) can influence eating habits, because most people eat in response to negative emotions (Mikolajczyk *et al.*, 2008, Ali & Crowther, 2009). There is evidence that stress not only increases consumption of food, but also shifts consumption toward high caloric foods that are normally avoided (Wellettem, 2002; Soriouer *et al.*, 2003).

Similarly, depression has been reported to promote over - eating that can lead to increased fat accumulation and overweight (Doll *et al.*, 2000; Adams *et al.*, 2007). However, evidence from cross sectional studies showed only a weak association, between psychological factors and body weight (Faith *et al.*, 2002; Scott *et al.*, 2008; de Wit *et al.*, 2009). More studies was

recommended to examine the association of psychological health with body weight (Ali & Crowther, 2009).

### **3.3.2 Hypertension**

Hypertension is the elevation of systolic blood pressure (SBP)  $\geq 140$  mmHg, and diastolic blood pressure (DSB)  $\geq 90$  mmHg (WHO/ISH, 2003; JNC 7, 2003; American Heart Association (AHA) 2013). The worldwide prevalence of hypertension affects more than one billion individuals with approximately 7.1 million deaths attributed to hypertension per year (WHO, 2002; WHO, 2003). According to the WHO (2003) the suboptimal blood pressure  $>115$  mmHg, is responsible for 62% of cerebrovascular disease and 49% of ischaemic heart diseases (IHDs) with no sex differences.

However, the large percentage of people afflicted with hypertension has been attributed to inadequate health education and health promotion campaigns. Evidence showed that approximately (30%) of adults are unaware of their hypertension, while greater than (40%) of individuals with hypertension are not on treatment, and two-thirds of hypertensive patients are not being controlled to BP levels  $< 140/90$  mmHg (WHO, 2003). The prevalence of hypertension in Nigeria compares unfavourably with those of other African countries in the sub-Saharan. For example, the overall prevalence of hypertension in Nigeria was reported to be (18.4%) compared with a prevalence of (10.35%) for Ethiopia, (14.30%) for Cameroun, (10.5%) for Tanzanian, and (10.5%) in Democratic Republic of Congo (Ogah *et al.*, 2012).

However, despite all evidence of the risk associated with hypertension, and its epidemics in Nigeria, still studies that examined the factors that associated with hypertension among the university students population are still very scarce. There is evidence that adoption of healthy lifestyles by all persons is critical for the prevention of high blood pressure and is an

indispensable part of the management of those with hypertension (WHO, 2002; Chobanian *et al.*, 2003; WHO, 2003). Lifestyle modification reduces BP, prevent or delay the incidence of hypertension, enhance antihypertensive drug efficacy, and decreases cardiovascular risk (WHO, 2003; JNC, 2003). There is evidence that physical activity reduces both systolic and diastolic blood pressure (Whelton *et al.*, 2002). Physical activity was reported to mediate the reduction of blood pressure in both those who are overweight and in those who are normal weight (Awosan *et al.*, 2013).

However, earlier studies did not agree on the postulated mechanism by which physical activity acts on blood pressure (Lepore *et al.*, 1997; Whelton *et al.*, 2002). Accordingly, Whelton *et al.* (2002) called for more studies on the relationship between hypertension and physical activity. However, another possible source of hypertension among university students is stress. There is sufficient evidence to prove that students are prone to different stressors (Omigbodon, *et al.*, 2004; Seyedfatemi *et al.*, 2007; El Gilany *et al.*, 2009), and research evidence indicated a possible association between stress and hypertension (Whelton *et al.*, 2002; Seyedfatemi *et al.*, 2007).

For example, an earlier study by Lepore *et al.* (1997) among a convenience sample of (n =150) university students in the United States of America showed that while students DBP was associated with challenges and stressors, the SBP was associated with chronic illness and chronic stress. However, this finding is contrary to the findings of a more recent study reported by Hughes (2005). In his study, Hughes (2005) found that only SBP was associated with student's stress, while DBP was not. However, Hughes called for more studies that will investigate how hypertension is related to students stress. On the other hand, gender has been implicated in students' hypertension although only few studies examined student's blood pressure by gender (e.g. Lepore *et al.*, 1997; Hughes, 2005; Chhabra *et al.*, 2006;

Abolfotouh *et al.*, 2007; Oghgbon *et al.*, 2009). Most the studies indicated that more male students reported higher raised blood pressure than female students did. For example, Oghgbon *et al.* (2009) examined blood pressure pattern of students in a university in the Eastern Nigeria, (n = 464). The result showed the mean SBP as  $115 \pm 13$  mmHg, with female students having a mean SBP of 111 mmHg against the male students mean SBP of 117 mmHg. However, the study argued that the BMI among the male student's compared to their female counterparts might be responsible for the raised SBP among the male students. However, a study among traders in Nigeria by (Awosan *et al.*, 2014) hypertension was more prevalent among females than males. Oghgbon *et al.* (2009) recommended for more studies on raised blood pressure among students population, to establish the gender differences.

### **3.4 General health complaints**

Several studies have investigated self-rated health and health complaints among the university students population. However, there is no conclusion on the pattern of health complaints among students population (Steptoe *et al.*, 2001; Stock *et al.*, 2007; Mikolajczyk *et al.*, 2008; El Ansari *et al.*, 2010). Evidence from studies conducted among university students population showed that the most frequently reported health to include headache, depression, insomnia stomach- ache, abdominal pain, and dizziness.

For example, Doll *et al.*, (2005) examined physical well-being and quality of life among (n = 1439) students sample from different universities in the UK. Data collection for the study was with the Short Form (SF-36). The result showed that 1204 (88%) of the participants rated their health as good, while 1254 (88%) visited their GP in the last three months. Depression and stress was among the most frequent health problem reported by the students. Although, the use of Short Form (SF-36), has been criticized for poor psychological assessments in non-hospital patients (Farivar *et al.*, 2007). Its use may affect student's interpretations and ratings

of depression and stress. In a similar study, Abolfotouh *et al.* (2007) examined health complaints among students in HEI in Egypt using cross sectional study (n = 764). The study showed that about one-third of the students reported various forms of sleep disorders, dizziness, abdominal pain and headache, whereas more than half of the students reported hand tremors students. In a similar study, Curry and Green (2007) examined the incidence of headaches among university students in the USA (n = 104). The result showed that over (88%) of the students reported experiencing headaches and over (60%) of students revealed that headaches interfered with their usual daily activities, more than (90%) of students resulted in the use of non-prescribed drugs in treating headaches. The study also indicated that students are lacking the knowledge about prevention and management of headaches. However, the study suggested the need for more students that may determine the incidence and correlates of headaches among university students.

More so, there is a need to examine the factors that could affect student's health complaints' in different countries. For instance, studies (e.g. Doll *et al.*, 2005; El Ansari *et al.*, 2007) found that more female students than male reported various health complaints. However, Doll *et al.* (2005) based their study on convenience sampling. On the contrary, other studies (e.g. Mansour and Marmash 2007; Adebayo *et al.*, 2008) found that more male students than females reported higher in all the health complaints examined. However, Mikolajczyk *et al.*, (2008) found that gender was not associated with student's health complaints in their study.

In addition, most studies reported a correlation between student's health status and their lifestyles (Steptoe *et al.*, 2001; Adewuya *et al.*, 2006; Mikolajczyk *et al.*, 2009; El Ansari *et al.*, 2010). Some of these lifestyles that may have adverse effects on health includes alcohol use, drug use, smoking, dietary habits and sedentary habits (Onyechi Okolo, 2008;

Mikolajczyk *et al.*, 2009; El Ansari *et al.*, 2011; DeBate *et al.*, 2007). However, the next chapter deals with the impact of risky lifestyles on students' health status.

### **3.5 Review of the relations between religiosity and health**

In Nigeria, religious practice and affiliation, plays a significant role both culturally and politically and in most times it is employed as an agent of violence, stigmatization, association or isolation (Idehene & Ojekwum, 2010). The Nigerian society is divided very sharply between the Muslims North and the Christians South as was clearly shown in (chapter 1). However, no study was found that compared the health status and lifestyle behaviours of Muslims and Christians in Nigeria. Religiosity refers to a membership and adherence to the teachings of organized social institutions (e.g. Catholic Church, Anglican Church, Protestant, Islam), that offer a coherent worldview and prescribe behaviours (Emmons & Paloutzian, 2003).

The relationship between religiosity and health status has not being fully established. For instance, while the studies of (Dorahy *et al.*, 1998; Francis *et al.*, 2004) provided strong evidence that religiosity and/ or spirituality correlated positively with mental and physical health status, Idehene and Ojekwum (2010) found that religiosity positively correlated with health awareness. In contrast, the studies of (O'Connor & Cobb, 2003; Ying, 2009; Leondary & Gralamas, 2009) reported no association between religiosity with mental health or depression.

Ying (2009) examined whether religion and spirituality predict well-being among students in an American university, with a convenience sample of (n = 65) students. The result showed that while 49.2% of the sample identified with organized religion, 43.1% reported no religious affiliation, while 16.8% reported to be atheist, agnostic, spiritual or in yoga practice.

However, the findings also showed that religious involvements and comfort, and spirituality were not significantly associated with mental health. Based on this study the author argued that: although religiosity and spirituality are more content-oriented and involved specific belief systems which in principle, would inform people's behaviour. However, Ying (2009) postulated that it is possible to hold certain beliefs but not act accordingly in everyday living. In addition, he argued that since only half of the students (49%) are affiliated with a specific organized religion, it may be possible that religiosity, may not be relevant to the participants. Furthermore, the author attributed the lack of association between spirituality and mental health to be due to the limited variability in the instrument used in measuring spirituality and on a small sample size, and consequently, called for more studies.

On the other hand, Constantine (2010) recommended that universities should establish counselling centres' and health outreach programs are devoted on the health benefit of religion in solving mental health problems. In addition, that more research on the subject in different countries should be encouraged to explore the roles of specific religion, in buffering psychological distress and mental health symptoms in university students. However, previous studies have reported on the influence of religious affiliation on students lifestyle behaviours. For instance, Idehene and Ojokwumi (2010) noted that variables of religiosity such as (affiliation, attitude, beliefs, and attendance) negatively correlated with health compromising behaviours (e.g. alcohol uses drug uses, smoking). In contrast, Dulin *et al.* (2006) reported that religious variables (e.g. affiliation and attendance) correlated positively with alcohol abuse, poor GPA, good social support. Consequently, Dulin *et al.* (2006) maintained that it is religious affiliation more than any other religious variables that predict alcohol abuse. Furthermore, the research findings on the association between religiosity and gender were not consistent. For instance, some studies find that female students scored higher than male



students did in all religious variables (Dorahy *et al.*, 1998; Leondary & Gralamas, 2009). However, an earlier study by Dorahy *et al.* (1998) among (n = 589) students sampled from Ghana, Nigeria and Swaziland, examined the relationship between religiosity and life satisfaction. The result showed that only female students from Nigeria and male students from Swaziland showed positive correlation with life satisfaction, evidence that the relationship between religiosity and life satisfaction may depend on gender and race. The study also found that religiosity does not increase life satisfaction score among females but only among males. However, Dorahy *et al.*, (1998) recommended more studies on the association of religiosity with the health of university students.

### **3.6 The effects of Social support on health status**

Sarason *et al.* (1987, p. 127) defined social support as: “*Having a group of family and friends who provide strong social attachments, being able to exchange helpful resources among family and friends and the feeling of having supportive relationship.*” In addition, Sarason *et al.* (1987) postulated that direct assistance, advice, encouragement, companionship, and expressions of affection are all forms of social support associated with positive outcomes for persons facing life’s various dilemmas. There is evidence that social support have positive psychological health impacts, which will be of benefit to university students. However, several factors are reported to be associated with student’s social support, such as gender, health status and lifestyles (Abolfotouh *et al.*, 2007).

With regard to gender, few studies (e.g. Allgower *et al.*, 2001; Edward *et al.*, 2001; Abolfotouh *et al.*, 2007) examined the gender differences in the perception of social support and their findings were controversial. Whereas Allgower *et al.* (2001) found that students that reported depressive symptoms also reported low social support, in both male and female. On the other hand, Edwards *et al.* (2001) reported that female students significantly reported

more negative social exchange than male students did. Abolfotouh *et al.* (2007) found that female students reported higher perceived social support than male students did. They also observed that females naturally are more emotional compared to males, and they are able to share their feelings more freely and readily with friends. By doing so, females perceived that having someone to talk also means having adequate social support. In contrast, males are expected to live up to certain social expectations that have been set and that if they were to share their feelings, it would be perceived as a sign of weakness. Hence, males tend to perceive low social support because they are more likely to feel that they have no one to express their feelings.

With regard to health status, most of the studies provided evidence of a relationship between students' health and perceived social support. However, the findings were inconclusive. While Allgower *et al.* (2001) found that low social support was related to students' self-reported chronic illness, sleep problems and social isolation. On the other hand, Edwards *et al.* (2001) found that negative social support correlates more with students' physical symptoms and mental health problems than positive social support.

According to Edwards *et al.* (2001), it is not the presence of positive social support but the absence of negative social support that was associated with better physical health. Alternatively, Mikolajczyk *et al.* (2008) found that it was satisfaction with social support and the number of people who could provide social support that was related to students' better health. Although, Mikolajczyk *et al.* (2008) also found that social contact was not related to better health. However, the study called for more studies on the health impact of social support on students. With regard to lifestyles, few studies examined the relationship between students' perceived social support and their lifestyle practices. Allgower *et al.* (2001) reported that poor or low social support was related to students' unhealthy behaviours such as

excessive alcohol uses and lack of physical activity. In contrast, Abolfotouh *et al.* (2007) found that positive social support predicts healthy lifestyles among students.

### **3.6.1 The effect of Socio-economic status on health status**

Chmara *et al.* (2007) conducted a study among university students in Poland to examine socioeconomic factors and prevalence of overweight among female students (n = 718). The study showed that more female students than male reported underweight 15.3% and 3.5% respectively. The study also showed that students that reported underweight and low BMI also belonged to high SES groups. On the contrary, other studies found that BMI is significantly higher among low socio-economic groups than middle and high socio-economic groups, (O'Dea, 2003).

Consequently, Ali and Crowther (2009) postulated that, the effect of SES on the prevalence of obesity may be mediated by low income which will limit the availability of the more healthy food options. On the other hand, student's mental health was reported to be associated with income status (Adewuya *et al.*, 2006; Mikolajczyk *et al.*, 2008). A study by Martins *et al.* (2004) examined the correlation of mental health and income among students in one university in Brazil. The result showed a positive correlation between student's income status and mental health. Income status and social support plays both directly and indirectly, in affecting health, by restricting the ability to attend hospital and paying for medications, restricting certain lifestyles such as eating healthy foods, living in good environments, be able to pay for gymnasium for regular exercises and some other luxuries that makes one live a happy healthy life.

## 3.7 Cognitive factors

### 3.7.1 Self-efficacy

There is evidence that cognitive factors have a significant effect on health status and lifestyle behaviours (Wardle *et al.*, 2004; Twenge *et al.*, 2004; Akinsola, 2009). Evidence showed that cognitive factors exert their effect by promoting individual's health behaviour change, which in turn promotes health status (Kuupplelomaki & Utrianen, 2003; Ying *et al.*, 2007; Zawawi & Hamaideh, 2009). Empirical evidence from students based studies showed that high scores in self-efficacy, leads to more adaptive coping, more effort in the goal-striving process, higher engagement in important goals, behaviours change and good health (Mikolajczyk *et al.*, 2008; Jegede, 2009; Onyeizuigbo, 2010). However, few studies examined these factors among university in Nigeria.

Bandura (1997) postulates that highly efficacious individuals tend to tackle tasks that are more challenging, employ better strategies; put forth more sustained effort and are more persistent in the face of obstacles, setbacks and difficulties. It increases the probability of success through its effects on sustained effort and stamina. There is evidence that high self-efficacy minimises stress and contributes to good health (Bandura, 1999; Onyezuigbo, 2010; Salami, *et al.*, 2010). In addition, Salami (2010) conducted a cross sectional study to examine self-efficacy and its implications on the quality of life among (n = 241) university students in Nigeria. The findings showed that student's self-efficacy score correlates negatively with depression. In other words, students with high sense of efficacy reported no depression and are in better mental health. According to the author, students who were stressed or depressed as a result of inability to meet academic demands but with a high self-efficacy, showed intrinsic motivation, self-discipline, skills and efforts. Other studies (e.g. Chemers *et al.*, 2001; Torres & Solberg, 2001) also reported a positive association between high self-efficacy

and students wellbeing, although most of the studies were based on small sample size, and none of the studies considered gender or ethnic differences in student's self-efficacy. In addition there is evidence that self-efficacy is associated with behaviour change such as alcohol abuse, sedentary habits and smoking (Gol Jegede, 2009; Onyeizuigbo, 2010). However, no study was found that examined behaviour change among university students in relation to self-efficacy.

### **3.7.2 Sense of coherence (SOC)**

Sense of coherence (SOC) presented a new dimension of looking into the concept of health. It focuses on factors that support human health and well-being in contrast to factors that cause disease (Eriksson & Lindstron, 2007). Antonovsky (1993) postulated three components of SOC, which include:

- (1) Comprehensibility; which deals with the extent to which a person sees the world as ordered and is able to mobilise the resources needed to cope
- (2) Manageability; which is the understanding of the problem and having the necessary resources to cope successfully
- (3) Meaningfulness; which pertains to the belief that coping makes sense and that one wishes to cope.

Antonovsky (1993) posited that SOC is not a particular coping style, but a high SOC may prevent stress-associated tension from developing into health problems, because individuals with a high SOC are more likely to adapt a coping strategy that is efficient for dealing with stressors. There is evidence that SOC is associated with student's health status and lifestyle behaviours. The following sections will examine the association of SOC with student's health status and lifestyles. With regard to health status previous studies provided evidence that

sense of coherence correlated positively with psychological well-being and life satisfaction (Ebert *et al.*, 2002; Ying *et al.*, 2007; Mikolajczyk *et al.*, 2008). On the other hand, students with higher score in sense of coherence reported better health, due to its cushioning effect on stress and depression (Gajdosova *et al.*, 2009). Von Bothmer and Fridlund (2003) examined self-rated health among university students in relation to their sense of coherence (SOC). A sample of (n = 328) filled the (SOC- 29) version. Among women, the result showed that a low score of SOC was associated with reporting more health complaints and depression in contrast to male students. Further analysis of the study shows that there was a positive association between SOC and well-being and life satisfaction.

Similarly, Biro *et al.* (2010) in a cross sectional study examined the relationship between depression and sense of coherence in (n = 81) among students in a university in Hungary. Data collection was by (SOC -13 and GHQ- 12). The result show students mean SOC score as 62.5. The result showed a positive relationship between SOC and wellbeing. However, the authors called for more studies with a larger sample to explore the association between SOC and wellbeing of students.

With regard to students' lifestyles, findings were controversial. While Kuuppelomaki and Utriainen, (2003), found a positive association between physical activity and SOC, on the other hand there was no associations between SOC, smoking, and alcohol consumption (e.g. Kuuppelomaki & Utriainen, 2003; Gajdosova *et al.*, 2009). For instance, Kuuppelomaki and Utriainen (2003) in a longitudinal study conducted a 3-year follow-up to examine how a student SOC is related to smoking, drinking and physical activity. A sample of (n = 287) from a polytechnic in Finland participated in the study. The result showed (73%) of students SOC mean score was (5.13.) The result showed that Students that exercised more than three times a week had strong SOC than those that exercise about once a month. The study also

shows that a person with a strong SOC will experience less stress and can cope better with stress. In addition, Kuuppelomaki and Utriainen (2003) noted that students who frequently take physical exercise experience less stress and cope better with stressful situations than those who are less active in terms of physical activity. Additional findings showed that smoking and alcohol consumption were not associated with students' SOC score. Gajdosover *et al.* (2009) reported similar findings. However, they also called for more studies that will examine the relationship between physical activity and SOC.

With regard to gender, only few studies examined the relationship between gender and sense of coherence, however, the results were contradictory (e.g. Ebert *et al.*, 2002, Mikolajczyk *et al.*, 2008). Ebert *et al.* (2002) examined psychological factors as predictors of general health status and among (n = 202) students in one American university, data collection based on 29-item (SOC) scale. The result showed that gender was positively associated with SOC, with male students reporting higher scores than female students. Conversely Mikolajczyk *et al.* (2008) in a similar study found no gender difference among students. However, they authors recommended more studies on students SOC and health. Unfortunately, few studies examined the importance of SOC to psychological health, especially in controlling the overall effects of stress and depression.

### **3.7.3 Locus of control**

There is evidence that locus of control is an attribute which is necessary for behavioural change and consequently contributes to good health. People who possess internal locus of control usually feel that they have control over situations around them, can influence events and perceive themselves as competent to predict what happens to them. In contrast, people characterized by external locus of control usually attribute events around them to forces beyond their control and such forces are said to be externally located (Zawawi *et al.*, 2009).

More so perceived control is an individual's belief in his or her ability to effect a change in a desired direction and self-improvement (Michinov, 2005). Studies on perceptions of competence and locus of control for positive and negative outcomes among college students, found students with internal locus of control showed better adjustment to college in terms of academic achievement and social adjustment (Njus & Brockway, 1990; Pugliese, 1994). In contrast, students with external locus reported higher frequency of failure, illness and withdrawal from college (Pugliese, 1994). Consequently, LOC influences health status and lifestyle behaviours irrespective of male or female.

In addition, there is evidence of a positive relationship between students' health status and locus of control (Wardle *et al.*, 2004; Twenge *et al.*, 2004; Zawawi *et al.*, 2009; Akinsola, 2009). However, most of the findings were inconclusive and controversial. For instance, Zawawi and Hamaideh (2009) examined depressive symptoms and their correlates with locus of control and satisfaction with life among Jordanian students (n = 492) in a cross sectional study. The findings showed a negative correlation between internal health locus of control and depression. Conversely, the study showed a positive correlation between external locus of control (powerful others (POLOC) and chance locus of control (CHLC) with depressive symptoms.

Additionally, the findings showed that locus of control provide effective coping behaviour in the presence of negative life events (i.e., financial difficulties and health problems). The researchers argued that when faced with negative life events, the internals tends to responds positively by adopting a problem solving strategy while the externals tend to react emotionally for example by being sad or angry. Consequently, internals are able to leave their disappointments behind them and live happily. Akinsola (2009) reported similar findings in a study among university students in Nigeria and Wardle, et al. (2004) reported the same



among university students from selected European sample. With regard to lifestyle behaviours, few studies reported the relationship between locus of control and student's lifestyles. Steptoe *et al.* (2001) examined locus of control and health behaviour among students from 18 European countries. Health behaviours examined included (exercise, cigarette smoking, alcohol use, food choices). The result showed a partial correlation between the internal locus of control and healthier behaviours such as exercise, fibre intake, and fat avoidance. The result also showed that IHLOC was not related to smoking and alcohol consumption.

On the other hand, chance health locus of control correlated negatively with unhealthy behaviours, which included exercise, alcohol, consumption, breakfast, fruit intake, fibre intake and fat avoidance. Additionally, the result showed higher internal health locus of control ratings were associated with healthier habits, independent of gender. On the other hand, individuals with high score in chance locus of control are more likely to be smokers, regular alcohol users, and not to eat fruit or fibre and not to make conscious efforts to avoid fat and cholesterol.

### **3.8 Summary of literature review on health status**

The concluding chapter examined previous studies regarding student's health status indicators under the auspices of mental health, physical health, general health and cognitive health. The review provided evidence of paucity of literature on student's health more especially among West African countries such as Nigeria, Ghana, Benin Republic, Togo, Niger, Gambia, Cameroun Gabon, Senegal and Ivory Coast, which provided an urgent need for more research on student's health across this region. Equally there is a significant evidence of deterioration of health among university student's population with comparison to their age mates who are non-student, as a result of various stressors associated with higher

education such as finance, accommodation, academic, or personal problems (Bayram & Bilgel, 2008; Mikolajczyk *et al.*, 2008). Consequently, student's health was reported to be generally poor, with increasing cases of depression, stress, hypertension and obesity (Zawawi & Hamaideh, 2007; Stock *et al.*, 2007). There is scarcity of studies with regard to students' cognitive health, and the few studies available indicated an association of cognitive health indicator such as locus of control, self-efficacy and sense of coherence with students' health status and lifestyle behaviours. In addition, there is significant evidence of a negative correlation between body weight and body image satisfaction (O' Dea, 1999; El Ansari *et al.*, 2010). These psychological effects of overweight and body image dissatisfaction may contribute to poor quality of life and life dissatisfaction reported among students.

The review also indicated lack of research interest with regard to gender and ethnicity among university students population, despite the overwhelming evidence that these demographic factors contributes to health inequality in any population group (Dahlgren and Whitehead, 1991). The few studies that conducted analysis based on sex and ethnicity was either inconclusive or controversial. The limiting factors with regard to previous studies include small sample size, non-random sampling and the use of non-validated measurements. These limiting factors are more among studies in developing countries like Nigeria.

The above indicated limitations, calls for an urgent need for more studies with university students especially in West Africa region where such studies are still very rare and at the same time, highly needed. Onyechi and Okolo (2008) indicated that there is a lack of research on students' health problems, such as obesity. In addition, others like Omigbodun *et al.* (2004) and Achinihu (2009) suggested that there is a need to promote lifestyle change and reduce depression and obesity to prevent the incidence of diabetes, and hypertension among Nigerians.

## **CHAPTER 4: LITERATURE REVIEW - LIFESTYLE BEHAVIOURS**

### **4.1 Dietary habits among university students**

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.

#### **4.2 Physical activity and sedentary habits**

There is much debate regarding the definition of physical activity. However, Caspersen *et al.*, (1986, p.127) stated that physical activity is “*any bodily movement produced by skeletal muscles that results in energy expenditure.*” The World Health Organization (2007) recommended 30 minutes of moderate physical activity per day for adults and at least one hour of moderate –intensity physical activity for children and young people. However, despite the public health implications for physical inactivity and sedentary behaviours there is a concern about the declining levels of physical activity among young adults especially those engaging in university education (Onyechi & Okolo, 2008; Mikolajczk *et al.*, 2008). This is concerning because it is recognised that regular physical activity can improve health and aid in the prevention of disease (WHO, 2005; 2006; 2009). However, there is evidence that the

high prevalence of certain illness (e.g. obesity, cardiovascular diseases, mental health problems) are associated with increasing sedentary lifestyles and reduced physical activity (Achinihu, 2008; Quodros *et al.*, 2009). Others argued that the decrease of physical activity might be explained by the fact that university students spend more of their time using internet and watching television (Huang *et al.*, 2003; Taha, 2008). On the other hand, the literature on the relationship between physical activity, sedentary behaviours and health outcome among university students population is less documented (Onyechi & Okolo, 2008; El Ansari *et al.*, 2011).

However, the association between physical activity level and gender shows that men are more involved in vigorous physical activities than woman (Huang *et al.*, 2003; Mikolajczyk *et al.*, 2008; Onyechi, 2008; Quadros *et al.*, 2009; EL Ansari *et al.*, 2011). For example in Brazil, de Quadros *et al.* (2009) assessed the prevalence of physical inactivity among university students in Brazil. The result showed that the main risk groups for physical inactivity were the female students (13.8%) of students reported inactive and sedentary lifestyle of which (11%) are males and (17%) females).

However, the study recommended that further research is required to determine changes in physical activity levels among university students. Conversely, a study among a sample of university students in the United Arab Emirates by (WHO, 2005) indicated no significant differences in sedentary habits among male and female students. Consequently, Daskapan *et al.* (2006) postulated the existence of two barriers that may be limiting student's desire for physical activity. These two barriers are: internal (e.g. lack of energy and motivation) and external ones (e.g. lack of finance, time and social support). However, Daskapan *et al.* (2006) recommended the need for further research to identify the differences of male and female participation in physical activity and the differences of the barriers by gender. Furthermore,

the Findings from the review pointed out that increasing number of students are engaging in moderate/mild or occasional exercises than vigorous type of physical activity. Huang *et al.* (2003) found that majority of students in their study fail to meet the recommended level of vigorous exercise for up to 4 days in a week that is beneficial to health. On the other hand, El Ansari reported that participants in their study participated in vigorous exercise for only 3 days a week and moderate exercise for less than 5 days in a week. In contrast, Onyechi and Okolo (2008) in Nigeria found that higher percentage of students (34.5%) exercised regularly than occasionally (31%). Consequently, majority of university students do not achieve the recommended levels of physical activity, there is a need argued Onyechi and Okolo for future research to identify and remove barriers to university student's limitation to physical activity.

#### **4.3 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).

#### **4.4 Cigarette smoking and public health**

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). However, only few studies examined smoking habit among students in Nigeria, and there is a need for more studies on students smoking habits in Nigeria.

#### **4.5 Summary of literature review on lifestyle behaviours**

This review provided important evidence of increasing unhealthy behaviours among students. With regard to dietary, physical activity, drug use, and smoking, there is evidence that students are adopting risky behaviours detrimental to health (Scully *et al.*, 2007; Keller *et al.*, 2007; Kenney & Holahan, 2008; Taha, 2008). Poor dietary habits was linked to lack of adequate health information about the important of eating healthy and the health implications of underweight and obesity. In addition, factors affecting students eating behaviour such as poverty, time factor, body weight control was indicated (Steptoe *et al.*, 2002; Adewuya *et al.*, 2006; El Ansari *et al.*, 2011).

There is evidence that students' physical activity is affected by other unhealthy behaviours such as dietary habits, smoking and alcohol use. Consequently, any intervention that specifically targeted on students sedentary behaviour will fail without taking into consideration other health behaviours (Prokhorov *et al.*, 2006). However, most of the studies showed more female students practice unhealthy behaviours compared to male students especially with regard to physical activity and dietary habits (Vickers *et al.*, 2004; Alexander & Brown, 2004; Ansari *et al.*, 2011). Most of the studies did not examine the gender and cultural differences with regard to student's lifestyle behaviours. In addition most of the studies were based on small sample size, non- random sampling which may have compromised the findings and the reliability of the results (Kenney & Holahan, 2008; Keller *et al.*, 2007; Alexander & Bowen, 2004; Vickers *et al.*, 2004). Consequently, the studies

indicated a need for more studies on the health status and lifestyle behaviours of adolescents especially university students that represent an important group in any nation because of their education and the future prospect as potential policy makers and leaders of any nation.

## **CHAPTER 5: RESEARCH METHODS**

### **5.1 Research questions**

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

1. What is the health status of university students in Nigeria?
2. What is the health behaviour of university students in Nigeria?
3. Are there differences in health status among university students in Nigeria by sex and by ethnicity?
4. Are there differences in health behaviours among university students in Nigeria by sex and by ethnicity?

### **5.2 Justification for adopting quantitative approach**

The current study is a cross sectional survey based on quantitative approach. A research approach comprises the whole research design, including the researchers' assumptions, the process of inquiry, the type of data collected and the meaning of the findings (Parahoo, 2006). Commonly, the research approach may fall between the quantitative and qualitative approaches (Parahoo, 2006; Polit & Hungler, 1995). However, the research approach adopted by a researcher depends on a number of factors including the nature of the phenomena to be investigated, the aim of the research, and the state of existing knowledge (Parahoo, 2006; Cormack, 2000).

Cormack (2000) argues that, some studies may be exclusively quantitative or qualitative, while others may effectively combine these approaches. Conversely, Patton (1990) argued that quantitative and qualitative methods constitute alternatives, but not mutually exclusive methods for research. Patton (1990) went further to argue that the selection of a particular approach should be based on the purpose of the study and the research questions and the

resources in hand, rather than believing that one must align oneself to a particular paradigm. However, Punch (1998, p. 242) outlined a sharp distinction between quantitative and qualitative research methods. According to Punch:

*“Qualitative approach conceptualizes reality in terms of variables, and relationships between them. It rests on measurement and therefore pre-structures data, and usually research questions, conceptual frameworks and design as well. Samples are typically larger than in qualitative studies, and generalization through sampling is usually important, by contrast, qualitative approach deals more with cases. It is sensitive to context and process, to lived experience and to local roundedness, and the researcher tries to get closer to what is being studied. It aims for in-depth and holistic understanding, in order to do justice to the complexity of social life. Samples are usually small, and its sampling is guided by theoretical rather than probabilistic considerations.”*

There is evidence quantitative and qualitative methodologies may be complementary, however, many research projects use only quantitative method (Strauss & Cobin, 1998; Punch, 1998; Cormack, 2000). Similarly, the current study is based on quantitative method alone. More so, this approach is common among researchers that study students health status and health behaviours (e.g. Edward *et al.*, 2001; Ebert *et al.*, 2002; Wardle *et al.*, 2004; Stock *et al.*, 2007; Mikolajczk *et al.*, 2008; Onyeizugbo, 2010; Salami, 2010; El Ansari *et al.*, 2011). Moreover, the study can be repeated by the same or other researchers and the results may still be similar, easily verifiable and replicable (Parahoo, 2006).

In addition, quantitative approach enables researchers to carry out appropriate statistical tests to establish the probability of certain phenomena occurring and to make some predictions and correlations, which are not possible under qualitative approach (Parahoo, 2006). Conversely, Bryman (2004, p.78) argued that:

*“Quantitative researchers fail to distinguish people and social institutions from the world of nature, that the measurement process in quantitative research possesses an artificial and spurious sense of precision and accuracy. In addition, that its reliance on instruments and procedures hinders the connection between research and everyday life and that analysis of relationships between variables creates a static view of social life that is independent of people’s lives.”*

Sarantakos (2005) suggested several reasons that need to be considered before adopting quantitative methods. For instance, he argued that a quantitative method enables researchers to test a theory with a large sample size, which can be obtained by the use of questionnaire. In addition, he postulated that the size of a sample in quantitative research needs to be large enough to reflect the attributes of the targeted population. Furthermore, that the aim of a quantitative method must be to conceptualise reality in terms of variables and the relationship between them and that studies which employ quantitative method must be those that involve measurements and quantifying of behaviours.

Similarly, the current study employed both objective measurements and subjective measurements with the use of a questionnaire. In addition, Sarantakos (2005) observed that, the strategy and procedure for the analysis of quantitative data are already well established, and can be coded, and without any interference of the researcher. Consequently, the outcome is therefore more objective and guaranteed, as data can be analysed with mathematical accuracy using SPSS (Statistical Package for the social sciences), such as descriptive statistics, chi-squared, or the analysis of variance (ANOVA).

The current study employed numerous statistical analyses such as descriptive, comparative and (Chapter 6) in providing answers to the research questions. More so, Sarantakos (2005) noted that another reason for choosing a quantitative survey method is when the survey is

designed to produce numerical data and proceeds by measuring variables, and is concerned for numerical outcomes such as percentage and prevalence. He argued further, that in order to find out how the problem of health are, and to assess the prevalence of both healthy and unhealthy lifestyle behaviours among the study population, that it is necessary to have statistical data. In addition, due to the wide range of the current study in terms of sample size and number of variables, there is a need to adopt a method that will incorporate the use of a questionnaire. More so, quantitative approach seems suitable for the conduct of the current study, as similar approach was employed by previous studies that investigated students health status and lifestyle behaviours (e.g. O' Dea, 1999; Erginoz *et al.*, 2004; Oghgbon *et al.*, 2009; El Ansari *et al.*, 2010; El Ansari *et al.*, 2012).

### **5.3 Justification for the use of questionnaire**

The questionnaire was chosen, due to the large quantities of information it can gather in an economic and effective manner. This method allowed for a comparison of findings, and is generally seen as authoritative and intriguing, and dependent upon wording that is easily understood (Saunders *et al.*, 2003; Bowling, 2004). The use of the questionnaire method was also encouraged partly, due to the high sensitive and confidential nature of some of the questions especially with regard to mental health issues, which is viewed in Nigeria as a stigma (Adewuya, 2005).

Confidentiality was also of particular concern in the present study because some of the lifestyle behaviours investigated (e.g. Cocaine, Marijuana, Heroin) are considered illegal by the Nigeria Drug and Law Enforcement Agency (NDLEA). Another major reason that was considered before adopting questionnaire method was on the religious culture of Islam. It would have been impossible for the researcher a non-Muslim male to be granted a private interview by a Muslim female student in Nigeria and be able to provide an honest answer to



certain personal problems, health status, and certain lifestyles. More so, the use of questionnaire was unavoidable due to large sample size ( $n = 1459$ ), in addition to the numerous variables investigated. Consequently, the time factor made it impossible for a face-to-face interview, since the study also involved quantitative measurements of height, weight and blood pressure with only 30 minutes allowed for data collection per session among students during a lecture session. Similarly, Bowling (2004) maintained that cost, anonymity and confidentiality, bias control and large sample size are one of the major advantages of questionnaire method over other research designs.

However, researchers have identified certain limitations in the use of the questionnaire such as partial responses, ability of the participants to read and understand complex questions and given answers that are considered socially acceptable (Bowman, 2004; Sarantakos, *et al.*, 2005; Parahoo, 2006). Sampling larger number of students curtailed these limitations, by explaining the questions to students and encouraging them to ask questions on issues that were not clear to them. In addition, information from the trial test and proof reading of the research instruments helped in making important changes in the questions for more clarity.

#### **5.4 Questionnaire design**

The current study is based on closed ended questionnaire. A questionnaire is a written investigation in which information is obtained by asking participants to respond personally to a series of predetermined questions (Bryman, 2001; Bowlin, 2002). On the other hand, Parahoo (2006) postulated that the choice of question format depends mainly on the type of data that the researcher want to collect. However, an earlier study by Hammastron and Janlert (1997) observed that, the commonest way to recognise health problems among young people is through self-reported symptoms, and the data collected can be reasonably used to compare students' health across countries. Consequently, most studies that investigated students health

and lifestyles were based on self-reported data (e.g. Doll *et al.*, 2005; Adewuya *et al.*, 2006; DeBate *et al.*, 2007; Onechi & Okolo., 2008; Mikolajczyk *et al.*, 2008; de Quadros *et al.*, 2009; El Ansari *et al.*, 2011; El Ansari *et al.*, 2012). The present study comprises both the subjective and the objective parts. The subjective part constitutes of the self-reported items of 56 questions, whereas the objective part involves objective measurements of hypertension, height, and weight, used in calculating the BMI. The items in the questionnaire were adopted from previous studies that examined the health and lifestyles of young adults especially university students (e.g. Mikolajczyk *et al.*, 2008; de Quadros *et al.*, 2009; El Ansari *et al.*, 2011; El Ansari *et al.*, 2012). The present study also used questions previously used by health ministries and organisations around the world in students health survey for example, the Global Students Health Survey, American College Health Association (2005); the General Health Questionnaire (Gao *et al.*, 2004).

There is evidence that most studies that investigated students' health usually do so with questionnaires (e.g. Steptoe *et al.*, 2002; Stock *et al.*, 2003; Vickers *et al.*, 2004; Bayram & Bilgel, 2008; Biro *et al.*, 2010). The current study by adapting validated and internationally used questions ensured that studies conducted in different parts of the world among students population on health status and lifestyle behaviours can be easily compared with each other (Doll *et al.*, 2005; Mikolajczyk *et al.*, 2008; El Ansari *et al.*, 2011; El Ansari *et al.*, 2012). The questionnaire comprised of 30 sections in 11 pages (Appendix 1). The questionnaire was designed in such a way that it can take a maximum time of 25 minutes to be completed, whereas objective measurements the (part B) of the data collection will take another 10 minutes. The questionnaire was designed to be easily readable, with guided lines separating one question from the other, and with boxes to enable eligible shading or ticking of responses by the respondents (Appendix, 1). The questionnaire contains items relating to: mental health,

general health, physical health, cognitive health, nutrition, physical activity, and drug use, smoking, and items relating to socio-demographic variables (Appendix, 1).

### **5.5 Form of questions for the study**

The format of the questionnaire was closed ended, which means that the respondents are provided options in all the questions. It also probes information through three forms: First, it ask about opinion, that is what they participants feel about something. Second, it ask about behaviour, that is what the respondents do or did with regard to lifestyles. Finally, it ask about attributes, which is about personal characteristics like age, gender (Saunders *et al.*, 2003). The reason for the use of only close-ended questions was that the format enables the comparison of the present study with other studies compared in other countries. However, for easy presentation, understanding and analysis, the questions were arranged in five different characteristics presented below:

**Two-way (dichotomous) question:** in this format, the respondent was allowed to make a choice among two response alternatives, such as yes and no; male and female. In the current study dichotomous questions were used in such questions as (have you seen a medical doctor in the past six months? Respondents were allowed only two options: yes and no (Appendix, 1). Similar questions such as ‘what is your gender’? Respondent’s options are female and male. Polit and Hungler (1995), argued that the use of two-way questions format is appropriate for gathering information,

**Multiple-choice questions:** In this format, there are more than two response alternatives or choices available to the respondents to select. It provides a wide range of alternatives for the respondents to choose and provides the researcher with more information on both the intensity and direction of respondents opinion. For example to the question ‘What is your

religion? Respondents were given 6 options: 1. Catholic; 2. Protestant; 3. Orthodox; 4. Islam; 5. Others; 6. None (Appendix 1). Ranking questions: These are questions or measurements that always go from 1 to N, where N represent the number of items being ranked. An example of a ranking question in the current study was with regard to smoking, the question was 'rank the importance of not smoking for health.' Ranking options 1 to 10 was provided in which 1 indicate higher important and 10 indicate less important. The ranking order questions therefore provide numerical options (e.g. 1, 2, 3) in contrast to rating questions above which are categories of ordinal scales (e.g. 1. good health; 2. better health; 3. best health).

Likert scale questions format: Most of the questions adopted for the current study were based on a Likert scale techniques. The scale contains a series of opinion statements about an issue to which the respondents are asked to indicate the degree to which they agree or disagree with the opinion expressed by the statement (Polit & Hungler, 1995; Bowlin, 2004). In other words the respondents attitude is the extent to which he or she agree or disagrees with each statement, usually on a (5-7) point scale ranging from (e.g. strongly agree; agree; 'neither agree; disagree and strongly disagree). According to Bowlin (2004), the Likert scale is the most popular scaling method employed in psychosocial and health care research.

Visual Analogue Scale (VAS): The VAS question format was included in the current study. The scale consists of a line and two anchors one at each end with verbal materials that mark opposite ends of a semantic dimension, it can also be in form of figures (Polit & Hungler, 1995; Saunders *et al.*, 2000) (Appendix 1). In the current study, the VAS scale questions format were used in the assessment of depression, stress, sense of coherence and body image.

## 5.6 Instruments and composition of the adopted research questionnaire

The variables adopted for the current study are those reported more frequently in literature with regard to students' health and lifestyles. All the variables and items that formed the self-reported questionnaire are as follows:

- **General health:** Students general health was examined through different variables, which included rating of health, health awareness, regular medication and frequent visit to a GP (Appendix 1). Students rated their general health by providing an answer to the question: "How would you describe your general health?" Five point response scales were provided, ranging from: 1. Excellent; 2. Very good; 3. Good; 4. Fair; 5. Poor. With regard to health awareness, students were asked: "To what extent do you keep an eye on your health?" With a four point response scale: 1. 'Not at all; 2. Not much; 3. To some extent; 4. 'Very much,' adopted from Stock *et al.*, (2003). El Ansari and stock (2010) used similar wordings. A higher score indicates greater health awareness.

In addition, each response score above was summed and analysed separately. In addition, with regard to seeing a GP and regular medication in the last six months, categorical options such as yes, no, seldom was provided. Similar items were used by the American College Health Association (2006); Mikolajczyk *et al.* (2008) and El Ansari & stock (2010) used similar wordings. Usually, a higher score are indicative of better-perceived health.

- **Attitudes towards a healthy campus environment:** The need to keep campus healthy was examined with three items: 1. There should be no smoking at the university; 2. Alcohol should not be sold at the university; 3. There is enough healthy food offered in the university. Each statement was rated on a 4- point scale: 1. strongly disagree, 2. Disagree, 3. Agree, 4.

Strongly agree. Each statement response score was summed separately and used for the analyses. The item wordings were adopted from (Stock *et al.*, 2001).

- **Perceived Stress:** Stress was examined with the (PSS- 10), adopted from Cohen *et al.*, (1983). It is one of the most widely used psychological instrument for measuring the perception of stress because of its established validity and reliability (Cohen *et al.*, 1983; Cohen *et al.*, 1993). The PSS- 10, contains 10 questions with answers ranked using a 5-Likert scale that assesses experiences and response to stress during the last month (e.g. “in the last month, how often have you been upset because of something that happened to you unexpectedly?” with response: 0 = Never; 1 = Almost never; 2 = Sometimes; 3 = Fairly often and 4 = Very often. The total score ranges from 0-40.

The following cut off scores, was recommended for PSS: 0-7 = very low, 8-11 = low, 9-15 = average, and 16- 20 = high. In the current study, 0 – 15 was rated low and 16 and above was rated high (Cohen *et al.*, 1983). In addition, O’ Connor and O’ Connor (2003) showed that the PSS yield good test-retest reliability of 0.70. Similarly, in a study among university students in different European countries, (Mikolajczyk *et al.*, 2009) reported that the Cronbach’s alpha of the PSS- 10 among university students in Germany = 0.85, in Bulgaria = 0.80 and in Poland = 0.81.

- **Depressive symptoms:** These items were adopted from Beck Depression Inventory (M – BDI – 20) items instead of the original (M – BDI – 21) items. According to Mikolajczyk *et al.* (2008), the modification of the original (BDI – 21) to (M – BDI – 20), included two approaches. First, the four items per symptom, which assessed the specific symptoms intensity in the original (BDI – 21) were replaced by a single statement per symptom. It contains a six-point Likert scale measuring its frequency in the last 4 weeks with the two extreme categories labelled as ( 0 = “Never”, to 5 = Almost always”). Second, one symptom,

which exhibited low specificity 'loss of weight' was excluded. Respondents were to rate each of the 20 -depressive symptoms according to their perception using a visual analogue scale (VAS) format. The respondents were asked to indicate how frequently they experienced each of the 20 symptoms (e.g. 'I feel sad') the options ranges from (0 = 'never' to 5 = 'almost always'). The M-BDI – 20 has been validated by (Mikolajczyk *et al.*, 2008). Similar items was also employed by Mikolajczyk *et al.*, (2007 & 2008) in studies of university students sampled from different European countries. It has high internal consistency reliability (Cronbach's alpha of 0.90, 0.92 & 0.87) in Germany, Poland and Bulgaria (Mikolajczyk *et al.*, 2008; Stock *et al.*, 2007). The cut of score M-BDI 35 is considered depression (Schmitt *et al.*, 2006, Mikolajczyk *et al.*, 2008). Similar cut off was used in the current study.

•**Psychosomatic health complaints:** These symptoms were assessed by 9-item instrument that measure the frequency of occurrence of a range of complaints in the last 12 months. Respondents were asked how often they experienced the specified complaints during the last 12 months based on a 4-point scale (from 1 = never to 4 = very often). The examples of the items included in this scale are stomach trouble/ heartburn, back pain (Appendix, 1). These items were adopted from (Hurrelmann, & Kolip, 1994). Stock *et al.* (2007) and Mikolajczyk *et al.*, (2008) have used similar items in their study among university students.

The internal reliability of this scale was reported to be high (Cronbach's alpha = 0.88) according to (von Bothmer and Fridlund , 2003; Mikolajczyk *et al.*, 2008). In other words, the total score was computed and summed for 'never (low) and very often (high)' and in a similar way for each of the 9-items that constitute the psychosomatic symptoms in the scale. von Bothmer and Fridlund (2003) used similar computation in their study of students in a university in Sweden.

General Self-Efficacy Scale: The GSES-10 item psychometric scale used in the current study was designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. The scale was adopted from Schwarzer and Jerusalem (1992). It is a 10-item scale which participants responded by indicating their extent of agreement with each of the 10- statements based on a four-point Likert scale of: 1 'not at all true' to 4 'exactly true.' Examples of items in the scale include "It is easy for me to stick to my aims and accomplish my goals." According to Schwarzer and Jerusalem (1992) higher score indicates high self – efficacy. The scale indicated a high internal consistency with cronbachs alpha (a) ranging from .75- .90 (Schwarzer & Jerusalem, 1992). GSEs- 10 was also used in the students population studies (e.g. Ogunyemi & Mabekoje, 2007; Mikolajczyk, 2008).

•**Religious affiliation:** This was gauged with a single question: What is your religion? The options includes: 1.Catholic; 2. Protestant; 3. Orthodox; 4. Islam; 5. Others; 6. None. This item was adopted from (Dulin *et al.*, 2006; Ying, 2009) used in their study among university students.

•**Satisfaction with life:** Life satisfaction was measured with the (SWLS) adopted from (Diener *et al.*, 1985). This is a five item scale assessing positive cognitive appraisals of life in general, with items (e.g. "In most ways my life is close to the ideal") rated from 1 (strongly disagree) to 7 (strongly agree). Similar studies (e.g. Diener *et al.*, 1985, Pavot & Diener, 1993) reported a positive reliability and validity of the SWLS. In addition, the SWLS test – retest reliability of 0.82 and internal consistency of 0.87 was reported by (Dorahy *et al.*, 1998) in their study. The cut -off point recommended by the authors'empolyed for the current study ars: 1. Satisfied with life > 21: Dissatisfied with life < 21.

•**Fruits and vegetable frequency:** The recommended servings of fruits and vegetables were adopted from the Food Guide Pyramid (FGP) identified by the US Department of Agriculture



(USDA, 1992). The food guide system was designed to provide the recommended amounts of essential nutrients without depending on the use of supplements or highly fortified foods (Dixon *et al.*, 2001). The FGP has a reputation as a good indicator of dietary practices, and has been used in many studies among students (e.g. Dixon *et al.*, 2001; von Bothmer & Fridlun, 2003; Mikolajczyk *et al.*, 2009; EI- Ansari *et al.*, 2011). ). The FGP is used in the current study because unlike most other dietary guideline, it considers multiple aspects of the diet simultaneously and easy to analyse. Respondents were asked to report the frequency of consumption of fruits and vegetables within the last 24 hours. Scoring: Fruit, met > 3 servings and vegetable, met > 4 servings.

•**Physical activity:** students physical activity levels was measured with the IPAQ, a set of 3 questions plus 1- single item used to measure 4 levels of physical activity among students. The 3 – sets of questions are used to measure (vigorous, moderate, or mild) physical activity and a single item that asked about physical inactivity (e.g. sitting to watch television). A typical question was: During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics or fast bicycling? However, different cut off-point was established for each level of physical activities, as follows: Vigorous Pa (20 mins × 3 days/wk.); moderate Pa. (30 mins × 5 days/wk.); mild Pa. (30 mins × 4 days/wk.). The IPAQ items and the recommended cut off-points were adopted from (Haskell *et al.*, 2007). In their study, the Cronbach's alpha of the scale was 0.877.

•**Smoking habit:** This was measured using 8-items adopted from (Wardle & Steptoe 1991). (Steptoe *et al.*, 2002) used similar wordings in their study of university students in 23 countries. Smoking was examined by asking participants to endorse one of eight response options:

1. I have never smoked a cigarette, not even a puff

2. I have only even tried one or two cigarettes
3. I used to smoke sometimes, but I don't now
4. I don't smoke cigarette, but smoke a pipe or cigars
5. I smoke cigarettes but not as many as one per day
6. I usually smoke between 1 and 10 cigarettes per day
7. I usually smoke between 10 and 20 cigarettes per day and
8. I usually smoke more than 20 cigarettes per day.

For the analysis, of smoking prevalence, the responses were dichotomized into:

1. Current smoker (computed by calculating the mean response of the five smoking categories represented in question 4,5,6,7 and 8.

2. Non-smoker (computed by calculating the mean response of the three non-smoking categories represented in questions 1, 2 and 3.

•Reducing the amount of cigarettes smoked: Respondents were asked if they would like to reduce the number of cigarettes smoked: the options were categorical 1 = yes and 2 = no. For the analysis the mean score for each response was computed and used. This item was Adapted from (Wardle & Steptoe 1991). Hashim (2000) used similar wordings.

•Risk awareness of smoking: This was gauged by asking respondents if they are aware of the health risks associated with smoking (e.g. Lung cancer) that has been linked to cigarette smoking. The response options were categorized: 1 = yes and 2 = no. The mean score for each response was computed for analysis. The item was adopted from Wardle and Steptoe, (1991). Steptoe *et al.* (2002) used similar wordings in a study among university students.

•Drug habits: frequency/ drug type was adapted from Hurrelmann & Kolip (1994). The items assesses students use of certain drugs and its frequency (e.g. Marijuana, Cocaine, Opiate,

Amphetamine, Pain killers, Steroids, Sedative, Tranquilizer, Stimulants and others). Similar items was adopted from (e.g. Pillon *et al.*, 2005; EL- Ansari *et al.*, 2011).

**Income status:** Students income status was gauged as a reflection of monthly income. Based on a previous study by (Adewuya, 2006) in Nigeria, three income groups were created namely:

1. High income > ₦10,000 or £60 and above
2. Medium income, from ₦ 5000-10,000, about £10-£25
3. Low income < ₦5000 below £10

•**Gender, ethnicity, region of origin and nationality:** Participants were also asked to identify their gender and region with options provided (e.g. male or female, and for ethnic origin , options were given from the three main ethnic groups in Nigeria namely: 1. Hausa/Fulani; 2. Yoruba; 3. Igbo; 4. Others. The main options for the region of origin are: 1. Northern Nigeria; 2. Western Nigeria; 3. Eastern Nigeria; and 4. On the other hand the reponse for nationality was: 1. Nigeria, and 2. Others ( Appendix 1)

### **5.7 Objective data collection**

Objective information was obtained from height, weight and blood pressure. Participants body weight and height was measured in the calculation of BMI. In addition participants' systolic and diastolic blood pressure, were also measured for possible hypertension. The details of this measurements have already being discussed. Body mass index BMI in  $\text{kg/m}^2$  was calculated as weight in kilograms divided by the square of height in meters (National Heart, Lung and Blood Institute NHLBI, 2000; World Health Organization, 2000).

Participants BMI was grouped into four categories based on the internationally recommended BMI cut off-points:

1. Underweight < 18.5 kg/m<sup>2</sup>,
2. Normal weight, 18.5 – 24.9 kg/m<sup>2</sup>,
3. Overweight, 25.0 – 29.9 kg/m<sup>2</sup>,
4. Obesity ≥ 30.0 kg/m<sup>2</sup>.

Similar cut off- points were employed in the study of university students by (Mikolajczyk *et al.*, 2010; von Bothmer & Fridlund, 2005, Al-Kandari *et al.*, 2008). On the other hand, Participants' blood pressure was measured from the readings of systolic and diastolic blood pressure in mmHg. These measurements have been described in detail above. Based on international recommended cut-off points, four categories of systolic and diastolic BP were created:

Systolic blood pressure recommended cut off-points:

1. Normal hypertension, SBP of 120mmHg-139mmHg,
2. Mild hypertension, SBP of 140 mmHg- 159mmHg,
3. Moderate hypertension, SBP of 160mmHg- 179 mmHg,
4. Severe hypertension, SBP > 180mmHg (Abolfotouh, 2007).

Diastolic blood pressure recommended cut off-points:

1. Normal, DBP of 85mmHg- 89mmHg,
2. Mild, DBP of 90mmHg-99mmHg

3. Moderate, DBP of 100mmHg-109mmHg,

4. Severe, DBP 110mmHg (Abolfotouch, 2007).

However, for the analysis, students were graded as not hypertensive if the blood pressure group was between 120- 139mmHg/85-89mmHg, or hypotensive if the BP was between 140-159mmHg/90-99mmHg.

## **5.8 Participants**

The sample for the current study were university students, drawn from universities across Federal Republic of Nigeria. The health survey was administered to 2500 students of which 2112 were returned. From the 2112 questionnaires returned, careful scrutiny showed that 563 was uncompleted due to some respondents did not put their gender, or region making it invalid to be entered for analysis. Finally, 1549 respondents completed their questionnaire with the required data and were consequently entered for the analysis.

## **5.9 Ethical considerations, consent and confidentiality**

According to the university regulation, this study was first approved by the University of Gloucestershire Research Degrees Committee (URDC). Based on historical antecedents, ethical issues more recently has become the most important part of any research (Dempsey, 2000; Bryman, 2008). Consequently, there is a need for the researcher to inform participants of the aims, objectives and the nature of the intended research (Punch, 2003). Although, Robson (1995, P. 471) argued, that:

*“Whenever possible, the investigator should inform all participants of the objectives of the investigation. The investigator should inform the participants of all aspects of the research or intervention that might reasonably be expected to influence willingness to participate. The*

*investigator should, normally, explain all other aspects of the research or intervention about which the participants enquire. Failure to make full disclosure prior to obtaining informed consent requires additional safeguards to protect the welfare and dignity of the participants.”*

However, Punch (2003) argued that participants have the right to know what will be done with the data and who will have access to their personal information. It is the obligation of the researcher, to ensure that the research questions are free from any embarrassing words, that may have psychological impact to the participant (Saratakos, 2005). Consequently, Thomas and Nelson (1996) outlined certain guidelines for the conduct of a social research as follows: First, the right to privacy or non-participation; second, the right to remain anonymous; third, the right to confidentiality; fourth, the right to withdraw from participation at any time, or to leave any question, which they feel that they do not wish to answer.

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, consequently clearance from the University Ethics Committee in Nigeria was not required. However, the researcher sought permission to conduct the research from all the participating universities in Nigeria. The steps taken to ensure transparency data collection, consent and confidentiality are described below.

A letter for approval was presented by hand directly to each Vice Chancellor (VC) of the participating university (Appendix, 2). The letter contained the required information concerning the research: title, objectives and the data collection techniques. In addition, the researcher made it known in the letter that while there is no harm anticipated in participating in the study, there is equally no benefit that the participants are entitled to either. It was explained in the letter, that the research was purely for a partial fulfilment for the award of (Ph. D).

The letter also explained that the participants consent would be sought before administering the questionnaire, and that their confidentiality will be assured by employing a self-anonymous questionnaire, which does not ask participants name, address or any other form of identification. The letter also explained that the participants have a right to withdraw from the study at any time without any legal implication. All the universities sampled for the study agreed and supported the researcher extensively (Appendix 3- 8). Prior to data collection, the researcher explained the content of the research and what it takes to participate to the participants in each classroom and lecture venues before distributing the questionnaire to the students. Each questionnaire was attached with a consent form (Appendix, 9) for each participant to fill 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.

In addition, while filling the questionnaire students were seated distant apart from each other and no communication was allowed to enhance confidentiality. Confidentiality was believed to be achieved in the present study because only the researcher saw and record the questionnaire, and the responses were locked out in a box accessible to the researcher alone. Furthermore, due to religious and cultural differences among the participants, the researcher allowed students to take the objective measurements, such as height, weight and blood pressure by themselves while the researcher provided supervision. This technique was well appreciated especially by female Muslims, to avoid being touched by a male, considered unholy in Islam, and this strategy enabled higher percentage of students that participated in the objective data collection for the study. However, this strategy prolonged the time allotted

to data collection, because some students need to repeat the measurements many times before getting it right. In addition, after both the subjective and objective measurements, all the data collected was packed in a strong iron box locked and wheeled away for safe storage, accessible only to the researcher to ensure confidentiality and adequate data protection.

### **5.10 Sample size**

A potential sample of 2500 male and female university students in Nigeria were recruited for this study, and from this figure, 2112 participants completed and returned their questionnaire correctly, while 563 were invalid. However, 1549 respondents provided all the required data that was entered into the SPSS for analysis. With regard to sample size, Bryman (2008, p.179) argued that *“The decision about sample size is not a straightforward one: it depends on a number of considerations and there is no one definitive answer.”* Conversely, Robson (1995) provided the guideline with regard to sample size.

According to Robson, the larger the sample size, the lower the likely error in generalizing; the more variability there is in the population, the larger the sample size needed. He argued further, that the type of analysis you are going to do have repercussions on sample size, as does the number of categories into which you will be subdividing the data. More so, He argued that common techniques and analysis such as chi-square require certain minimum cell frequencies and therefore, this reinforces the need to consider what one is going to do with the data in terms of analysis (Robson, 1995). On the other hand, Field (2009) observed that the reliability of factor analysis is dependent on sample size, and that the rule is to suggest that a researcher has at least 10-15 participants per variable. However, Field (2009), noted that the use of up to 300 participants is a good sample size, 100 is poor sample size whereas the use of up to 1000 participants is excellent. It is therefore considered that the use of 1549 participants in the current study was adequate for all the analysis conducted.



### **5.11 Procedure for data collection**

There are three categories of universities in Nigeria namely: 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 ( $n = 2500 \pm 300$ ) 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. 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).

However, since students were recruited from lecture rooms, the recruitment exercise for each year goes on, until the estimated number of participants was met. However, the researcher had an advantage that helped in sampling students this way, through the cooperation of university dean of studies that gave a list of the number of students anticipated for each lecture, which enabled the researcher to plan the anticipated number of potential participants needed in advance, in a plus or minus probability. These rigorous procedures were to enhance

a general representative sample. The following section provides a detailed account on how the multi-stage sampling of the present study was achieved:

Stage 1 sampling of universities by categories: The researcher approached the office of the Federal Ministry of Education in Nigeria and obtained a comprehensive list of all the registered higher education institutions in Nigeria. There are 102 registered universities in Nigeria according to the National University Commission (NUC, 2010), comprising three different categories (Federal, State and Private) Universities, within the three main geopolitical zones in Nigeria (Northern, Southern and Eastern) regions that constitute the Federal Republic of Nigeria (Bangdiwala *et al.*, 2010)

The universities in Nigeria were then stratified into three categories, and all the universities in each category were named, numbered, and put in a different bag. Then the researcher randomly selected two universities each from each of the three university categories. The overall result yielded six universities as follows: two Federal Universities; University of Uyo and Obafemi Awolowo University Ile Ife; two State Universities Akwa Ibom State University and Osun State University; two Private Universities Obong University Uyo and Oduduwa University Ikpetumodu (Table 5.1; Appendices 3- 8).

**Table 5.1: Sampled universities and courses of study**

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

Stage 2 Sampling of students disciplines: The Dean of Students Office (DSO) in participating universities provided the researcher with a list of all courses offered to undergraduate students in each academic semester according to the course level. These courses were stratified according to categories (Federal, State and Private) universities respectively. Then in each university category, the students courses were adjusted for similarities, by merging different but similar departments together (e.g. microbiology, agricultural sciences, chemistry botany, zoology, physics) were all merged into the department of science so that similarities will be achieved in all university categories.

The researcher then provided three baskets with each basket standing for each university category, named and numbered. The first action taken by the researcher was to adjust all the courses done in each university category to be similar. This was done by merging some courses, departments or even faculties so that similar courses of study will be available in each university faculty to avoid sampling error, and to enable students to be sampled from the same course of study to enhance uniformity of the sample. Next, student's disciplines with regard to their respective universities was selected by random sampling. A box each was put for each university category, with all the respective courses, and two disciplines were taken at random. The outcome of these random sampling is shown in (Table 5.1).

Stage 3 Sampling of students' year of study: As described above, students year of study was 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 programme.

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.

### **5.12 Inclusion and exclusion criteria**

To achieve a similar sample, the inclusion and exclusion criteria of potential participants were defined in advance. For example, only full time students are allowed to participate in the study. Part time students, students in adult education programme, and students in distance learning and/or electronic learning programmes and short course programmes were excluded from the sample, in order to recruit students with similar experiences. Secondly, only Nigerian nationals (citizens) were included. That is those who are Nigerians by birth, by naturalisation, by nationalisation, and those who hold the Nigeria passport. Foreign students on exchange programmes were also excluded because the study was analysed by region/ethnicity.

### **5.13 Testing of the research instruments**

The entire component of the current study was tested, before beginning the main study. According to Polit & Hungler (1995, p. 38) "*It is necessary to assess the adequacy or the inadequacy of the data collection plan, to test the technical equipment intended for use in the study and to establish the understanding and acceptability of questions by respondents.*" Consequently, prior to the commencement of data collection for the current study, a convenience sample of (n = 10), Nigerian students at the University of Gloucestershire, 5 males and 5 females were selected to proof read the questionnaire and test the measurement scales for suitability. As recommended by Bryman, (2001, p. 155) that it is best, "*if the researcher can select a small set of respondents, who are comparable to members of the population from which the sample for the main study will be drawn.*" However, the

researcher explained to each participant the aim and objective of the main study and the reasons for testing the research instruments. However, Bryman (2001) maintained that the desirability of testing the research questionnaire is not solely to do with trying to ensure that survey questions operate well; that it has a role in ensuring that the research instruments as a whole function well. Similarly, the main aim of proof reading the research questionnaire and testing the research instruments before beginning the main study are as follows:

- On the issue of clarity of the questionnaire: were it readable, clear, well numbered, and each item distinct from each other to attract the interest of respondents and yield high response rates.
- On the issue of respondent's answers (ticking or circling) the right choice(s): how do they understand the scales and the ratings? Are people answering the questions the same way so that the resulting data is not reliable and valid because no variability to analyse.
- Combination of open and close-ended questionnaire format was also tested on how respondents feel to express their responses and actions in their own words especially on medication and GP diagnosis.
- The wordings used for each question was investigated in the proof reading exercise to gauge if any, was found offensive, provocative, derogatory, abusive, insulting or stigmatizing, that may affect respondents responses to such questions.
- In addition, units of measurements (e.g., a unit of alcohol) were tested due to cultural differences based on the country where the questionnaire were first validated and Nigeria where the current study is taking place.

- Time estimated for completing the study and respondents comments was also investigated during the proof reading exercise to gauge whether the length of time may actually affect respondents completing the study.
- Objective instruments functional capacity and reliability was also gauged during the proof reading exercise. Measures for (weight, height, and blood pressure) were re-tested for consistency and sensitivity.

Consequently, statistical analysis was not the purpose, it was only a suitable exercise to proof read the questionnaire if it is articulate enough for Nigerian culture.

#### **5.14 Modification of the research instruments based on the outcome of the trial test**

Although there was, no statistical analysis for the data collected; however, the responses were very useful and instructive and were of immense contribution in the modification and refining of the entire research process before beginning of the main study. For instance, in the trial test and proof reading, the respondents reported that open-ended questions presented some difficulty to respondents. One item that examined students' general health included few open-ended questions: such as (what were the reasons for seeing your GP in the last 6 months? What was the illness that kept you in bed in the last 12 months? In addition, what kind of medication do you take regularly? However, the responses to those questions showed that most did not give any response to those questions. Interestingly when the researcher raised the issue during the group discussion, most of the students reported that they had forgotten the name (s) of drug(s) prescribed to them by their GP although they all agreed that if the see options it would help them to remember it. The same reason was advanced to other open-ended questions.

Consequently, based on the outcome of the trial test, the following actions were taken:

- The researcher changed all open-ended questions to close ended questions by given students many options (Appendix 1).
- A previous item that was used to measure body image was recommended to be removed on the ground that some of its wordings was offensive or provocative. For example (have you ever removed your clothes and look at yourself in a mirror and felt that you are fat? However, these particular items were removed when respondents showed it to be provocative. It was replaced with a more acceptable item based on visual analog scale of nine female and nine male figures of different body weights and sizes (appendix 1, section 33). In accordance with the demands of Bryman (2008) that researchers must found ways of asking questions, which would not embarrass informants by asking them to discuss intimate details of their personal lives with strangers.
- The researcher also noted that after each weighing, the scale arrow does not return back to zero(0) and this was giving false reading of about ( $\pm 0.1 - 0.4$ ). When this was identified the researcher have to re-weigh each participant, and after each weighing, the scale arrow is set back to zero (0) before another measure was taking. In addition, the time duration for data collection was reported to be within 20-25 minutes, which the respondents in the proof reading exercise found to be appropriate.

### **5.15 Data collection procedures for the present study**

The data collection for the current study was conducted in two parts: the first part was subjective; which involves the use of self-reported questionnaire. The second part was objective: this involves direct measurements of weight, height and blood pressure.

### **5.15.1 Subjective data collection with self-reported questionnaire**

Data were collected from six universities across different cities in Nigeria. These universities include University of Uyo, Obafemi Awolowo University Ile Ife, Akwa Ibom State University, Osun State University Osogbo, Oduduwa University Iketumodu, and Obong University Abak. The data collection took place between April and June 2013. Respondents are from different disciplines: Medicine, Microbiology, Agriculture, Economics, History and Accounting. Respondents were encouraged to complete the questionnaire independently, and to be as honest as possible. They were encouraged to ask questions about any aspect they did not understand, with a right to withdraw from the study at any time if they wish without any problem.

The questionnaire was given to the participants during lecture with all the students on-site. 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 this strategy protected students who did not wish to participate from being embarrassed, as they gently returned the questionnaire when everybody was busy without anybody 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 (Appendix, 9).

Experienced university workers helped in the distribution of the questionnaire, which took about 20-25 minutes to complete. However, after completing the subjective phase, the researcher asked all participants to keep their questionnaire secret and complete the objective measurements, record them in the space provided in the questionnaire before submitting it into the iron box provided. The researcher provided tapes elastically calibrated in metre and centimetre for height measurements, and 10-bathroom weight measurement device calibrated



in kilogrammes, and then 14 pieces of Omron for measuring blood pressure. Enough equipment was provided to aid time and to ensure confidentiality, as it can allow for few students at a time waiting for one particular equipment.

### **5.15.2 Objective measurement:**

In the present study, objective data was collected for body mass index, by measuring directly from the 1549 participants, their body weight and height. Similarly, to gauge participants blood pressure, both systolic and diastolic blood pressure was measured directly from the participants. The techniques and procedures employed are described below. Blood pressure measurement: To measure participants blood pressure (BP), the researcher provided an automated digital monitor (Omron HEM -7116 – EB (V), Tokyo), with appropriate cuff sizes. The researcher provided a comfortable seat for the participants where they are allowed to seat and relax for 5 minutes before 3 separate blood pressure (BP) readings were taken (per-participant).

Students are allowed to check their own blood pressure by themselves after teaching them how to do it to ensure confidentiality and to avoid any form of contact between female Muslim students with the researcher who is a male. However, some female research assistants were very helpful. To check the blood pressure was easy because the device provided was digital. Omron Hem- 7116 – EB (V), Tokyo has an error of measurement of  $\pm 3\text{mmHg}$ . Weight measurements: For body weight measurement, the researcher employed the mechanical Bathroom Scale (WK/HUAB 12488 Belgium). Each student invited for body weight measure was told to remove shoes, handbags and to empty their trouser and shirt pockets. Body weight was measured (to the nearest 0.5kg) with the subject standing motionless on the bathroom weighing scale. Each weighing scale was returned to zero (0) after each use, and each day the scale was standardized with a weight of 50kg as

recommended by the authors. Height measurements: Height was measured (to the nearest 0.5m) with the participant standing in an erect position against a vertical Tape measure (Wilkinson 580 3yy London) with the hand positioned so that the top external auditory meatus was in level with the interior margin of the bony orbit. Shoes, caps and hair ties were removed before measurement. The final measurements were recorded in meters. The measurements of height and weight were used in calculating body mass index (BMI) defined as weight in Kilogrammes divided by the square of height in meter. WHO (2006), AL-Kandari *et al.*, (2008) employed similar calculations for BMI in the study of student's population.

### **5.16 Statistical data analysis for the present study**

Data analysis provides the only legitimate means by which information collected during a research process can be used to make significant statements about the study and the significant of the findings (Sarantakos, 2005, Bryman, 2008). Certainly social scientists depends on the analysis of data in drawing conclusion about the phenomenon that is being studied (Parahoo, 2006; Field, 2009). Consequently, students responses to the questions in the present study was transferred to the SPSS statistical package, 20.0 version, which enabled both frequencies and percentages to be computed, which was later presented in a tabular form for easy understanding.

However, before the SPSS analysis of the present study, all the returned student's questionnaire booklets were checked for incomplete responses by the researcher alone and those that did not qualify to be included for the analysis were removed. All responses where sex and ethnicity were not indicated were automatically excluded from the data analysis. Also those responses where the respondent ticked more than one alternative was also removed. All together 563 candidates were excluded from the analysis due to incomplete responses and

missing data. Finally 1549 candidates provided complete responses and was then entered into the SPSS for the analyses. To answer the research questions and achieve the research objectives, three separate tests were conducted: Descriptive statistics, non-parametric tests and parametric tests.

- **Descriptive statistics:** preliminary data analysis of this study was conducted with descriptive tests. There are various advantages why descriptive data analysis was conducted first in this study before the main tests. These advantages included screening and cleaning the data. By conducting the descriptive tests, it was possible to check the entire data set entered into the SPSS for errors. However, it was found that in some cases gender have three categories instead of two, similar things happened to ethnic and in some cases, variables scores were found to be out of range (e.g. not within the range of possible scores). Such cases were found in some categorical questions, where the responses were: 1. Yes, 2. No. It was found that a third unknown option was also included.

Descriptive tests enabled these errors to be identified and corrected in the data set. In addition, 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 and 2. However, because of the nature of the data set for the current study, two forms of descriptive statistics were employed. With regard to categorical variables, codebook was used to obtain the count/frequency, which is an indication or identification of how many people that gave each response. It also presented the percentage of the people that gave each response. With regard to continuous variables, what was employed was ‘descriptive statistics’. This test provided summary statistics on mean and standard deviation needed for the interpretation of the results. Consequently, descriptive statistics was valuable in providing the analysis in answer to questions 1 and 2.

- **Non-parametric test:** The non-parametric test employed in this study was the chi-square test for independence. The chi square test was employed to explore the relationship between categorical variables in answering the research questions 3 and 4. More so, chi square test, have been found to be better suited for data that are measured on categorical scales (Field, 2009; Pallant, 2010). It was possible to examine the relationship between sex or ethnic as an independent categorical variables with other categorical dependent variables in this study (e.g. depression, general health).

Moreover, the data set for the current study also fulfils the major recommended assumptions required for the use of non-parametric test. Non- parametric tests are assumed suitable for studies where the samples are recruited at random and are capable of independent observations, so that each person or case can be counted only once and hence cannot appear in more than one category or group, and where the data from one subject cannot influence the data from another (Pallant, 2010). Chi square result provide information on the simple ‘main effect’ for the current study on sex and ethnic, which enables the level of associations to be determined.

Chi square test has an advantage for being easy to conduct and interpret based on a P- value of either higher (significant) or lower (not significant) than 0.05, and for being suitable in studying the relationship between categorical variables, which are the major components of the current study. Chi square tests have been employed in studies that examined the relationships between variables among university students (e.g. Dahlin *et al.*, 2005; Onyechi & Okolo, 2008; Gan *et al.*, 2011 Mikolajczyk *et al.*, 2012).

- **Parametric tests:** The data analysis for the present study also employed analysis of variance (ANOVA) tests. The nature of the investigation involved the use of a two-way ANOVA first, and then a One-way ANOVA, in addition to post hoc test. It is important to

state that the normality for scale data were first checked using the Kolmogorov-Smirnov test to ensure that they were acceptably normal before parametric statistics were used. Similarly, Levene's test was used to ensure homogeneity of variance before ANOVAs test were performed. The justification for the use of ANOVA tests are as follows:

**Two- way ANOVA test:** The two-way ANOVA test was used to analyse the differences in any of the continuous measured variables in the current study (e.g. body image perception), across ethnic group and sex. The analysis is based in comparing the means of the outcome variables in all the groups. Another great advantage for the use of a two-way ANOVA in the current study, is that, it was also used to test for an interaction effect between sex and ethnic group, that is, whether being a female and Igbo is related to a different body image perception, compared to other ethnic and sex groups.

Consequently, the primary purpose of a two-way ANOVA in the present study is to understand if there is an interaction between the two independent variables (sex and ethnic group) on the dependent variables (e.g. self-efficacy, SOC, LOC). The two-way ANOVA was considered suitable for this study, because it tests simultaneously, the 'main effect' for each of the two independent variables (sex and ethnic group) and explored the possibility of an 'interaction effect.' On the other hand, the two-way test generates three p- values, one for sex and ethnic each, and one measuring the interaction between sex and ethnic. The use of two-way test in the present study was also justified, in that the data set and study design fulfils the basic assumptions for the use of a two way ANOVA. As noted by Pallant, 2010, p. 205) some of these assumptions included:

1. That the dependent variables to be examined must be measured at the interval or ratio level (i.e. they are continuous). However, the data set for the present study achieved this

assumption. For example, all the variables analysed with ANOVA test were all measured as a continuous score (see Table 6.5; 6.6, and Appendix 10).

2. That the two independent variables to be examined should each consist of two or more categorical, independent groups. However, the above criteria was met in the present study by the use of gender (2 groups: male or female) and ethnicity (3 groups: Hausa, Igbo and Yoruba).

3. That the variables being examined should be independent of observations. In the present study, there is no relationship between the observations in each group or between the groups themselves. The current study fulfils this assumption based on a robust study design with students recruited from different universities in Nigeria, and then split into three ethnic groups namely, Hausa, Igbo and Yoruba, with absolute no possibility for any person belonging to more than one ethnic group.

**One-way ANOVA test:** One-way ANOVA was used in the current study to further the analysis conducted with the two-way ANOVA. Where a two-way analysis gave indication of an interaction effect, this means that the effect of sex was different for the different ethnic groups (equivalently: the effect of sex – i.e. the difference between males and females – is different for different ethnic groups). However, a significant F for the interaction reported this way does not answer the research question. It does not tell the direction of the effect, if any, for example that self-efficacy, has for the different sexes and ethnic groups. The uniqueness of the present study is the interaction effect, for example, whether there is no effect of self-efficacy for the females, but there is for the males. Maybe there is an effect of self-efficacy for both males and females, but a different pattern for each. Maybe being an Igbo female differ in the perception of self-efficacy, compared to other groups, maybe Igbo females and Hausa males may differ from their perception of self-efficacy, compared to other

groups. To answer those questions posed by having a significant interaction effect above, a simple main effect for sex and ethnic was conducted with a one-way ANOVA (see Appendix 10). More so, one-way ANOVA was used in the present study, to further the outcome of an interaction significant effect of a two-way ANOVA, because, one-way ANOVA, involves one independent variable, which has a number of different levels (sex: male and female; ethnic: Hausa, Igbo and Yoruba), with one continuous variable (e.g. self-efficacy).

However, one-way ANOVA test in the current study was used to show whether there are significant differences in the mean scores on the dependent variable (sex and ethnic groups) across the continuous variables (e.g. self-efficacy). Where there are significant mean differences within sex, no further test was conducted, since sex is only male and female, so the interpretation was based on the mean differences. However, where there was a significant mean differences within the ethnic groups, further tests was conducted with post- hoc tests to find out where this differences lie, since there are three different ethnic groups (Hausa, Igbo and Yoruba).

**Post-hoc tests:** This test was used where one-way ANOVA indicated a significant main effect for ethnic. Because in the current study there are three ethnic groups (Hausa, Igbo and Yoruba), consequently, it was difficult to know exactly, which ethnic groups are significantly different from which others: that is exactly what the post –hoc test revealed. Therefore in the present study, where the one-way ANOVA showed significance main effect for ethnic, this was followed with a post-hoc tests that compared two ethnic groups at the same time to identify the specific significant differences between each pair (see Appendix,10).

Therefore, to answer objective 1 and 2 of the present study, descriptive statistics was used, where as to answer objective 3 and 4, chi square tests was conducted on categorical variables, whereas continuous variables was investigated by combinations of two-way ANOVA and

one-way ANOVA, which was followed where necessary with a post-hoc tests (Tukey's honestly significant difference test). In addition, with regard to students reported health complaints, the 9 self-reported symptoms were also categorized into four components based on an established factor analysis (using principal component analysis, PCA) of similar symptoms conducted by El Ansari *et al*, (2014). The four groups of symptoms are Gastrointestinal (GIT) factors (2 items: stomach trouble and diarrhoea), psychological factors (2 items: sleep disorder and difficulties to concentrate), circulatory and breathing factors (2 items: rapid heartbeat and fatigue) and pain and aches (3 items: headaches, back pain and neck and shoulder pain). More so El Ansari *et al* (2014) showed that for internal consistency, reliability analyses using Cronbach's Alpha undertaken on the items that comprised each of the four components (group of symptoms) that emerged from the factor analysis, was strong (gastrointestinal factors, 0.67, psychological factors, 0.82, circulatory/breathing factors, 0.69, and pain/aches, 0.63).



## **CHAPTER 6: RESULTS**

### **6.1 Introduction**

In this chapter, the findings from the students' self-reported questionnaire and the objective measurements are presented. The health indicators examined are interpreted specifically with regard to gender and ethnicity (region). In addition, due to the large volumes of health indicators and lifestyle variables examined, special attention is paid to those variables that indicated interaction effects or main effects or both. The results are presented in three sections namely: Socio-demographic factors, health status indicators and lifestyle variables. In the present study with regard to the Nigerian context, both ethnicity and region are interchangeably used as the same.

### **6.2 Socio-demographic characteristics of the sample**

Table 6.1 Shows variables used to gauge socio-demographic factors that can influence students' health and well-being. The analysis are presented by sex and by ethnicity and in frequencies and in percentages, with significant effects indicated.

**Table 6.1: Frequency (%) of socio-demographic factors by sex and ethnicity**

Variables	Sample N= 1549	Female N= 848	Male N= 701	P/ PHI	Hausa N= 530	Igbo N= 542	Yoruba N= 477	P/PHI
<b>Age</b>								
<20 years	630 (41)	373 (44)	257 (37)	<b>0.003*/.086</b>	215 (41)	205 (38)	207 (43)	<b>0.170/.064</b>
20- 23 years	667 (43)	356 (42)	311 (44)		216 (24)	254 (46)	198 (42)	
>23 years	252 (16)	119 (14)	133 (19)		96 (15)	84 (16)	72 (15)	
<b>Monthly income</b>								
High => £50	578 (37)	333 (39)	245 (35)	<b>0.001*/.048</b>	277 (50)	170 (31)	132 (28)	<b>0.001*/.044</b>
Medium 20- £ 50	612 (40)	319 (38)	293 (42)		145 (26)	242 (45)	225 (47)	
Low < £ 20	357 (23)	197 (23)	163 (23)		108 (24)	131 (24)	120 (25)	
<b>Income insufficient</b>								
Always sufficient	80 (5)	42 (5)	35 (5)	<b>0.681/.048</b>	23 (4)	29 (5)	28 (6)	<b>0.805/.044</b>
Mostly sufficient	197 (12)	112 (13)	79 (11)		64 (12)	63 (12)	64 (13)	
Sometimes insufficient	866 (56)	465 (55)	395 (57)		294 (56)	305 (56)	267 (56)	
Always insufficient	412 (27)	226 (27)	156 (27)		149 (28)	146 (27)	118 (25)	
<b>Religious affiliation</b>								
Christianity	944 (61)	485 (61)	429 (61)	<b>0.215/.043</b>	325 (61)	356 (65)	254 (56)	<b>0.001*/.268</b>
Muslim	228 (14)	133 (16)	85 (12)		110(21)	45 (8)	63 (13)	
Others	387 (25)	217 (23)	170 (27)		95 (18)	161 (27)	128 (31)	

P- Represents the P value while PHI indicates effect size

The result indicated that 701(45%) of the sample were males while 848(55%) were females. In addition, ethnic characteristics of the sample showed that students were sampled from three ethnic groups: Hausa/Fulani (34%), Igbo, (35%) and Yoruba (31%). With regard to participant's age (Table 6.1), shows that students in the age group (20-23) years are more compared to students in the other two age groups, whereas students in the oldest age group (> 23 years) have the least number of students. On the other hand, Chi-square test for independence indicated a significant association between students reported age and their gender ( $p = 0.003$ ) and the size of the association was much ( $\Phi = 0.86$ ) with female students reporting more on the young age group < 20 years while the male students are more on the two higher age categories. However, when students age were compared by region, the result showed no significant association between students age group and their region or ethnic origin  $p = 0.170$ .

With regard to religious affiliations (Table 6.1), the overall sample indicated more Christians compared to Muslims and one-quarter of the students indicated non- religious affiliation. This finding is important as was explained in (Chapter 1) that in Nigeria religious affiliation is an important denominator often used to group Nigerians as either Muslim North or Christian

South, similar to the use of ethnicity or region. On the other hand, a chi-square test showed no significant association between students' religious affiliation and their gender ( $p = 0.215$ ,  $\phi = 0.43$ ). This means that the proportion of male students in any of the three possible religious organizations is not significantly different from the proportion of female students in those groups. However, when the analysis was compared by region, the result indicated significant associations, ( $p = 0.001$ ), although the effect size was small (.268). As was expected, there were more Muslims in the North, and more Christians in the South especially among the Igbo ethnic group.

With regard to the analysis of students' income status and income sufficiency, the result indicated significant associations for both gender and region (Table 6.1). However, looking at the overall sample, the result indicated that less than half of the sample (37%) belonged to the highest income group, whereas (63%) belonged to the medium and low-income groups. The result indicated that more female students received higher monthly income ( $< \text{£}50$ ) than male students. However, the effect size was not much ( $\phi = 0.48$ ), indicating that the difference between rich and poor students was not noticeable. Furthermore, the analysis by region indicated that over half of the Hausa students belong to the highest income group, compared to the combination of the proportion of Igbo and Yoruba in the same group.

When the income insufficiency was analysed, the Chi-square test indicated no significant association in both gender and region (Table 6.1). In other words, students reports that their allowance was not enough for a month does not depend on being a male or a female, nor on their ethnic group. This is understandable as the amount of money giving for monthly income in the current study was very small. Consequently, while only (16%) of the total sample indicated their monthly income to be either always or almost insufficient, whereas more than (83%) of the students indicated their income to be either sometimes or always insufficient

(Table 6.1). However, only (10%) of the samples by gender and by region agreed that their monthly income was sufficient. This finding is of public health consequences as poverty may be associated with worries, anxiety, depression and stress because of students unmet needs.

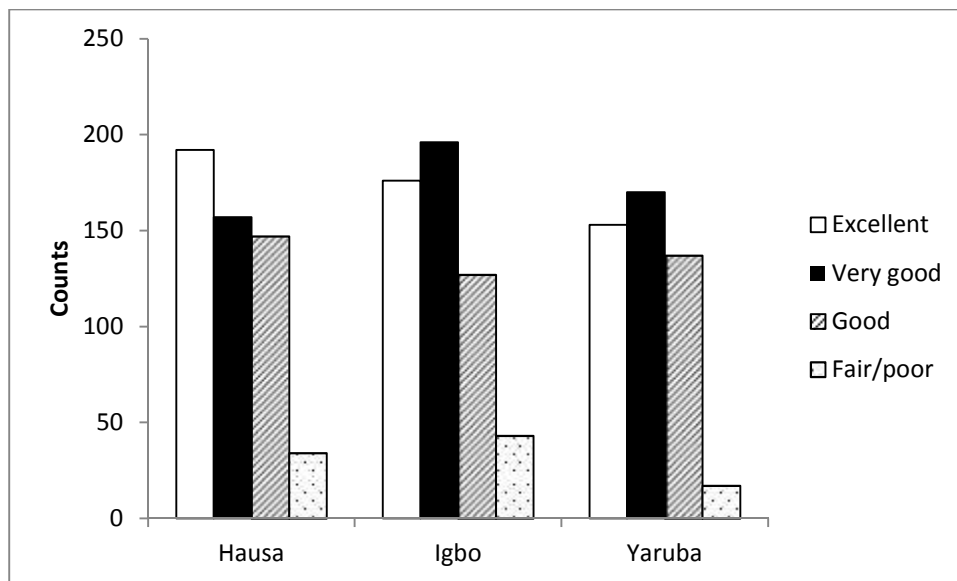
### **6.3 Health status indicators**

Table 6.2 presents the Chi-square analysis of the variables that are used to measure general health indicators, which included overall health, health status indicators, body mass index and hypertension. The analyses are presented by sex and ethnic groups and with frequency and percentages (%). In addition, the analysis based on the overall sample was also indicated. Concerning the overall health of the sample, the result showed that about (94%) of the sample reported their health to be excellent, very good or good. On the other hand, only (6%) of students reported their health to be either fair or poor. Chi- square test indicated no significant association between sex and general health, but when the analysis was conducted within ethnic groups, the result indicated a significant association between students general health rating with their ethnic groups.

**Table 6.2 Frequency and percentage (%) of general health status by sex and ethnicity**

Variable	Sample	Female	Male	P/ PHI	Hausa	Igbo	Yoruba	P/ PHI
<b>General health</b>								<b>0.013*/.112</b>
Excellent	520 (34)	268(31)	252 (36)		192(36)	176(32)	153(32)	
Very good	523 (34)	298(35)	225(35)	<b>0.342/.054</b>	157(30)	196(36)	170(36)	
Good	411 (27)	230(29)	118(24)		147(28)	127(23)	137(29)	
Fair /poor	95 (5)	49(5)	38(4)		34(6)	43(9)	17(3)	
<b>Eye on your health</b>				<b>0.011*/.055</b>				
Not at all	1 (3)	29(3)	12(2)					
Not much	313 (20)	151(18)	162(23)		13(3)	10(1)	18(4)	<b>0.012*/.103</b>
To some extend	660 (43)	362(43)	298(43)		108(20)	114(21)	91(19)	
Very much	532 (34)	306(36)	226(32)		233(44)	203(38)	224(47)	
					176(33)	213(39)	144(30)	
<b>Seen a GP recently</b>								
No	67 (50)	492(60)	445(63)					
Yes	782 (50)	354(40)	256(37)	<b>0.003*/.054</b>	295(56)	339(62)	303(64)	<b>0.020*/.071</b>
					234(44)	204(38)	173(36)	
<b>On regular medication</b>								
No	937 (61)	492(58)	445(63)	<b>0.033*/.054</b>	295(56)	339(62)	303(64)	<b>0.020*/.071</b>
Yes	610 (39)	354(42)	254(37)		234(44)	204(38)	173(36)	
<b>Body mass index (kg/m<sup>2</sup>)</b>								
Underweight <18.5	151 (10)	99(12)	52(7)	<b>0.001*/.113</b>	41(8)	56(10)	54(12)	<b>0.001*/-.126</b>
Normal weight 18.5-24.9	769 (50)	443(52)	326(47)		277(52)	276(50)	216(44)	
Overweight 25.0-29.9	388 (25)	194(23)	194(28)		153(29)	125(24)	110(24)	
Obesity >30.8	242 (15)	112(13)	129(18)		59(11)	86(16)	97(20)	
<b>Systolic BP in mmHg</b>								
Normal BP, 120-139	1400 (90)	775 (91)	625 (89)	<b>0.174/.047</b>	480(91)	491(90)	430 (90)	<b>0.174/.047</b>
<b>Diastolic BP in mmHg</b>								
Normal BP, 85-89	1493 (91)	816 (96)	677(97)	<b>0.238/-043</b>	502(95)	530 (98)	462 (97)	<b>0.057.077</b>

After combining the positive health categories such as (excellent, very good and good) the result shows that students from Igbo ethnic group reported better health compared to Hausa and Yoruba ethnic groups, where Yoruba reported least in this category. Surprisingly, examining the poor health category indicated that more students from Igbo ethnic group reported their health to be either poor or fair when compared with Hausa and Yoruba ethnic groups. The differences in health categories are presented graphically in (Figure 6.1) for better understanding. The graph also indicated that the Yoruba ethnic group reported the least poor health (fair or poor) compared to other ethnic groups.



**Figure 6.1** Frequency of reporting general health categories by ethnic groups

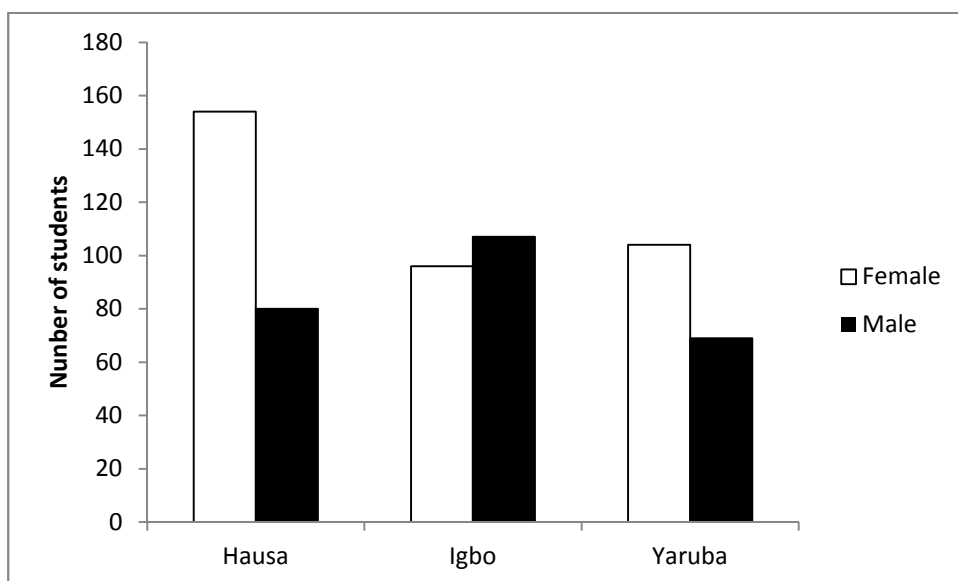
On keeping an eye on health, the overall sample showed that about (97%) of the sample reported keeping an eye on their health in either not much, to some extent, and the very much categories (Table 6.2). When Chi-square analysis was conducted by gender, the result showed significant association between keeping an eye on one's health and being a male or female, although the effect size is not much ( $\phi = 0.55$ ). The result indicated that more female students indicated watching their health more constantly than male students did.

Similarly, when the analysis was conducted by region, there was a significant association between keeping an eye on one's health and his/her region of origin, with more Igbo students reported watching their health than Hausa and Yoruba. With regard to having seen a GP in the last six months (Table 6.2) the result showed that in the overall sample, half of the students reported seen their GP within such duration. However, when the analysis was conducted by gender, the result showed significant association between seeing a GP and gender with more female students than male reported seeing their GP within the last six months. When the analysis was conducted by region, the result showed a significant

association between seeing a GP and the students' ethnic origin, with more Hausa students reported seeing their GP more constantly than Igbo or Yoruba, although with a medium effect size (0.54). With regard to regular medication among the overall sample, the result showed that one-third of the sample reported being on regular medications as against more than two-third of the sample that are not on regular medications (Table 6.2).

With regard to gender the result showed a significant gender differences with more female students reported 'yes' to taking regular medications in the last six months (41.8%) compared to (36.5%) male students that reported the same. However, when regular medication was examined by region/ethnicity, the result showed significant associations, where students from Hausa ethnic group reported the highest intake of medication compared to students from other ethnic groups. Female students from the Hausa ethnic group reported the highest intake of medication, while the Igbo females reported the least intake of medication. Among male students, the Igbo males reported the highest intake of medication, while the Yoruba males reported the least on regular medication.

Figure 6.2 presents graphically the frequency of students on regular medication by gender and region. While Hausa indicated the highest frequency of regular medication, the Igbo ethnic group reported frequency of regular medication more than the Yoruba ethnic group. On the other hand, students from the Yoruba ethnic group are the least on the frequency of regular medication. However, the size of the differences among the ethnic groups was far more ( $r = .071$ ) compared to the effect size of gender differences ( $r = .054$ ). Consequently, with regard to general health and general health indicators, students from the Yoruba ethnic group indicated the worst general health and the least (in keeping an eye on their health; in seeing GP and in regular medication) these can be seen in Table 6.2 and in figures 6.1 and 6.2.

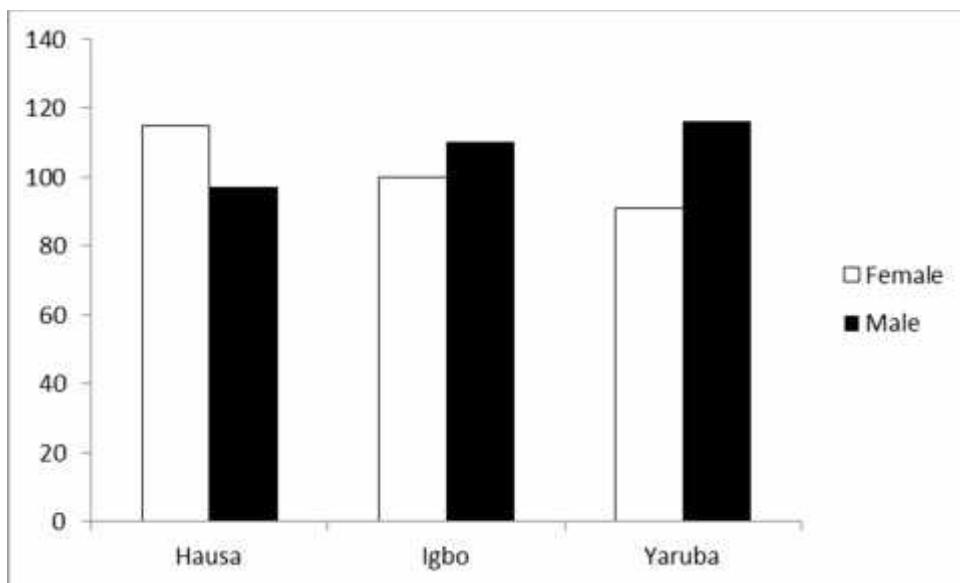


**Figure 6.2 Differences of regular medication by sex and ethnicity**

With regard to students' body mass index (BMI), the overall sample shows (40%) are either overweight or obesity and less than (10%) is underweight (Table 6.2). However, when the analysis was conducted by gender, the result indicated significant association between gender with different BMI categories with more male students reporting overweight and obesity compared to female students. However, while more male students reported overweight and obesity among the Igbo and the Yoruba ethnic groups, more females students reported overweight and obesity only among the Hausa ethnic group.

This analysis is presented graphically in (figure 6.3). It shows that more students from the Hausa ethnic group reported overweight and obesity than Igbo and Yoruba ethnic groups. However, Increasing overweight and obesity among female students in Hausa ethnic group is of public health concern due to severe health consequences.





**Figure 6.3 frequency of overweight or obese by sex and ethnicity**

With regard to students' blood pressure (Table 6.2), the result showed that more than (90%) of the sample are within the normal range of Systolic blood pressure (120 mmHg- 139 mmHg). This is very interesting especially when it shows that similar result was found in both gender and region. For example when the analysis was conducted by gender, the Chi-square test indicated no significant association between students blood pressure and their gender ( $P = 0.174$ ), with more than (90%) of both male and female students under the normal blood pressure categories.

On the other hand, only less than (10%) of the participants are within the range of both mild and moderate hypertension no severe blood pressure was reported. When the students blood pressure was analysed by regions/ethnic groups, the result showed no significant associations between students ethnic groups and their blood pressure. In other words, the measured blood pressure of students are within the same range across all the ethnic groups and across the four different blood pressure categories.

## 6.4 Mental health perception

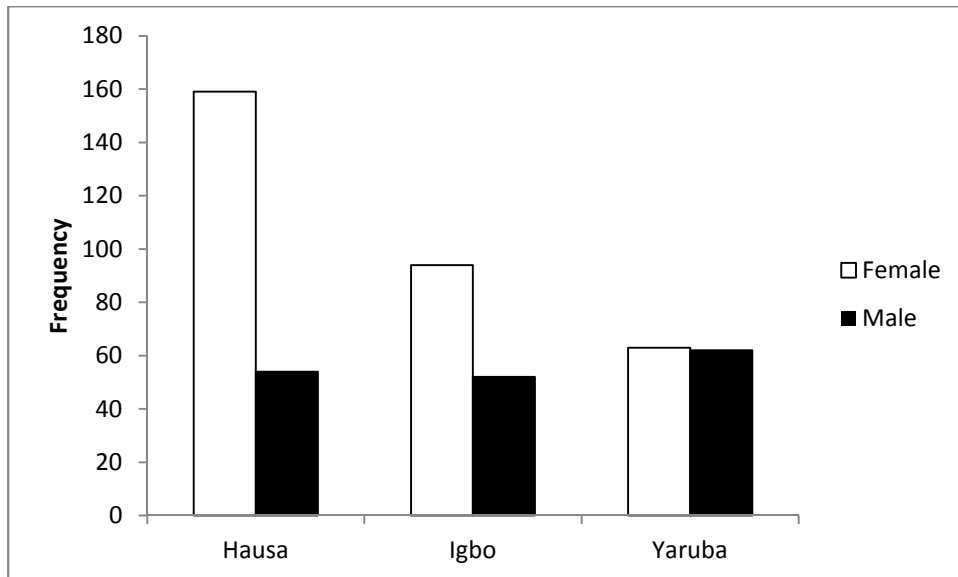
Table 6.3 presents the Chi- square analysis of students' mental health indicators by sex and ethnic groups. The result also shows the analysis based on the overall sample. All the analysis are presented by frequency and percentages.

**Table 6.3: Frequency and percentage (%) of mental health indicators by sex and ethnicity**

VARIABLE	Sample	Female	Male	P/PHI	Hausa	Igbo	Yoruba	P/PHI
<b>Depression</b>								
Low < 35	1065 (69)	535(63)	525(76)	<b>0.0017.138</b>	315(59)	396(73)	357(75)	<b>0.0017.148</b>
High > 35	484 (31)	313(37)	169(24)		215(41)	147(27)	120(25)	
<b>Stress</b>								
Low < 15	215 (14)	109(13)	106(15)	<b>0.199/033</b>	58(11)	77(14)	80(17)	<b>0.0277.068</b>
High >15	1334 (86)	739(87)	595(85)		472(89)	466(86)	397(83)	
<b>Quality of life</b>								
				<b>0.0467.079</b>				<b>0.0187.109</b>
Very badly	18 (12)	6(1)	12(2)		8(1)	3(1)	7(2)	
Badly	106 (7)	61(7)	45(6)		45(9)	36(7)	25(5)	
So So	273 (18)	137(16)	136(19)		69(13)	105(19)	100(21)	
Quite well	792 (51)	429(51)	363(52)		278(53)	218(52)	233(48)	
Very well	360 (12)	215(25)	215(25)		130(24)	118(22)	112(24)	
<b>Life satisfaction</b>								
Dissatisfied	522 (34)	288(34)	234(33)	<b>0.810/006</b>	208(39)	153(28)	162(34)	<b>0.0017.097</b>
Satisfied	1027 (66)	560(66)	467(67)		322(61)	390(72)	315(66)	
<b>Well-being</b>								
Low < 10	194 (13)	102(12)	112(16)	<b>0.0257.057</b>	78(15)	70(13)	68(14)	<b>0.687/022</b>
High > 10	1355 (88)	746(88)	589(84)		452(85)	473(87)	411(86)	

With regard to depression (Table 3), the result showed that while one-third of the total sample of students reported depression two-third of the sample, reported low depression. The result also indicated a significant association between male and female students with more females reported depression compared to male students. The effect size was small ( $r = .138$ ), indicating no major differences in the actual number of students that suffered depression by gender. In addition, when the analysis was compared by ethnicity, the Chi- square test for independent indicated a significant association between students' reported depression and their ethnic origin. The result indicated that twice as many Hausa students compared to Igbo and Yoruba reported depression. The analyses was further plotted graphically by sex and ethnic in (Figure 6.4) and the result showed that the Hausa female students are the most depressed and this was followed by the Igbo female students in the sample. However, among

the male participants in the sample, the Yoruba male students indicated to be the most depressed. It is interesting to note that while there was a significant gender differences in depression among the Igbo and the Hausa ethnic groups, there was no significant differences between the male and female students among the Yoruba ethnic group.

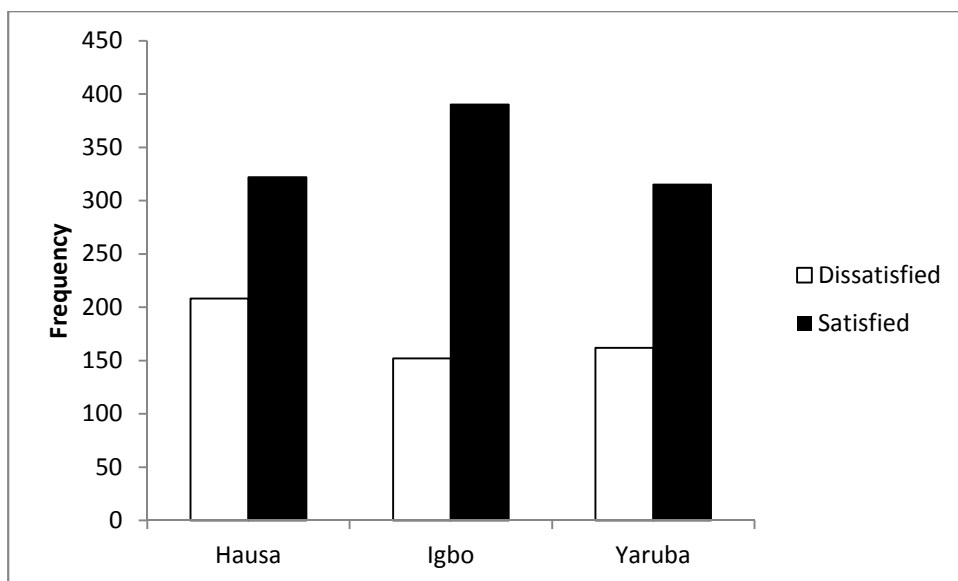


**Figure 6.4** Frequency of those reported as depressed by gender and ethnicity

With regard to students' perceived stress, the result showed that over (80%) of the sample reported stress (Figure > 15). However, when the analysis was conducted by gender, the result showed no significant association between students perceived stress and their gender ( $P = 0.199$ ). On the other hand, analysis of students' perceived stress by ethnicity indicated a significant association between students' perceived stress and their ethnic origin (Table 6.3). The result showed that more students from Hausa ethnic group reported stress compared to Igbo and Yoruba, similarly, more students from the Igbo ethnic group reported stress than students from the Yoruba ethnic group. With regard to students' perceived quality of life, the result showed that more than (60%) of the students perceived the quality of their life to be either quite well or very well, compared to less than half (47%) of the sample that viewed the

quality of their life to be either very badly, badly or So So (not sure). However, when the analysis was conducted by gender, the result indicated slight differences in the proportion of male and female students that viewed the quality of their life to be either quite well or very well with male students more positive than the female students did. On ethnic group, there was a significant association between students perception of the quality of life with their ethnic origin. The result showed that more students from the Hausa ethnic group reported their life to be either quite well or very well compared to Igbo and Yoruba. In addition, the result showed that more students from the Yoruba ethnic group indicated having the poorest quality of life among the three tribes (Table 6.3).

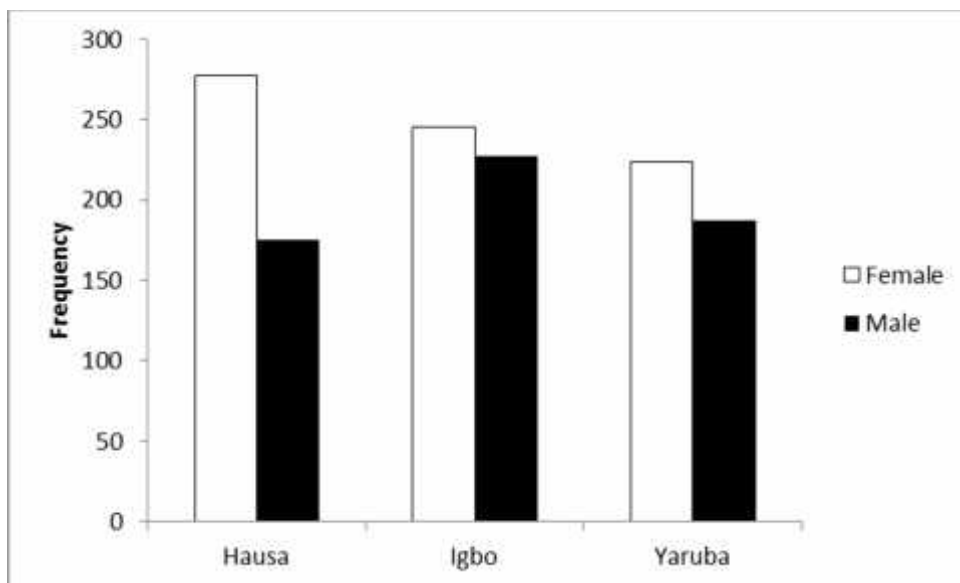
With regard to life satisfaction (Table 6.3), the result showed that more than two-third of the students indicated that they are satisfied with the events in their life as against the one-third of students that are dissatisfied with their life events. When the students' life was compared by gender, the result showed no significant association between the way male and female student perceived their satisfaction with life. However, the analysis by ethnic group showed a significant association between students' ethnic groups and their perceived life satisfaction. The result showed that more students from the Igbo ethnic group indicated being satisfied with the events in their life, whereas more students from the Hausa ethnic group indicated the poorest score in students' life satisfaction scale. Figure 6.5 presented the analyses graphically, showing the frequency of satisfied and not satisfied by ethnic groups. The graph shows evident that more students from Igbo ethnic group indicated that they are well satisfied with their life events. Conversely, fewer students from Igbo ethnic group rated their life as 'not satisfied' compared to other ethnic groups. The graph also confirmed that the Hausa ethnic group have more students who rated their life events as 'not satisfied' when compared with other ethnic groups.



**Figure 6.5 Frequency of those reporting satisfied or dissatisfied with life by ethnic**

With regard to wellbeing, perception (Table 6.3) the result showed that more than three-quarter of the participants rated their well-being to be high and only less than one-quarter of the sample believed their well-being to be low or poor. The analysis by gender indicated significant differences between the association of students' perceived wellbeing and their gender. The result showed that female students indicated better wellbeing compared to their male counterparts.

The Chi-square analysis by ethnicity indicated no significant association between the way students perceived their wellbeing and their ethnic groups. The analysis was presented graphically in (Figure 6.6) by sex and ethnic. The graph shows that female students indicated better wellbeing than male students in all the three ethnic groups. In addition, more Hausa female students reported better well-being overall while fewer Hausa males reported better well-being overall. The graph also shows that among the male students, more Igbo ethnic group reported better well-being, than male students from the other two ethnic groups did. These analyses are well indicated in the graph.



**Figure 6.6 Frequency of high wellbeing index by sex and ethnicity**

### 6.5 Health complaints

Table 6.4 presented the frequency and percentage of Chi-square analyses of students' health symptoms by sex and ethnic groups. The analyses of the sample showed that when the response options of 'sometimes' and 'very often' categories were combined, the result indicated that: (39%) reported stomach trouble, (36%) reported back pain, (27%) reported diarrhoea, (22%) reported headache, (58%) reported sleep disorder, (41%) reported difficulties to concentrate, (49%) reported neck and shoulder pain, (35.1%) reported fatigue, while (17.4%) reported rapid heartbeat.

When the Chi-square analysis was compared by sex, the result indicated significant association between students' sex and their reporting of sleep disorder, difficulties to concentrate, neck and shoulder pain and stomach trouble. The result indicated that female students reported more in all the symptoms examined. These symptoms includes: sleep disorder, female (63%) and male (47%), stomach trouble, female (45%) and male (32%), difficulties to concentrate, female (43%), and male (36%), neck and shoulder pain, female

(51%) and male (36%), headache, female (21%) and male (20%) and diarrhoea, female (29%), male (25%). These values were obtained by combining the two positive options: sometimes and very often (Table 6.4). When ethnic groups were examined for these variables, the result showed significant differences by ethnicity, except sleep disorder, which showed significant only with sex. On the other hand, more students from the Hausa ethnic group (45%) reported difficulty to concentrate, whereas more students from the Igbo ethnic group reported stomach trouble (61%), headache (24%), diarrhoea (29%) while more students from Yoruba ethnic group reported neck and shoulder pain (51%). On the other hand, Hausa and Yoruba ethnic group reported more of psychological health, whereas Igbo ethnic groups reported more of somatic illness.

**Table 6.4: Frequency and percentages (%) of health complaints by sex and ethnic**

Variable	Sample	Female	Male	P/PHI	Hausa	Igbo	Y oruba	P/PHI
<b>Stomach trouble</b>								
Never	504 (33)	250(30)	254(36)	<b>0.001*/.167</b>	186(35)	182(32)	137(29)	<b>0.001*/.170</b>
Rarely	436 (28)	215(25)	221(32)		139(26)	144(27)	153(31)	
Sometimes	418 (27)	240(28)	178(25)		111(21)	152(28)	155(33)	
Very often	191 (12)	143(17)	48(7)		94(18)	155(33)	32(7)	
<b>Back pain</b>								
Never	623 (40)	232(38)	300(43)	<b>0.066/.066</b>	217(40)	232(43)	175(37)	<b>0.001*/.001</b>
Rarely	370 (24)	201(24)	169(24)		119(23)	131(24)	120(25)	
Sometimes	407 (26)	245(29)	162(23)		128(24)	118(22)	161(34)	
Very often	149 (10)	79(9)	70(10)		66(13)	62(11)	21(4)	
<b>Diarrhoea</b>								
Never	729 (47)	367(43)	361(52)	<b>0.007*/.007</b>	263(50)	229(42)	237(50)	<b>0.006*/.006</b>
Rarely	401 (26)	236(28)	165(23)		123(23)	156(29)	122(26)	
Sometimes	358 (23)	204(24)	154(22)		125(24)	142(26)	91(19)	
Very often	61 (4)	41(5)	21(3)		19(3)	16(3)	27(5)	
<b>Headache</b>								
Never	799 (51)	415(50)	384(55)	<b>0.050*/.072</b>	310(59)	245(45)	245(51)	<b>0.001*/.126</b>
Rarely	413 (27)	245(29)	168(25)		118(22)	166(31)	129(27)	
Sometimes	262 (17)	151(18)	111(15)		86(16)	95(17)	81(17)	
Very often	75 (5)	37(3)	38(5)		16(3)	37(7)	22(5)	
<b>Sleep disorder</b>								
Never	236 (15)	90(10)	146(21)	<b>0.001*/.149</b>	95(18)	65(12)	77(16)	<b>0.077/.056</b>
Rarely	415 (27)	227(27)	188(27)		147(27)	142(26)	126(26)	
Sometimes	654 (42)	379(45)	275(39)		203(38)	253(47)	198(42)	
Very often	244 (16)	152(18)	92(13)		85(17)	53(15)	76(16)	
<b>Difficulties to concentrate</b>								
Never	428 (28)	239(28)	189(27)	<b>0.001*/.103</b>	150(28)	150(28)	129(27)	<b>0.001*/.125</b>
Rarely	500 (32)	272(32)	201(29)		140(26)	184(33)	176(37)	
Sometimes	473 (3)	96(12)	52(7)		70(14)	173(32)	136(27)	
Very often	148 (10)					36(7)	42(9)	
<b>Neck Shoulder pain</b>								
Never	313 (20)	157(19)	156(22)	<b>0.027*/.077</b>	106(20)	105(19)	103(22)	<b>0.001*/.125</b>
Rarely	474 (31)	255(30)	219(31)		170(32)	172(32)	132(27)	
Sometimes	559 (36)	307(36)	252(36)		160(30)	205(38)	194(41)	
Very often	203 (13)	129(15)	74(11)		94(18)	61(11)	48(10)	
<b>Fatigue</b>								
Never	547 (38)	292(36.4)	254 (39)	<b>0.337 / .047</b>	214 (40.4)	162 (29.5)	171 (36.2)	<b>.006/ .006</b>
Rarely	416 (26.9)	242 (26.5)	174 (25)		123 (23.2)	171 (32.5)	154 (32.3)	
Sometimes	475 (28.4)	256 (30.4)	217 (31)		156 (29.4)	165 (32.4)	30 (6.3)	
Very often	112 (6.7)	56 (6.7)	56 (5.0)		37 (7.0)	45 (5.6)		
<b>Rapid heartbeat</b>								
Never	1099 (67.7)	600 (70.1)	495 (72.1)	<b>.064/ .065</b>	351(72.9)	376 (68.2)	342 (71.7)	<b>.006/ .006</b>
Rarely	216 (14.9)	107 (13.3)	109 (15.5)		74. (14.2)	93 (16.2)	49 (22.7)	
Sometimes	167 (12.9)	95 (11.2)	72 (10.3)		55 (10.0)	55 (12.7)	54 (11.3)	
Very often	68 (4.5)	45 (5.4)	22 (3.1)		20 (2.9)	16 (2.9)	32 (4.3)	

## 6.6 Prevalence of health complaints across each of the four symptom groups

When the health symptoms was classified into four groups, the result indicated that more female students reported symptoms relating to gastrointestinal, circulatory/breathing and



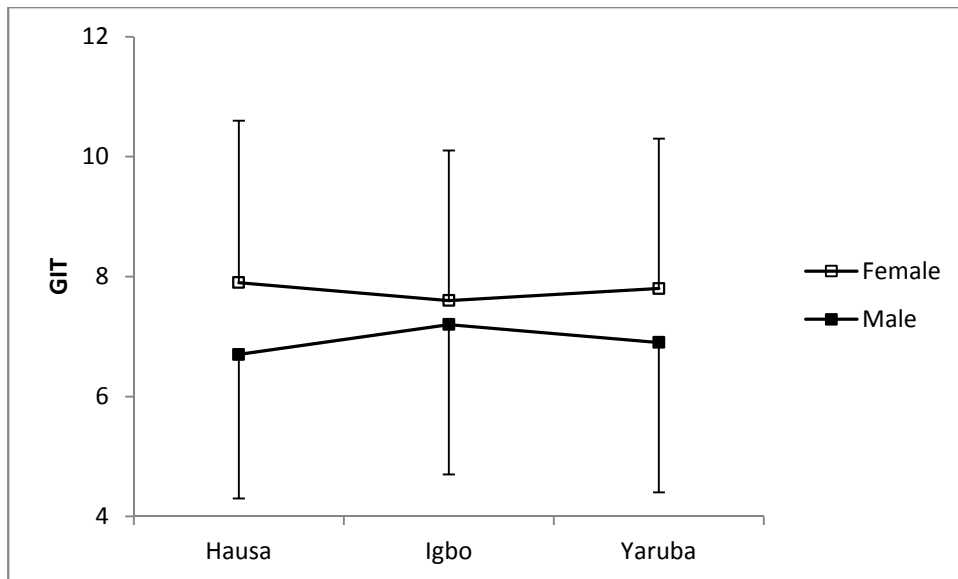
pains/aches, more than female students. On the other hands, more male students reported pains/aches related symptoms more than female students.

**Table 6.4A: Two- way ANOVA showing mean (SD) of health symptoms by sex and ethnic**

Variables	Female	Male	Hausa	Igbo	Yoruba	P – value /effect size		
						Sex*ethnic	Sex	Ethnic
<b>GIT</b>	7.78 (2.59)	6.95 (2.47)	7.44 (2.67)	7.39 (2.52)	7.38 (2.53)	.026 (.005)	.001 (.026)	.941 (.001)
<b>Circ/Breath</b>	6.62 (2.53)	6.33 (2.35)	6.48 (2.42)	6.46 (2.44)	6.54 (2.51)	.213 (.002)	.016 (.004)	.850 (.001)
<b>Psychological</b>	6.95 (2.75)	8.42 (2.60)	8.72 (2.88)	8.66 (2.53)	8.75 (2.66)	.041 (.004)	.001 (.010)	.909 (.001)
<b>Pain</b>	8.45 (2.49)	8.18 (2.62)	8.21 (2.50)	8.47 (2.50)	8.31 (2.46)	.002 (.008)	.079 (.003)	.029 (.003)

Gastrointestinal symptoms – 2 items; Circulatory/Breathing – 2 items; Psychological – 2 items; Pains/Aches – 3 items. All Symptoms counted if reported to occur Sometimes or Very often. P values were significant at  $p < 0.005$ .

However, when two - way ANOVA was conducted for each of the four groups, the result shows that only Circulatory/breathing problems showed no significant interaction as  $p > 0.05$ . On the other hands, there was a significant main effect for sex, with females reporting higher than males (Table 6.4A). With regard to gastrointestinal problems, there was a significant interaction ( $p < 0.05$ ). One-way analysis indicated that more Hausa females and Igbo males reported GIT problems compared to other students groups (Figure 6.7). In addition, the study indicated a stronger ethnic association for circulatory/breath and psychological illness ( $r = .850$  and  $.909$ ) respectively.



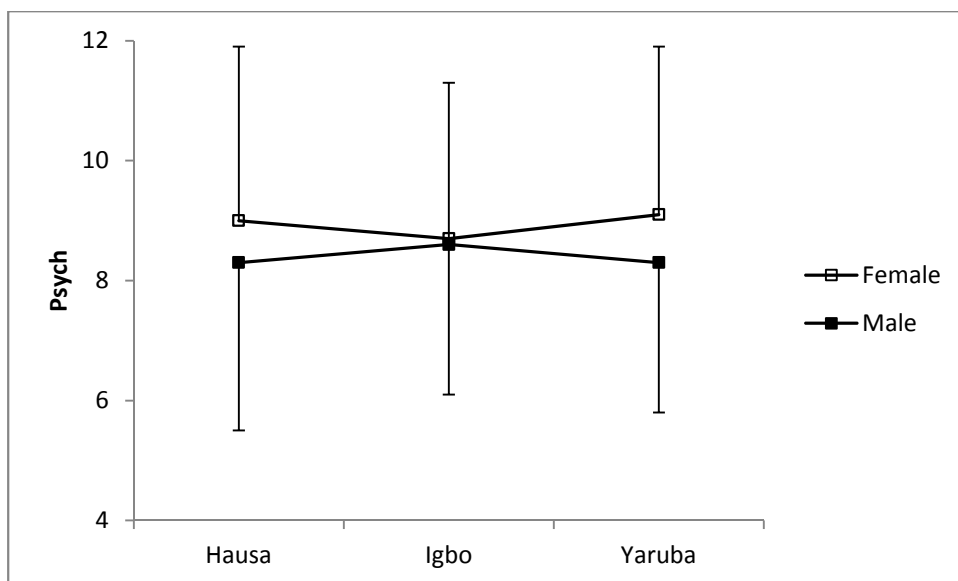
**Figure 6.7 shows the sex\*ethnic effects for the gastro-intestinal (GIT) related symptoms**

The above graph shows one- way ANOVA output plot for GIT main effect for sex and ethnicity. Error bars are one SD.

\* Hausa females was significantly higher than both Igbo and Yoruba females ( $P < 0.05$ )

\* Hausa males was significantly lower than Igbo and Yoruba males ( $P < 0.05$ ).

Similarly, psychological problems showed a significant interaction (Table 6.4A). One-way ANOVA analysis indicated that Igbo female students had the lowest that reported psychological problems compared to Hausa and Yoruba, however, Yoruba female students was slightly higher than Hausa female students. On the contrary, Igbo male students had the highest number of students that reported psychological problems compared to Hausa and Yoruba, which showed no differences with each other (Figure 6.8).



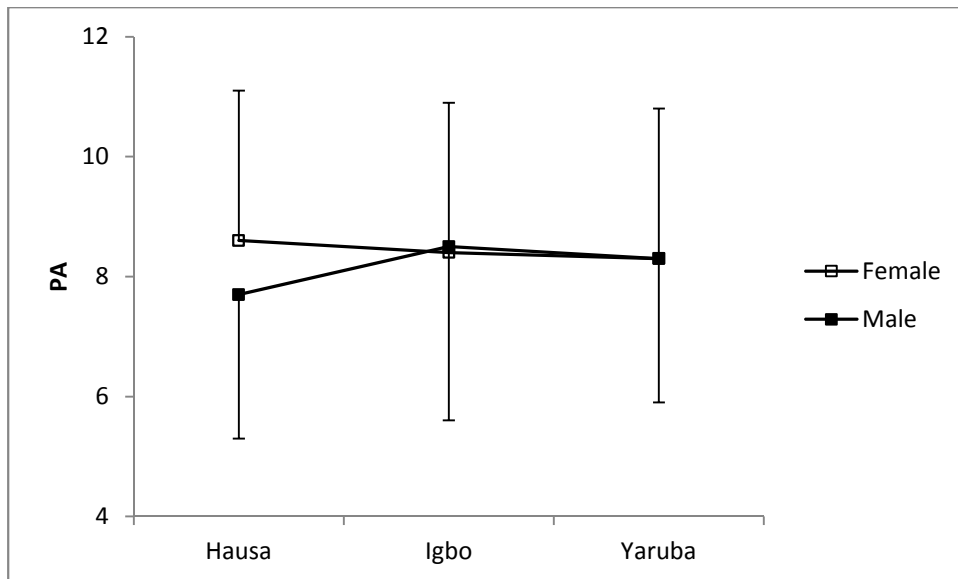
**Figure 6.8 shows the sex\*ethnic effects for the psychological related symptoms**

The above graph shows one- way ANOVA output plot for GIT main effect for sex and ethnicity. Error bars are one SD.

\* Hausa females and Yoruba females was the same but was significantly higher than Igbo females ( $P < 0.05$ )

\* Hausa males and Yoruba males was the same but was significantly lower than Igbo males ( $P < 0.05$ ).

Finally, with regard to pain related problems, a two way ANOVA analysis indicated a significant interaction, and a significant main effect for ethnicity. However, one-way ANOVA analysis indicated no differences between Yoruba male and female students. On the other hands, while there was no differences between Yoruba male and female students, Hausa females and Igbo males showed the highest number of students reporting pain problems among the groups, with Hausa males having the least number of students reporting pain related problems (Figure 6.9).



**Figure 6.9 shows the sex\*ethnic effects for the pain related symptoms**

The above graph shows one- way ANOVA output plot for pain symptoms main effect for sex and ethnicity. Error bars are one SD.

\* Female students showed no significant differences by ethnicity ( $P > 0.05$ )

\* Hausa males were significantly lower than Igbo and Yoruba males ( $P < 0.05$ ).

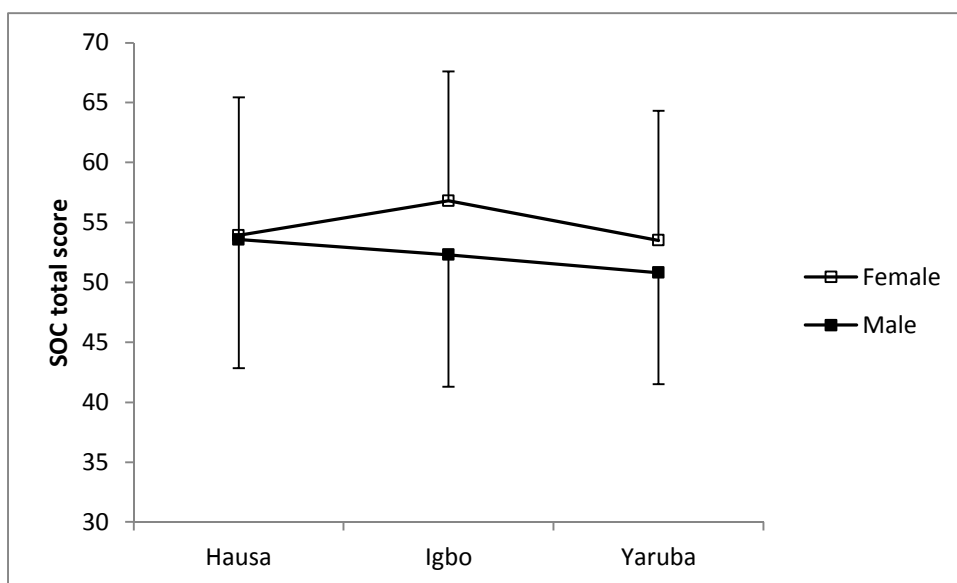
## 6.7 Cognitive health indicators

Table 6.5 presented the results of a two-way ANOVA of cognitive health variable in means and standard deviations for both sex and ethnic groups together with interaction effects and main effects for sex and ethnic.

**Table 6.5: Two-way ANOVA showing mean (SD) of cognitive health items by sex and ethnic**

Variable	Sample	Female (mean (SD))			Male (mean (SD))			Sex* ethnic	Sex	Ethnic
		Hausa	Igbo	Yoruba	Hausa	Igbo	Yoruba	P- value /partial Eta squared		
<b>SOC-total</b>	53.57 (10.80)	53.91 (11.50)	56.80 (10.80)	53.50 (10.80)	53.56 (10.71)	52.30 (11.00)	50.80 (9.30)	<b>0.022<sup>†</sup>.006</b>	<b>0.001<sup>†</sup>.014</b>	<b>0.001<sup>†</sup>.009</b>
<b>SOC-meaning</b>	15.43 (4.07)	15.32 (4.53)	16.14 (3.58)	15.33 (3.74)	15.92 (4.41)	15.25 (4.23)	14.61 (3.81)	<b>0.006<sup>†</sup>.006</b>	<b>0.104/.001</b>	<b>0.009<sup>†</sup>.006</b>
<b>Self-efficacy</b>	31.16 (5.05)	30.58 (4.77)	31.72 (4.85)	30.69 (5.55)	32.15 (5.16)	30.69 (4.93)	31.41 (5.01)	<b>0.001<sup>†</sup>.013</b>	<b>0.105/.002</b>	<b>0.613/.001</b>
<b>LOC-total</b>	30.99 (6.45)	31.23 (6.31)	31.92 (7.00)	30.27 (5.97)	30.72 (6.04)	31.74 (6.53)	31.03 (6.60)	<b>0.818/.001</b>	<b>0.286/.001</b>	<b>0.001<sup>†</sup>.014</b>
<b>POHLOC</b>	33.37 (1.48)	3.38 (1.30)	3.16 (1.40)	3.36 (1.41)	3.42 (1.52)	3.74 (1.73)	3.17 (1.49)	<b>0.001/.011</b>	<b>0.058/.002</b>	<b>0.123/.003</b>

With regard to sense of coherence (SOC), in addition to the assessment of student's total SOC score, an SOC sub category (meaningfulness) was also examined (Table 6.5). The result showed that the mean SOC score for the overall sample was (10.80). The two- way ANOVA result indicated that there was a significant sex\*ethnic effect for the SOC total sum. This effect is shown graphically in (Figure 6.7). In addition, there was a significant main effects for sex and ethnicity, where males were lower than females.



**Figure 6.10 shows the main effects for sex and ethnicity for SOC (sum)**

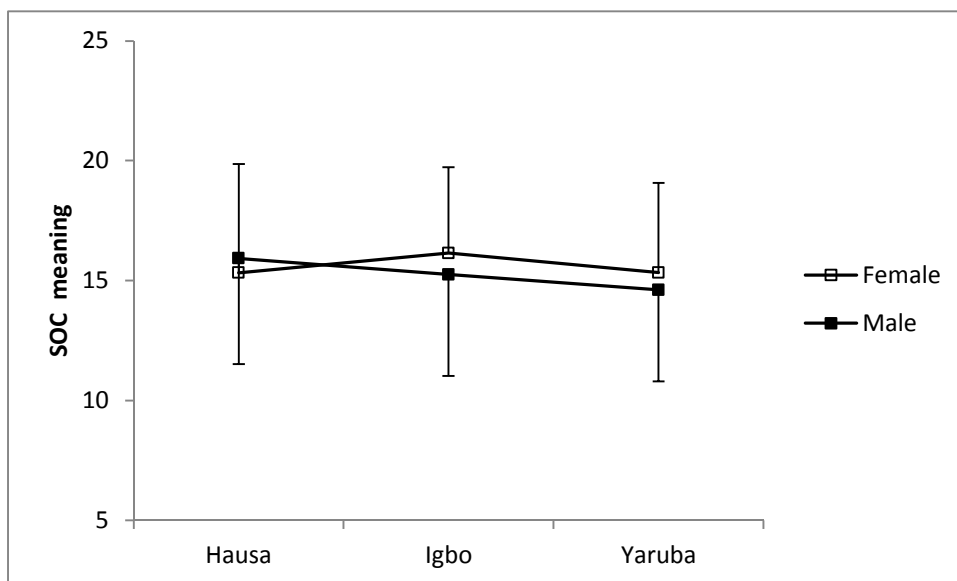
The above graph shows one- way ANOVA output plot for SOC (sum) main effect for sex and ethnicity. Error bars are one SD.

\* Igbo females was significantly higher than both Hausa and Yoruba females ( $P < 0.05$ )

\* Yoruba males was significantly lower than Hausa males ( $P < 0.05$ )

One –way ANOVA conducted for female students alone showed a significant main effect for region ( $P < 0.003$ ) and a further post hoc Tukey test showed that Igbo females had a high SOC sum than both Hausa and Yoruba ( $P < 0.05$ ). However, the effect size was very small ( $r = 0.009$ ). On the other hand, the analysis for male students showed a significant regional effect ( $p < 0.012$ ), where Yoruba males showed a significant difference with Hausa males ( $P$

< 0.05), analysis included in (Appendices 10). With regard to sense of coherence (meaningfulness), which examined how students are able to make meaning of their life events, in overcoming stress and depression (Table 6.5), the result showed a significant sex\*ethnic effects for SOC-meaning. This effect is shown graphically in (Figure 6.8). There were also significant main effects for ethnic ( $P < 0.05$ ) but not for sex ( $P > 0.05$ ). The analysis also showed that the mean score for males was lower than that of females. One-way ANOVA for females showed no significant main effect ( $P = 0.072$ ) and post hoc Tukey tests showed no significant difference ( $P > 0.05$ ). This analysis was included in (Appendices 10). However, the analysis for male students showed significant ethnic effects ( $P < 0.002$ ) and post hoc Tukey tests showed that Yoruba was significantly lower than Hausa.



**Figure 6.11** Shows the sex\*ethnic effect for the SOC sub group (meaning)

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The above graph shows one-way ANOVA output plot for SOC (meaning) sex and ethnic. Error bars are one SD.

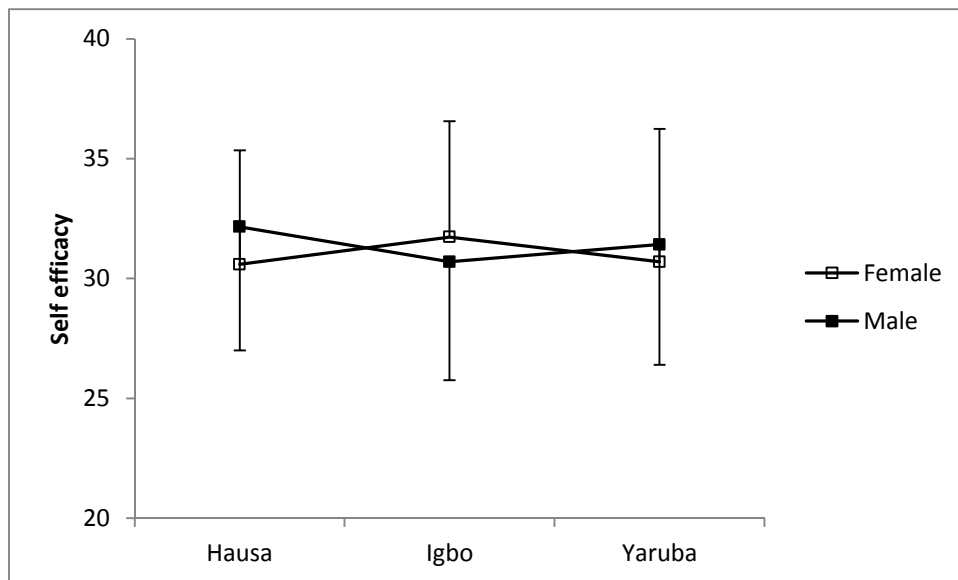
\*Yoruba male was significantly different and lower from Hausa ( $P < 0.05$ )

\* No significant differences among female students at  $P > 0.05$

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With regard to self-efficacy, the two-way ANOVA showed sex\*ethnic interaction effect with no main effect for sex and ethnic. However, the result showed that males were higher than females. This effect is shown graphically in (Figure 6.9). One-way ANOVA for females

showed an ethnic effect ( $P < 0.007$ ) and a post hoc Tukey tests shows that Igbo females was significantly higher than both Hausa and Yoruba females ( $P < 0.05$ ). One- way ANOVA for male students showed an ethnic effect ( $P < 0.005$ ) and Igbo males were significantly lower than Hausa ( $P < 0.05$ ).



**Figure 6.12 Shows sex\*ethnicity effect for self- efficacy**

The above graph shows one- way ANOVA output plot for sex and ethnic effects for self- efficacy. Error bars are one SD.

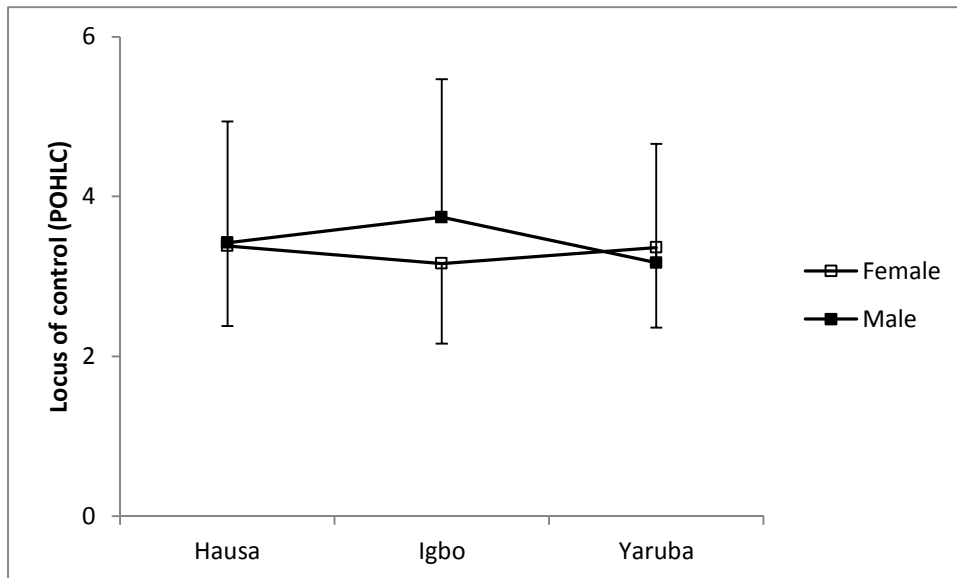
\*Igbo females was significantly higher than Hausa and Yoruba females ( $P < 0.05$ ).

\*Hausa males was significantly higher than Igbo ( $P < 0.05$ ).

With regard to locus of control (LOC- total) the mean score and SD of the overall sample was presented in (Table 6.5). When a two-way ANOVA was conducted, the result showed no sex\*ethnic effects, for the LOC total score. In addition, there was no main effect for sex, but there was a main effect for ethnic, where Igbo scored higher than both Hausa and Yoruba. However, when the powerful others health locus of control (POHLOC) an LOC sub-group, was investigated, the overall score was high (Table 6.5).

When a two-way ANOVA was conducted for the sample, the result showed a significant gender and ethnic effect for POHLOC. The result also showed no main effect for sex and

ethnic. This effect is shown graphically in (6.10 Figure), by sex and ethnic. One-way ANOVA for females showed no ethnic effect ( $P = 0.093$ ) and post hoc test showed no significant differences ( $P > 0.05$ ). However, one-way ANOVA for males showed a significant main effect for ethnic ( $P < 0.001$ ), and a post hoc test showed that Igbo males had a significant higher score than Yoruba ( $P < 0.001$ ) in POHLOC



**Figure 6.13 Shows the sex\*ethnic main effects for (POHLOC).**

The above graph shows one-way ANOVA plot for sex and gender main effects for (POHLOC). Error bars are one SD.

\*Igbo males significantly differs from Yoruba males  $P < 0.05$

\* Females showed no significant differences by ethnicity  $p > 0.05$

## 6.8 Social support and body image

Table 6.6 presented variables used to measure body image and social support. The result shows the means for sex and ethnic, with both interaction and main effects. In addition, all reports are based on means and standard deviations. With regard to social support, the analysis of the overall sample showed that more than (50%) of the participants rated their income support to be high. Two-way ANOVA shows significant interaction effect for social support. This effect is shown graphically in (Figure 6.10). The main effects for sex and ethnic



indicated that male students' social support was lower than what was available for female students.

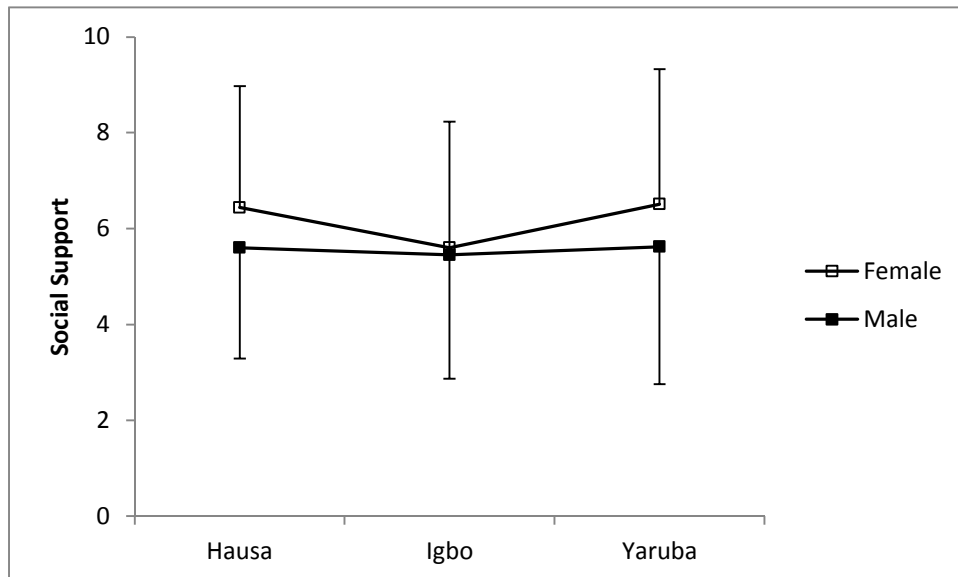
**Table 6.6: Two-way ANOVA showing the Mean (SD) of social support and body image**

Variable	Sample	Female (mean (SD))			Male (mean (SD))			Sex*ethnic	Sex	ethnic
		Hausa	Igbo	Yoruba	Hausa	Igbo	Yoruba	P- value/ partial Eta squared		
<b>Social support</b>	5.89 (2.60)	6.44 (2.53)	5.60 (2.63)	6.51 (2.82)	5.59 (2.31)	5.45 (2.58)	5.62 (6.86)	<b>0.035*/ .004</b>	<b>0.001*<sup>†</sup> .014</b>	<b>0.001*<sup>†</sup> .009</b>
<b>Current image</b>	4.71 (1.34)	4.85 (1.39)	4.63 (1.44)	4.57 (1.43)	4.74 (1.19)	4.65 (1.23)	4.84 (1.28)	<b>0.091/ .003</b>	<b>0.400/ .001</b>	<b>0.171/ .002</b>
<b>Ideal image</b>	5.18 (1.13)	5.23 (1.10)	5.01 (1.26)	5.08 (1.23)	5.21 (1.13)	5.32 1.00	5.22 (1.10)	<b>0.074/ .003</b>	<b>0.016*/ .054</b>	<b>0.598/ .004</b>
<b>Ideal male</b>	5.46 (1.06)	5.41 (1.13)	5.35 (1.07)	5.46 (1.01)	5.59 (1.03)	5.43 (1.06)	5.16 (1.08)	<b>0.202/ .002</b>	<b>0.053/ .002</b>	<b>0.565/ .001</b>
<b>Ideal female</b>	5.11 (1.22)	5.22 (1.18)	5.01 (1.29)	5.35 (1.23)	4.94 (1.12)	5.19 (1.17)	4.87 (1.25)	<b>0.001*/ .013</b>	<b>0.002*/ .006</b>	<b>0.924/ .001</b>

One-way ANOVA for females showed an ethnic effects ( $P < 0.001$ ) and post hoc Tukey tests showed that Igbo females was significantly lower than Hausa and Yoruba females ( $P < 0.05$ ). In addition, the result indicated that Hausa female students social support was better than what female students among the Igbo and Hausa ethnic groups reported. The graphs presented a clear indication that female students reported social support was better than what was reported by male students in all the ethnic groups. However, in both sex and ethnicity, the effect size was very small ( $r = .014$  and  $.009$ ) respectively.

Also one-way ANOVA for male students showed no ethnic effects ( $P < 0.066$ ) and post hoc Tukey showed no significant differences among male students by ethnicity, also shown graphically in (Figure 6.11), the analysis is included in the (Appendices 10). However, the analysis indicated that whatever type of social support available to male students in the sample, does not have any significant differences when compared across the three ethnic

groups. The finding is important, since students social support is an integral part of students socio-economic status in the present study.



**Figure 6.14 Shows the sex\*ethnic main effects for social support**

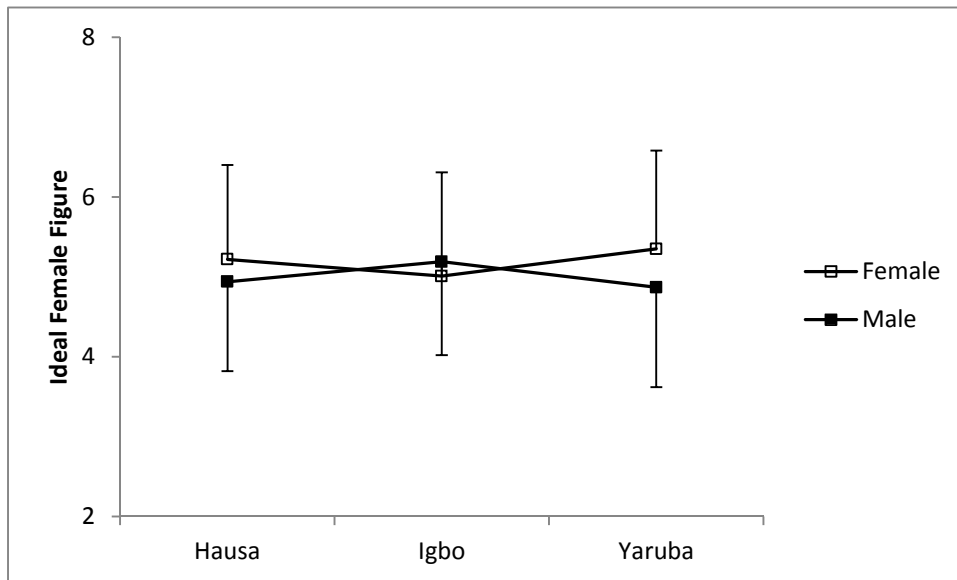
The above graph shows one way ANOVA output plot of sex and ethnic main effects for social support. Error bars are one SD.

\*Igbo female students significantly lower than Hausa and Yoruba females ( $P < 0.05$ ),

\*Male students showed no ethnic effects ( $P > 0.05$ ).

With regard to body image (Table 6.6), the overall sample showed that more than (50%) of the sample indicated preference for bigger body. Two-way ANOVA indicated that ideal male body, current body image and ideal body image, showed no interaction effects, and no main effects for sex and ethnic, with only ideal body image that showed significant main effects for sex, with males indicating preference for bigger body than females ( $P < 0.05$ ,  $r = .054$ ). However, the ideal female body showed significant sex\*ethnic effect, this effect is shown graphically in (Figure 6.12), there were also main effects for sex where females were higher than males, although the effect size was very small ( $r = .006$ ) and no main effect for ethnic. One-way ANOVA for females showed an ethnic effect ( $P < 0.001$ ) and post hoc Tukey tests

showed that Yoruba females was significantly higher than Igbo ( $P < 0.009$ ) were. One-way ANOVA for males showed an ethnic effect ( $P < 0.015$ ) and post hoc tests showed that Igbo males was significantly higher than Yoruba ( $P < 0.05$ ) were.



**Figure 6.15 shows the sex\*ethnic main effect for the ideal female figure**

The above graph shows one-way ANOVA plot on sex and ethnic effects for ideal female figure. Error bars are one SD.  
 \*Yoruba females were significantly higher than Igbo females'  $P < 0.05$   
 \*Igbo males were significantly higher than Yoruba males  $P < 0.05$

## 6.9 lifestyle behaviours

Table 6.7 presented Chi-square analysis on students' lifestyle behaviours by sex and ethnic groups in addition to main effects. All values are presented in frequencies and percentages. With regard to the consumption of fruits and vegetables, the result showed that a greater percentage of students met the recommended daily consumption of fruits and vegetables. However, while there was a significant difference in the consumption of fruits by sex and ethnic ( $P < 0.05$ ,  $r = .079$ ) there was no significant difference in the consumption of vegetables ( $P > 0.05$ ,  $r = .005$ ). The analysis of fruit consumption by sex indicated that more male students consume fruits and met the daily-recommended fruit consumption than female

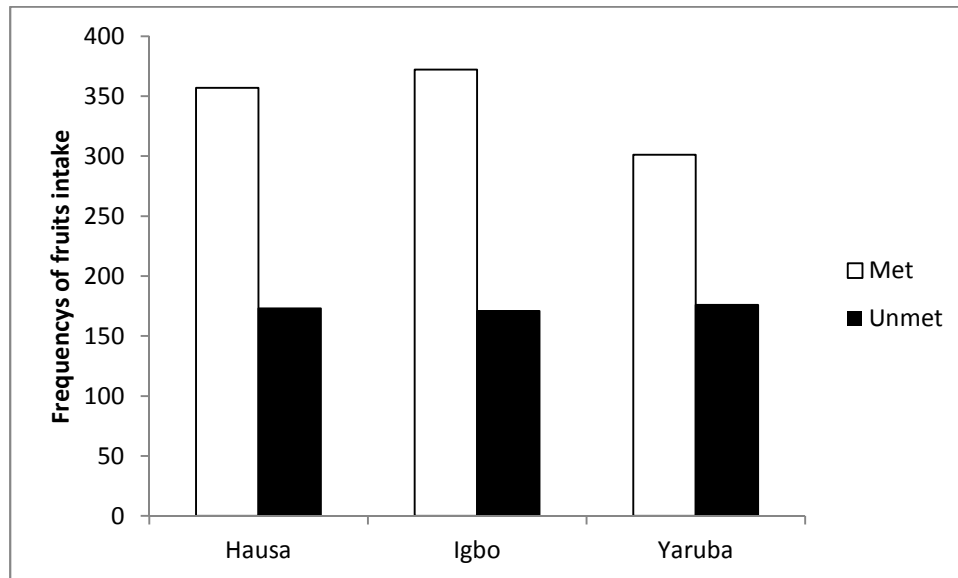
students did. The analysis of fruits consumption by region indicated that more than (60%) in each ethnic group met the daily recommendation of fruits.

**Table 6.7 Chi-square analysis showing frequency (%) of lifestyle behaviours by sex and ethnicity**

Variables	Sample	Female	male	P/ PHI	Hausa	Igbo	Yoruba	P/ PHI
<b>Daily food</b>								
<b>Fruit</b>								
Met>2-4	1029 (66%)	538(63%)	491(70%)	<b>0 .006*/ .079</b>	357(67%)	372 (67%)	301(63%)	<b>0 .006*/ .070</b>
Unmet<2-4	520 (34%)	310(37%)	210 (30%)		173 (33%)	171(33%)	176 (37%)	
<b>Vegetables</b>								
Met>3-5	966(62%)	527(62%)	439 (63%)	<b>0 .847/ .005</b>	335(63%)	352 (65%)	280 (59%)	<b>0 .117/ .053</b>
Unmet<3-5	583(38%)	521(38%)	262 (37%)		195 (37%)	191(35%)	197(41%)	
<b>No smoking on Campus</b>								
Strongly disagree	152 (10%)	92 (11%)	60 (9%)	<b>0.001*/ .077</b>	42(8%)	73(13%)	37(8%)	<b>0.001*/ .167</b>
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%)	
<b>No alcohol on Campus</b>								
Strongly disagree	132 (6%)	74 (9%)	58 (8%)	<b>0.498/ .006</b>	46 (9%)	57(11%)	29 (6%)	<b>0.001*/ .132</b>
Disagree	184 (20%)	91(11%)	93 (12%)		48 (9%)	56 (10%)	80 (17%)	
Agree	329 (20%)	183 (20%)	146 (22%)		104 (20%)	110 (20%)	115 (24%)	
Strongly agree	904 (54%)	500 (60%)	404 (58%)		332 (63%)	320 (59%)	253 (53%)	
<b>Smoking habit</b>								
Current smoking	92 (5%)	34(4%)	59 (8%)	<b>0.001*/ .092</b>	45 (9%)	15 (3%)	33 (7%)	<b>0 .001*/ .014</b>
Non-current smoking	1448 (95%)	814 (96%)	642 (92%)		485(92%)	528 (97%)	444 (93%)	
<b>Awareness of Smoking to Lung cancer</b>								
Yes	1310 (85%)	711 (84%)	599 (86 %)	<b>0.361/ .023</b>	451 (85%)	465 (86%)	395 (85%)	<b>0.550/ .028</b>
No	233 (15%)	134 (16%)	99 (14%)		79 (15%)	76 (14%)	78 (17%)	
<b>Drug uses</b>								
Yes regularly	137(8%)	76 (9%)	59(9%)	<b>0 .761/ .035</b>	53(10%)	42 (8%)	40 (9%)	<b>0.001*/ .012</b>
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%)	
<b>Physical activity (PA)</b>								
<b>Vigorous PA</b>								
Met	466 (31%)	262 (31%)	204 (29%)	<b>0.443/ .043</b>	155 (29%)	165(30%)	147(31%)	<b>0 .852/ .014</b>
Unmet	1083 (69%)	586 (69%)	497 (71%)		375 (71%)	378 (70%)	330(69%)	
<b>Moderate PA</b>								
Met	1019 (66%)	572 (68%)	447 (64%)	<b>0.128/ .039</b>	423 (80%)	472 (87%)	361(76%)	<b>0 .001*/ .115</b>
Unmet	530 (34%)	276 (32%)	254 (36%)		107(20%)	71(13%)	361(34)	
<b>Mild PA</b>								
Met	1255 (81%)	690 (81%)	565(81%)	<b>0.701/ .010</b>	423(80%)	472 (87%)	361 (76%)	<b>0 .001*/ .001</b>
Unmet	294 (19%)	158 (19%)	136 (19%)		107 (20%)	71 (13%)	106 (24%)	

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 6.13). The graph also indicated that while Igbo ethnic group had the lowest, whereas Hausa and Yoruba showed no significant differences.

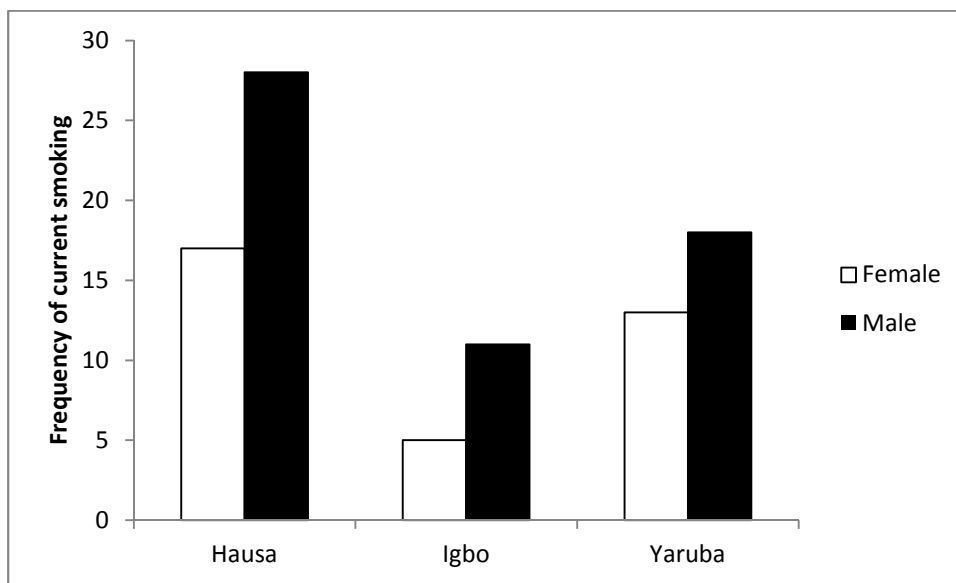


**Figure 6.16 Frequency of met and unmet daily intake of fruits by ethnicity**

With regard to daily servings of vegetables, the result showed no significant differences between male and female students in the sample, (Table 6.7). 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 6.7), 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 6.7) 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

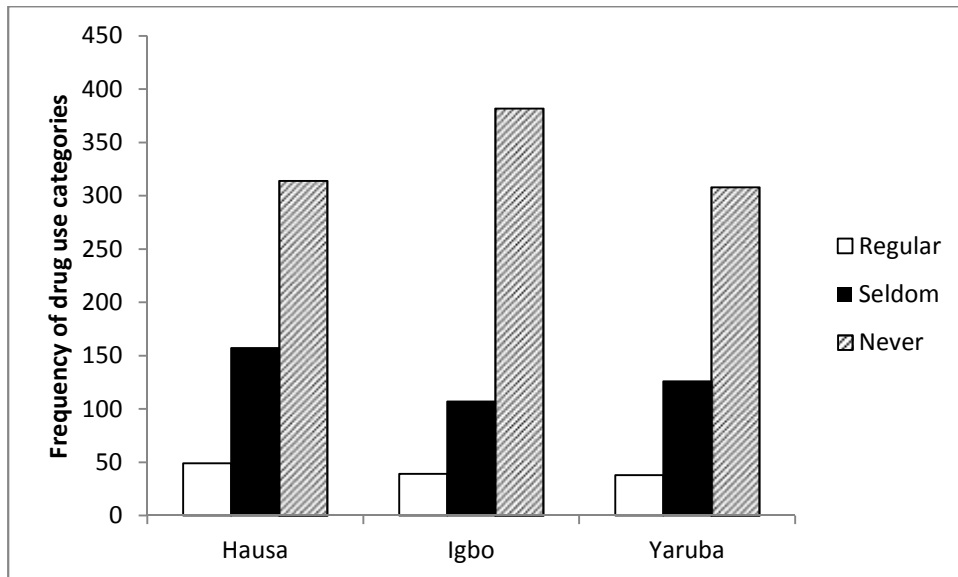
smoked more, Igbo females also smoked the least. These analysis are presented graphically in (Figure 6.14) showing frequency of current smokers by sex and ethnic groups. The graph shows that while Hausa ethnic groups had more students in both male and female that are current smokers, The Igbo ethnic group had the lowest number of students in both male and female that are current smokers.



**Figure 6.17 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 6.7). 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 6.7), 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 6.15) with Hausa showing highest use of drugs and Igbo the least. Igbo also had more students who had not tested drug.



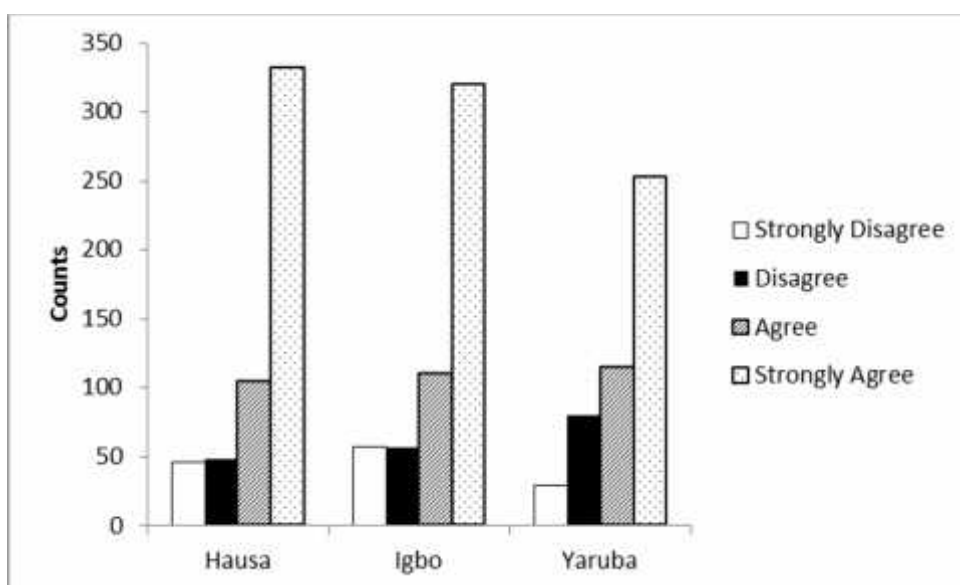
**Figure 6.18 shows drug use categories by ethnicity**

With regard to physical activity (6.7) three categories were investigated which are vigorous, moderate and mild. Table 6.8 shows that a lower number of students (30.1%) met the recommended level of vigorous activity, whereas a greater number of students' seemed to participate in mild physical activity such as domestic work. The result also indicated that while more students are disengaging with vigorous physical activity, more students are showing interest in mild and moderate activities (Table 6.7).

When Chi-square analysis was conducted, the result showed no sex or ethnic significance in the vigorous physical activity category. Although the effect size for the three physical activity categories was insignificant (Table 6.7). On the other hand, both the mild and moderate activities, showed no significance differences by sex, but showed significance differences by

ethnicity where the Yoruba ethnic group had the lowest scores in both the moderate and the mild physical activities compared to Igbo and Hausa. With regard to keeping a healthy campus environment, gauged with no smoking and no alcohol on campus (Table 6.7). When the categories of those who agree and those who strongly agree that there should be no smoking on campus, the overall sample showed that (76%) of the sample supported banning smoking on campus. However, when the analysis was conducted for gender and ethnic, the result showed significant differences where females are more than males, and more Hausa than Igbo and Yoruba.

On the other hand (79%) of the sample supported alcohol ban on campus. When the analysis was examined by sex and ethnic, the result showed no significant differences between male and female students, whereas among ethnic groups, more Hausa reported banning alcohol on campus than Igbo and Yoruba. The analysis is shown graphically in (Figure 6.16). It shows that majority of the students from the Yoruba ethnic group, did not support banning the use of alcohol on campus.



**Figure 6.19 Frequency of attitudes towards alcohol on campus by ethnicity**



## CHAPTER 7 DISCUSSION OF THE RESULTS

### 7.1 Summary of the key findings

The key findings from the present study regarding the distribution of health status and lifestyle behaviours of Nigerian students by sex and ethnicity are listed below. These findings are further discussed in detail within the context of the previous literature in this chapter.

- Socioeconomic status: Sex and ethnicity effects were found for monthly income. Further analysis suggested that irrespective of ethnicity, more females had higher monthly income than males, and the Hausa ethnic group had higher income than the other groups, while Yoruba had the lowest monthly income, compared to other ethnic groups. A sex\*ethnicity interaction effect was found for social support. Further analysis showed that Hausa females reported better social support than other groups and Igbo females had the lowest. Among males, the result indicated no differences in social support across the three ethnic groups.
- Physical health indicators: Sex and ethnicity effects were found for regularity of seeing GP and for taking regular medications. Irrespective of ethnicity, more females than males saw their GP and had more regular medications. Further examination of the data, suggested that more Hausa students had seen their GP recently and more Hausa female students reported regular medications. More Igbo males had regular medications than other groups, while the Yoruba ethnic group saw their GP less frequently and Yoruba males had the lowest frequency of medications than other groups.

Body mass index: Sex and ethnicity effects were found for BMI. More males were overweight or obese than females. More Yoruba males and Hausa females were overweight or obese, than those in other ethnic groups.

- Mental health: Sex and ethnicity effects were found for depression and more females had depression than males. Further analysis suggested that Hausa and Igbo females were largely responsible for this gender differences. There was little sex differences in the Yoruba ethnic group. In addition, Hausa females and Yoruba males reported depression more than those in the other ethnic groups did.
- Health complaints: Sex and ethnic effects were found for health symptoms, and the result showed a higher incidence in female students. Further investigation suggested that Hausa students had more psychological health problems while Igbo and Yoruba ethnic groups had more somatic illness.
- Cognitive health: A Sex\*ethnicity interaction effects was found for self-efficacy, sense of coherence and powerful others locus of control. On self-efficacy, the data indicated that irrespective of ethnicity, males scored better than females. In addition, further analysis showed that more Hausa males and Igbo females had better score and more Hausa females and Igbo males had the lowest score, than other groups. On sense of coherence, more females in general scored better than males.

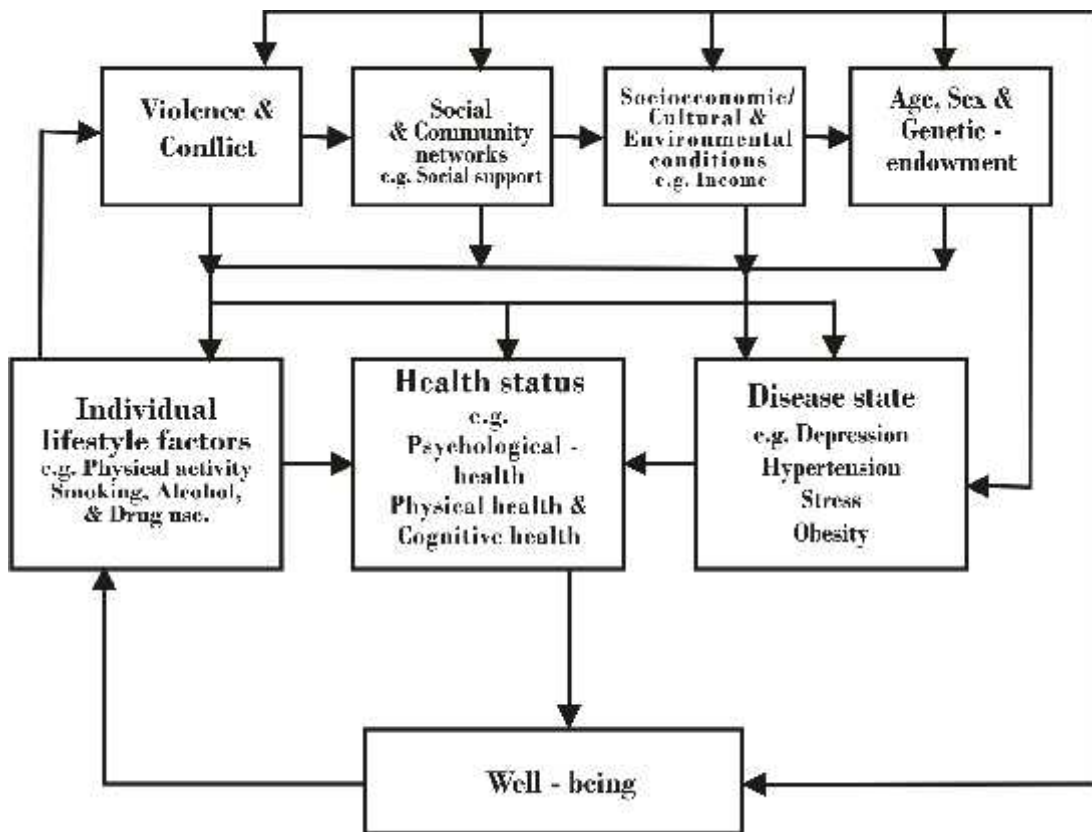
The result also suggest that Hausa males and Igbo females had better SOC and Hausa females and Yoruba males had the lowest SOC score than other groups. On powerful others health locus of control (POHLOC), the overall score irrespective of ethnicity indicated that males scored higher than females. Further analysis of the study suggest that Igbo males scored higher, than other groups and Yoruba males had the lowest score than other groups. There were no regional differences among female students.

- Body image: A sex\*ethnicity interaction effects was found for ideal female body. Further analysis of the data suggest that Igbo males and Yoruba females preferred bigger female body size while Hausa males and Igbo females, preferred small female

body size. Irrespective of ethnicity, the study indicated that more female students preferred bigger female body size than males.

- Lifestyle behaviours: Sex and ethnic effects were found for consumption of fruit and cigarette smoking. Irrespective of ethnicity, the study suggests that more male students consumed fruits and were more likely to smoke cigarette than female students. More Hausa students indicated smoking cigarettes and the Yoruba ethnic group had the lowest consumption of fruits.

**Figure 6.20 The framework of the interaction between determinants of health and the role of violence and conflict based on the outcome of the current study**



## 7.2 Further applications of the theoretical model based on the findings of the study

In the theoretical model that the present study is based (Figure 3.1), Dahlgren and Whitehead (1991), classified health determinants into layers of influence on health. They postulated a

social ecological theory to health, which attempted to map the relationship between the individual, their environment and disease. Individuals are at the centre with a set of fixed genes. Surrounding them are influences on health that can be modified. The first layer indicated personal behaviour and ways of living that can promote or damage health. For example, the choice to smoke or not. The model indicated that individuals might be affected by friendship patterns and the norms of their community. The next layer indicated social and community influences, which provide mutual support for members of the community in unfavourable conditions. Nevertheless, they can also provide no support or have a negative effect. The third layer includes general socioeconomic, cultural and environmental conditions. For example, income status, education, working conditions (Figure 3.1).

Although Dahlgren and Whitehead (1991) indicated in their model the various factors that determine health, operating across different layers called rainbow (Figure 3.1). However, they failed to show how these factors interact with each other, both within and across the layers. Interestingly, the present study has filled this gap in knowledge, by providing evidence of interaction between the health determinant factors both within and across the layers of influence on health. Based on the outcome of the present study, an intellectual framework of the interaction between determinants of health has been constructed to highlight the ways in which different types of factors and forces can interact to bear on different conceptualizations of health (Figure 6.20).

Another significant contribution of the present study was the identification of violence and conflict as a factor in the social determinants of health. The result of the present study shows that violence and conflict interacts with different factors such as individual sex, lifestyles, socioeconomic status (SES), social support systems, cultural and ethnic variables, institutional and religious factors to produce health disparities among the ethnic groups

(Figure 6.20). The aforementioned figure shows that violence and conflict may affect community networks such as social support systems through displacement and death of family members. The current study indicated that the Yoruba students from the western region where there was little violence had a better social support system than students from the other ethnic groups, though the effect size was small (.004). This outcome may be attributed to displacement of people and property, in addition to the loss of close relatives that can provide social support. This also has an impact on students' income as only 39% of the students reported high income > £50 per month (Table 6.1). Similar findings were reported in previous studies such as Mikolajczyk *et al.*, 2008; El Ansari *et al.*, 2011).

In addition, there is evidence that violence and conflict has an impact on students' lifestyles, health status and well-being (Mikolajczyk, 2008; El Ansari *et al.*, 2012). The present study shows that students from ethnic groups where violence and conflict are high, reported negative life styles such as physical inactivity, poor health such as depression, stress and obesity compared to those from low violence regions. For example, students from the Hausa ethnic group reported high incidence of depression (Figure 6.4), life dissatisfaction (Figure 6.5) regular medication (Figure 6.2), psychological related illnesses (6.8) and gastrointestinal related diseases (6.7), compared to students from Igbo and Yoruba ethnic groups, where violence is at least low. If the social environment becomes unsafe, this can influence the mental health status of an individual. A safe environment free from crime is an important factor and contributes significantly to individuals' well-being (Mikolajczyk *et al.*, 2008).

Consequently, the results of the present study indicated that violence and conflict constitute risk conditions which have a direct effect on health and well-being and also affect health through the numerous psychosocial, behavioural and physiological risk factors which they engender (Figure 6.20). Although only few studies have examined the impact of violence on

health, however, earlier studies have shown that violent crime directed at the person is of particular importance as a health determinant (Patrick et al., 1995; Wikinson and Marmot, 1998). Consequently, social and political change, including income redistribution, may be necessary to modify the health experience of university students in Nigeria.

### **7.3 Socio-economic status**

In the present study, students' socioeconomic status was measured with monthly income and social support. More than (60%) of the sample belonged to either the medium or the low-income class with (5%) of the sample reporting their monthly income to be 'sufficient always' (Table 6.1). In contrast to monthly income, more than half of the sample reported having a sufficient social support (Table 6.6). The study indicated that most of the students belonged to the low-income groups. This situation reflected the current general economic situation in Nigeria.

However, since the Nigeria economy depend mainly on oil and agriculture (Nellor, 2008; Aregbesola, 2011), consequently, the current fall of oil price worldwide, is affecting the economy of all the oil producing nations, such as Russia, Iran, Libya, Kuwait (CIA, 2014). This hard economic situation has led to the devaluation of the Nigerian currency (Naira) with the current exchange rate at ₦288 to 1 (CIA, 2014). These austerity measures adopted by the Nigerian government have increased poverty and hardship among Nigerians, especially university students, due to unavailability of vocational or part time jobs for students in Nigeria. Consequently, many students having low monthly income, and many reported their monthly income as insufficient.

In addition, the high cost of living in Nigeria has made most of the students to be reporting income 'always insufficient.' Moreover, the agricultural sector, another source of income in Nigeria is affected by the high rate of violence and killing of farmers who went to their farm

in Nigeria by the militants (Boko Haram) making things very difficult especially for students who depend on family members and friends for financial help. The study also indicated a significant positive social support for the students. This is one of the cultural characteristics of African people to live and participate in community life system (Olibie, *et al.*, 2013). African cultural norms encourages community participation, and extended family system, which can be achieved through blood relationship or belonging to an organised religion, social organization, or trade unions which provide collective support, both financial and emotional support to each other. However, the current study did not ask students specifically to identify the type of support they received (e.g. money in cash, emotional support such as family visits, praying together with members of their church). There is a need for future studies to incorporate a face- to- face interview with a questionnaire so that students forms of social support can be identified and incorporated into a public health campaign programme.

However, interaction effects and main effects for sex and ethnicity, demonstrate that the level of social support and income provided to the students is both sex and ethnicity dependent (Table 6.5 and Figure 6.11) with more female students than male and more Hausa than others having better income and social support. In addition, more Hausa female students reported better social support while Igbo female students had the lowest social support (Table 6.6 and Figure 6.11). The present study is not aware of any other study, which examined the interaction effects of socioeconomic status of students in Nigeria; therefore, the result could not be compared with any other study in Nigeria. However, having more female students on a higher socioeconomic scale in this study than males is a new development in Nigeria and indeed Africa. Previous studies indicated that due to patriarchal African culture, males are more valued than females and females are generally viewed as subordinates to males (Olibie *et al.*, 2013; Omoregie & Ihensekhien, 2013), consequently, the training of boys in school is

given more priority, both financially and morally, than girls in the past. However, in recent times, the value of women in Africa and in Nigeria has improved remarkably, due to the activities of human rights and equality rights activists in Nigeria. Consequently, more women are now being supported and encouraged to go back to school, to avoid early pregnancy, early marriage and ill health (Aregbesola, 2011). The Islamist militants in Nigeria (Boko Haram) are attacking all positive repositioning of women to have equal place among males violently. However, there is a need for more studies to compare the socioeconomic status of students and non-students in Nigeria to narrow the gap of socioeconomic status if it exists.

The present study also indicated socioeconomic inequality based on ethnicity, with Hausa ethnic group having a better socioeconomic status than others (Table 6.1 and Figure 6.11) do. This finding supported previous observations in Nigeria (Anugwom, 2000; Aregbesola, 2011) Northern Nigeria has being the seat of power and Hausa ethnic group have being ruling Nigeria since the time of independence (Okonkwo, 2007; Ogbeidi, 2012). Consequently, Northern Nigeria is better funded and with more employment opportunities, more infrastructure and students from Hausa ethnic origin are more likely to have loans and other advantages such as social amenities and social support, than other tribes in Nigeria (Tignor, 1993; Kalu, 1996; Aregbesola, 2011).

Despite the fact that low income and income insufficiency are such a fundamental aspect of low socioeconomic status, however, the evidence for their role in generating health inequalities is far from complete (Mackenbach & Baker, 2002; Mamort, 2006; Kaya *et al.*, 2007; Mikolajczyk *et al.*, 2008). On the other hand, there is evidence that income- related indicators of socioeconomic status, such as social support, monthly and household income are strong predictors of ill health (Dahlgren and Whitehead, 1991; WHO, 2006; Zawawi & Hamaideh, 2007). There is a sharp contrast between income status among students in



developing countries like Nigeria and those of developed countries. For instance, a study conducted among students from Spain and Germany (Stock *et al.*, 2003) found (72%) and (64%) of students respectively, reported their income to be always sufficient. In developed countries and in most western European countries, students especially university students receive financial aids, through government funding and bank loans which are not available for Nigerian students. Consequently, many students from these countries have sufficient funds for their education, in addition to part time jobs. This makes a poor comparison with the current study where most of the students are mostly self-sponsored. However, it is difficult to compare the findings of the current study to previous research in Nigeria, as this is the first study to examine students' socioeconomic status based on interaction effects and main effects. Moreover, some studies that examined socioeconomic status in Nigeria such as (Omigbodun *et al.*, 2004; Adewuya 2006; Onyechi & Okolo, 2008), are based only on monthly income and on a comparison between male and female students without looking into the interaction effects or main effects.

Consequently, those previous studies among students in Nigeria could not be relied on, by policy makers in understanding the socioeconomic disparity between male and female students within and between regions in Nigeria. For example, the present study was able to show that female students had a better income and social support than male students (Table 6.1 and 6.6). Others have reported similar findings in Nigeria (e.g. Adewuya *et al.*, 2006; Oghagbon, 2009). However, the present study made additional contribution, by finding that although female students had better socioeconomic status in Nigeria, but it was the female students from Hausa ethnic group that reported better socioeconomic indicators (monthly income and social support) whereas female students from the Igbo ethnic group reported the poorest socioeconomic indicators (Table 6.1 & 6.6; Figure 6.11). Such findings are

significant when planning health interventions based on socioeconomic inequalities among students in Nigeria.

#### **7.4. Health awareness**

In the current study, students' health awareness was measured with the parameters: 'keeping an eye on your health', 'seeing a GP,' taking 'regular medication,' and rating of 'general health.' The result of the tests indicated an interesting outcome. For example, the same proportion of students who reported their health to be either, excellent, very good and good, are the same proportion that reported keeping an eye on their health, as either 'not much', 'to some extent', and 'very much' (Table 6.2).

Further analysis of the results showed that within the same sample of (n =1549) students, 50% of the sample reported currently 'seeing their GP', while another 39% of the sample reported being on 'regular medication'. These findings may require further investigation. These findings can only be explained on the basis that students who reported keeping an eye on their health (e.g. by attending screen tests for BP, diabetes, HIV, and counselling services), may wrongly perceive these services as an indication of good health. Similarly, it may also be possible for students who are seeing their GP more frequently, and taking regular medications to see themselves equally as being healthy. This perceptions actually contradicts the (WHO, 1948, p.100) definition of health and well-being, which postulated that, "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"

On the other hand, the main effects for sex indicated that more female students reported monitoring their health than male students including being on regular medication (Table, 6.2, Figure 6.2). However, there are several reasons within the findings of this study, which may support more female students than male seeing their GP and for being on regular medication.

For example, the current study indicated that more female students than male, reported depression (Table 6.3; Figure 6.4), and mental health problems have been reported as one of the commonest reasons why students go to the hospital and for taking regular medications such as anti-depressants or psychotic drugs (Adewuya, 2006; Lindsey *et al.*, 2009). Other studies such as Wardle *et al.* (2004) and El Ansari & Stock (2010) also found that more female students than males reported seeing their GP and taking regular medications. Consequently, Wardle *et al.* (2004) postulated that it might be possible that health awareness may be limited in young men compared with women who always maintain good contact with health care providers.

On the other hand, the current study disagreed with the findings of Mikolajczyk *et al.* (2008) and El Ansari *et al.* (2013) that found gender differences in health rating. Mikolajczyk *et al.* (2008) found that more male students rated their health better than females. On the contrary, El Ansari *et al.* (2013) in a study among students in Egypt found that a higher percentage of female students (86%) compared to (77%) of male students rated their health as excellent/very good. In the current study, there was no significant difference between male and female students in the rating of their general health, with  $P = 0.342$  (Table 6.2).

It is difficult to explain why there was no significant difference between males and females rating of their health, in the present study, despite female students reporting more depression (Table 6.3) taking regular medications, and seeing their GPs more than males (Table 6.2). However, in rating general health for the present analysis, three positive health indicators such as excellent, very good and good health were all combined together, whereas in the study by (El Ansari *et al.*, 2013), they combined only excellent and very good health for their rating, which might be responsible for the difference results between the two studies. However, another possible reason for the lack of significant gender differences in the rating

of general health in the present study, may be related to the lack of gender differences in other health indicators that might predict health status. These health indicators that also showed no gender differences in the present study includes income sufficiency (Table 6.1), blood pressure status (Table 6.2), stress perception, life satisfaction (Table 6.3), drug use and physical activity (Table 6.7). It is possible for a relationship to exist between these variables and the rating of health among male and female students. There is a need for more studies to examine why there is no gender differences in the rating of general health among male and female students in Nigeria.

Moreover, Denton *et al.* (2004) postulated similar explanation, that gender differences among university students health are a consequence of different structural contexts for gender (social support, income availability), lifestyle (exercise, drug use, diets, smoking), psychosocial factors (stress, life satisfaction and psychological resources). In addition, Denton *et al.* (2004) noted that women's health are more influenced by structural and psychosocial factors such as stress and sense of coherence, while men's health was more affected by health behaviours such as drinking and physical activity. In addition, violence and conflict may have contributed to the general outcome of females' poor health, since they produce fear, anxiety, and general insecurity, which may have affected female students more than males.

There is a need to employ mixed methods in a future study that will investigate these variables among university students in Nigeria. The present study is the first to recruit large sample of students (n =1549) across the three main ethnic groups in Nigeria and the first to examine students health in Nigeria on the basis of interaction effects, in addition to simple main effects for sex and ethnic. Therefore, more cultural studies of this nature need to be available so that comparisons of findings can be possible.

However, there are certain factors that need to be considered before comparing the findings of the present study with the studies of Mikolajczyk *et al.* (2008) and El Ansari *et al.* (2013), reported above. Some of these factors include:

\* The ratio of male and females in the sample: In the present study, the difference between the number of males and females participants is not significant compare to the aforementioned studies.

\* Lifestyle factors: In the present study the number of students in both males and females that use drug and/or smoke cigarette are very few compared to the studies of Mikolajczyk *et al.*, 2008) and El Ansari *et al.*, 2013), where alcohol consumption, drug use and smoking was high in both male and female students

\* The rating methods employed: In the current study, all the positive health indicators were combined such as excellent, very good and good health, compared to the studies by (Mikolajczyk *et al.*, 2008; El Ansari *et al.*, 2012) where only excellent and very good health were combined to gauge students rating of health.

\* Cultural beliefs towards health are deeply rooted in Nigeria (Ogunjuyigbe, 2004) consequently, cultural differences must be considered when comparing the results of the present study with some European studies.

Another explanation for the health differences between male and female students reported by previous studies, was that women usually have the tendency to report their health as poor compared to males, and their tendency to see their GP more often by keeping an eye on their health more than male students (Steptoe *et al.*, 2002;Wardle *et al.*, 2004). However, this observation may differ from culture to culture, which may give rise to the different results reported between male and female students from different cultural and ethnic backgrounds.

However, main effect for ethnic indicated that more students from the Hausa ethnic group visited their GP more frequently, than other groups, with more Hausa females taking regular medication than other groups. There may be a relationship between seeing GP frequently, taking regular medication and the high prevalence of depression among the Hausa ethnic groups. This study indicated that students from the Hausa ethnic group reported depression more than other groups (Table 6.3 and Figure 6.4). This health situation among people from this ethnic group may be associated with the high rate of killings, kidnappings, violence, fear and anxiety occasioned by the activities of the Islamist militants in Nigeria called Boko Haram, especially within this ethnic group. In other words, the role of violence and conflict in predicting health and well-being cannot be over-emphasised (Figure, 6.20). Similar health problems were reported among students in the Eastern European countries, during the time of their economic crisis and violent revolutions in the 1990's (Mikolajczyk, *et al.*, 2008).

The result also indicated that the Yoruba ethnic group had the lowest number of students who have seen their GP recently and who are on regular medication (Table 6.2). However, the result also indicated that the Yoruba ethnic group had the lowest monthly income (Table 6.1). Consequently, financial constrains may be responsible for the low number that went to see their GP, since the cost of seeing a GP and the cost of paying for medication in Nigeria is very high, and with little or no health insurance (CIA, 2014) or federal government subsidy on health as explained in Chapter 2.

Therefore, most of the Yoruba students being on a low monthly income may have considered the cost of medical consultation or the payments for medication, and these may have been the main hindrance in going to see their GP and unable to pay for regular medication. This suggests that reducing income inequalities may not only reduce health inequalities but also improve the overall health of a population (Mackenbach & Baker, 2002; Marmot, 2006,

WHO, 2006). Students from this ethnic group may require a special health care arrangement to be put in place for them, or their monthly income should be improved to enable them pay for their health care. In addition, the finding supported the proposition that the availability of social amenities and social support will have a positive impact on health (Dahlgren and Whitehead, 1991; Steptoe *et al.*, 2002; WHO, 2006; Mikolajczyk *et al.*, 2008). However, the low level of violence and conflict in the western region where the Yorubas' are densely populated may have contributed to a better health with low medication compared to the other ethnic groups.

There is a need to repeat the current study in Nigeria among the young adults who are non-students. More so, studies have shown that the health status of university students may have a unique pathway because of the different problems and challenges encountered during university education, especially in developing countries like Nigeria (Adewuya *et al.*, 2006; Zawawi & Hamaideh, 2007 Adebayo *et al.*, 2008; Bayram & Bilgel, 2008). More studies should be encouraged with the analysis based on interaction effect due to the cultural composition and diversity of the people of Nigeria. More so it is difficult to compare the findings of the present study with previous studies in Nigeria, as this is the first study to examine the interaction effects of various health determinant factors in Nigeria.

### **7.5 Body weight and body mass index (BMI)**

The findings of the present study indicated that more than 40% of the sample reported being overweight or obese, (Table 6.2). The analysis indicated sex and ethnicity effects, and irrespective of ethnicity, more males than females reported overweight or obesity. In addition, the study indicated that more Yoruba males and Hausa females reported either overweight or obesity. However, having 40% of the sample (n = 1549) as overweight or

obesity is a public health concern. Several factors may have contributed to the high incidence of overweight and obesity in the current study, such as:

\* Low income: In the present study students, income is very low and majority of the students belonged to the low-income categories of less than just £50 per month (Table 6.1). In addition, the high cost of living in Nigeria in recent time with the introduction of austerity measures by the Nigeria government, to compensate for the falling oil price internationally, makes it impossible for students to meet up financially, their daily needs especially with regard to balanced diets and health care costs. Consequently, students will base their diets on carbohydrates and fatty foods with less fibre, which have being associated with overweight and obesity (Ali & Crowther, 2002; Liu *et al.*, 2003; Onyechi & Okolo, 2008).

\* Physical inactivity: The study indicated that about 70% of the sample of (n = 1549) students are physically inactive. This is a very high figure considering the end- point of overweight and obesity on the future health of students and its impact on public health and funds. However, people have diverse motives for engaging in physical exercise and these are important determinants of exercise participation (Ingledeew & Suillivan). In the current study, there was no motivation for students to participate in physical activity. Students' income was poor and always inadequate. With poor income, the financial responsibility of paying a gymnasium membership fee could be a burden for the students. More so, the high incidence of violence and conflict (Fig. 6.20), in many places in Nigeria produces a climate of fear, and insecurity, which does not encourage out- door physical activities and impacts on a healthy lifestyle hence the high prevalence of overweight and obesity among students in Nigeria.

In addition, participating in exercise requires balanced diet and having conducive environment. In Nigeria, most students cannot afford a balanced diets and the environment is not safe for open air exercise and long distance running due to the activities of the militants



the Boko Haram. Students need to be financially motivated; in addition, the health important of physical activities with regard to obesity and heart attack must be explained to the students.

\* Psychological factors: Previous studies indicated that psychological conditions such as stress and depression might influence eating habits and overeating, which will ultimately lead to overweight and obesity (Doll *et al.*, 2000; Ali & Crowther, 2009; Piers *et al.*, 2003). In the present study, the prevalence of stress and depression is very high (Table 6.3), which may have contributed to the high prevalence of overweight and obesity. Students need counselling and motivations to be engaged in physical activities.

The findings from the present study with regard to the overall sample are higher than some previous studies reported among university students in Nigeria (Onyechi & Okolo, 2008; Achinihu, 2009). However, these differences may be related to differences in measurements and sample size. While the present study was based on objective measurements and large sample size (n = 1549), the studies of (Onyechi & Okolo, (2008) and Achinihu (2009) were based on self -reported data. Consequently, there may have been a serious underestimation of the prevalence of overweight and obesity among Nigeria students due to inappropriate data collection method. There is evidence that studies based on the objective measurements and large sample size are more valid compared to studies based on self-reported height and weight and on a small sample (Cohen, 1983; Steptoe *et al.*, 2002).

Similarly, the proportion of overweight and obesity in the present study is more than what was reported in some other countries. For example, a study by Abolfotouh *et al.* (2007) among university students in Egypt, found that (25.2%) of the sample are overweight or obese. Similarly, among students in Saudi Arabia, Al- Rethaiaa *et al.* (2010) found that (21.8%) and (15.7%) of their sample respectively, reported overweight and obesity. On the

other hand, studies that are based on students from western world reported lower BMI, compared to the findings of the present study. For example, Chamara *et al.* (2007) found that only (3.5%) of students in their study in Poland reported obesity. There are several reasons why the findings of the present study may differ from the findings of the studies reported above. The present study adopted some unique approaches in data collection with regard to the measure of obesity and high blood pressure. This study employed objective measurement of height and weight to overcome the problems of under reporting. Moreover, previous studies found that females have the tendency to under report their height and weight, whereas males usually over report their height and weight (Sakamaki *et al.*, 2005; Mikolajczyk, 2007; 2008 & 2009). Another difference is that in the present study students have poor income and no facilities to encourage physical activities compared to the studies reported in Egypt, Saudi Arabia, or in Poland.

With regard to sex, there were significant differences between males and females ( $P < 0.001$ ), where more male students reported overweight and obesity (Table 6.2). This finding supported many other studies, which showed that female students BMI was smaller than those of male students (e.g. Huang *et al.*, 2003; Al Kandari *et al.*, 2008; Banwell *et al.*, 2009; Mikolajczyk *et al.*, 2010). However, the overall prevalence of low BMI among female students was attributed to the desire of females to have a thin body size than male students and the perception that slim is beauty (Sanlier & Unusan, 2007).

Conversely, a study by Al-Qauhiz (2010) among students in Libya, found that more female students are classified as overweight and obesity. However, concerning Libya, most Muslim countries operate an extreme Islamic law that prohibits women from participating in physical activity in the open space (Al-Qauhiz, 2010). Consequently, it will be more easy for a woman to be overweight or obese in Libya. More so, there is strong evidence, that physical inactivity

are associated with obesity (WHO, 2006; Onyechi & Okolo, 2008; DeBate *et al.*, 2007; Mikolajczyk *et al.*, 2010), this may be one of the reasons while the female students in Libya reported more overweight and obese. However, main effects for ethnic demonstrate that the propensity to be overweight or obese is both sex and ethnic dependent ( $P < 0.001$ ). This study found that more Hausa females and Yoruba males were more likely to be overweight or obese compared to other groups. The underlying reasons for these findings are not clear but may be related to socio-economic status, Psychological factors and lifestyle factors. The present study indicated that the Hausa females had the highest monthly income and social support and the Yoruba ethnic group had the lowest monthly income, among the three ethnic groups.

There is evidence that both high and low socioeconomic status was associated with overweight and obesity (Puoane *et al.*, 2002; Mohan; 2004; Mbada *et al.*, 2009). In the present study, the Hausa had the best income and social support than the other groups and the Yoruba ethnic group had the lowest income and social support. Mbada *et al.* (2009) found SES to be inversely related to Weight and BMI ( $p < 0.001$ ) among the general population in Nigeria and reported that subjects in the low socioeconomic class had higher prevalence of obesity, similar to what the present study found among the Yoruba ethnic group (Table 6.1 & 6.2 & Figure 6.11).

Consequently, Chukwuonye *et al.* (2013) observed that the effect of socioeconomic status (SES) on the prevalence of obesity may be mediated by low income which will limit the availability of healthy food options. However, there are studies from other African countries, and other third world countries that observed higher prevalence of obesity in the higher SES class ((Puoane *et al.*, 2002; Mohan; 2004; Chukwuonye, *et al.*, 2013), similar to what was found among the Hausa ethnic group in the present study. A possible explanation for this

phenomenon in addition to cultural differences and values is that people who are better financially tend not to engage in manual labour and prefer office work, watching TV, and sleeping which encourages weight gain (puoane, 2002). There was no study among the university students in Nigeria that can be comfortably be compared with the findings of the present study, because no study was found in the literature review that examined students by sex and ethnicity in Nigeria. However, the important of overweight and obesity have being reported as a public health issue among university students (Huang *et al.*, 2003; Doll *et al.*, 2005; Onyechi and Okolo,. 2008; Al Kandari *et al.*, 2008). There is a need for more studies among university students in Nigeria, based on longitudinal study and a face- to face interview that will help to identify other associates of students overweight and obesity. This finding indicated the need to adopt different approaches in planning intervention of overweight and obesity among Hausa and Yoruba ethnic groups in Nigeria.

## **7.6 Depression**

The prevalence of depression in the current study is high, the overall sample indicated that 30% (n = 1549) of students reported depression. The analysis indicated main effects for sex and gender, with more females irrespective of ethnicity reported depression than males. The reasons for the high prevalence of depression in the current study might be related to the observations, that university education in Nigeria is associated with difficulties (Omigbodun *et al.*, 2003, Adewuya, 2006). Some of these difficulties are related to: poor income status, income insufficiency, poor health and poor accommodation, violence within university campuses by Islamist militants, in addition to poor infrastructure facilities (Omigbodun *et al.*, 2003; Adewuya *et al.*, 2005; Sanya *et al.*, 2009; Salami, 2010). More so, the present study have indicated the various ways by which violence and conflict can affect health status (Fig. 6.20).

However, an earlier study of depression among university students in Nigeria by Adewuya (2006) showed that only (8.3%) of the sample reported depression. However, Adewuya (2006) measured students depression with the MINI, which is used mainly for hospitalised patients in measuring chronic and pathological depression (Pinninti *et al.*, 2003). This may in part account for the low prevalence of depression reported in the Adewuya (2006) study. However, Adewuya (2006), conducted his study when there was less terrorism and violent attacks on students in Nigeria, compared to the present time, when to be a student in Nigeria is to live daily in constant fear of being killed or abducted by the militants Boko Haram that want all forms of western education to be banned in Nigeria.

Therefore the climate of fear occasioned by the activities of Boko Haram among university students and the differences of items used to gauge depression between the present study and that of Adewuya (2006), may have contributed to the high prevalence of stress and depression in the present study compared to the study of Adewuya (2006), more than a decade ago. On the other hand, a study among students from different European countries by Mikolajczyk *et al.* (2008) found that (34%) of Germans (34%) of Polish and (39%) of Bulgarians reported depression with depressive score 35. Students' depression in the current study is slightly lower when compared to those European countries reported above.

With regard to the studies of Mikolajczyk *et al.* (2008), the difference in the prevalence of depression between the present study and those European data, may be attribute to cultural differences in the perception and interpretation of stress and depression, lifestyle factors (e.g. drug use, smoking, alcohol consumption), and the health effects of religious affiliation. In the present study, students use of alcohol, drug, and smoking is lower than what was reported by Mikolajczyk *et al.* (2008), and their lifestyle factors have been linked with high depression (Vickers *et al.*, 2004; Adewuya 2006; Zawawi & Hamaidel, 2007; Lindsey *et al.*, 2009).

In addition, in the present study students indicated high interest in religious participation unlike the European study reported by (Mikolajczyk *et al.*, 2008). More so, there is evidence that religious affiliation and activity show negative relationship with depression and psychological illness (Francis *et al.*, 2004; Ying, 2009; Idehene & Ojewumi, 2010). When students depression was compared by sex, there was a significant differences between male and female students ( $P= 0.001$ ) where female students reported depression more than male students (Table 6.3). There are several indications that showed women's health to be poorer than those of men's in the current study. For example, more female students saw their GP and more are on regular medication compared to male students. It may be that their general health condition, in addition to the cost of seeing GP more frequently or the stress and cost of maintaining regular medication (Table 6.3; Figure 6.2), may have contributed to the higher prevalence of depression among female students in the current study.

Another reason may be due to the consequence of female education by Boko Haram that are abducting and killing especially female students in Nigeria sending waves of terror across Nigeria (Adebayo, 2014). In addition, cultural norms where females are expected to do all the home works alone together with their academic work. Other studies have also found that more female students reported depression than male students. For example, in Nigeria, Adewuya (2006) and Aniebue and Onyema (2008), found that female students are more likely than males to experience depression. Similarly, the present study supported the result of a study in a Taiwan university by (Chang, 2007) which also found that female students were more likely to seek professional psychological help than male students, an indication of depressive symptoms.

However, Abdel-Khalek and Ansari (2004) argued that female vulnerability to mental health problems is associated with a type of genetic predisposition, rather than purely

environmentally sex differences. Other studies postulated that women in general are more prone to over report medical symptoms than men (Abdel-Khalek & EL Ansari, 2004; Stock *et al.*, 2007). Although, certain factors have been reported to increase stress and depression among university students, such as financial problems (Kaya *et al.*, 2007; Zawawi *et al.*, 2007; Bayram & Bilgel, 2008; Mikolajczyk *et al.*, 2008); chronic illness (Lindsey *et al.*, 2009; DeRoma *et al.*, 2009). Consequently, there is a need for more research on students' depression, especially in a multi-ethnic nation like Nigeria. The main effect for ethnicity showed that more Hausa females and Yoruba males reported depression more than other groups (Figure 6.4). However, the result indicated that both male and female Yoruba students had the same score in depression. The underlying reasons for this data are not clear. However, with regard to Hausa females, the result indicated that they were more likely to be overweight and obesity, drug use and smoking, more than other groups (Figure 6.3; 6.14 & 6.15), these factors were found to be associated with depression (Adewuya, 2006; Stock *et al.*, 2009). Students from this region also experience more violence than those from other parts of Nigeria, which may potentiate the high prevalence and of depression (Fig. 6.20).

More so the Hausa female students had the lowest score on cognitive health indicators (Figure 6.7; 6.8 & 6.9), which has also been reported to be associated with depression (Yin *et al.*, 2007; Gajdosova *et al.*, 2009; Salami, 2010). However, it is important to include motivation of Hausa female students on cognitive health, when planning mental health interventions for this group. In addition, the overall sample indicated that more Hausa ethnic group rated their health as excellent, female students inclusive. It is evident that students who always want to maintain excellent health are prone to high stress and depression and this may be related to high financial cost, and the stress of always taking medication or going to see the GP (Omibgodun *et al.*, 2004; Adewuya *et al.*, 2006; Mikolajczyk *et al.*, 2008, El Ansari *et*

*al.*, 2011; 2012). On the other hand, the reason why Yoruba male students reported depression more than other male groups, is difficult to explain. However, the kidnappings might be accounted with the fact that the Yoruba ethnic group had the lowest income, with the male students having the lowest score on sense of coherence scale, compared to other groups. There is evidence, that low income and financial problems (Kaya *et al.*, 2007; Zawawi & Hamaideh, 2007) and low sense of coherence (Ying *et al.*, 2007; Gajdosova *et al.*, 2009), are both associated with high depression. However, because of the uniqueness of the present study, it is difficult to compare the findings of the study to previous research as this is the first study that examined students depression by gender and ethnicity in Nigeria. On the other hand, more studies are required in order to explain the high prevalence of depression among Hausa females, Igbo females and students from Yoruba ethnic group (Figure 6.4), which cannot be conclusively explained by the findings of the current study alone, in order to plan appropriate intervention for this particular groups.

### **7.7 General health complaints**

The result showed that on average (10%) of the sample reported very often to each of the health complaints examined (Table 6.4). The Igbo and Yoruba ethnic groups reported more of somatic symptoms (Table 6.7). The findings indicated that fewer students in the sample reported health problems compared to what was reported in other countries. For example a study by von Bothmer and Fridlund (2003) among students in Sweden found that (52%) of students reported headache, (51%) reported neck pain, (34%) reported stomach pain and (22%) reported sleep disorder. Similar findings was reported among Egyptian students by (Abolfotouh *et al.*, 2007) and in Jordan by (Hamdan-Mansour *et al.*, 2007).

However, epidemiological studies showed that tropical Africa, and developing countries suffer more of infectious and communicable diseases, whereas developed countries like



European nations have more of non-communicable diseases (WHO, 2001; 2002 & 2006). Another factor that may contribute to the difference and high score of Swedish students may also be related to the differences in socioeconomic differences between the two countries which may influence lifestyle behaviours such as use of drugs, smoking, alcohol consumption, and frequency to night clubs. When the analysis was compared by sex, there was evidence that female students had more of the complaints than males, and the differences were mostly significant. The study indicated that female students' health was poorer than those of male students are. However, more female students indicated visiting their GP more often, taking regular medication and reporting depression more than male students did (Table 6.2; 6.3 & Figure 6.4). These are evidence of poor health. However, cultural norms that may contribute to female stress and depression, such as combining high academic workload with the demand of domestic work such as taking care of children and husband, or other family members, which are considered female duties, may contribute to the overall poor health of female students in Nigeria.

Similar findings of poor health among female students were also reported in other countries (e.g. Stock *et al.*, 2003; Abolfotouh *et al.*, 2007). These studies failed to provide reasons for the disparity between male and female students (2005). However, Steptoe *et al.* (2002) argued that, female students may be finding the strains and stresses of university life more difficult compared to their male counterparts. In addition, Steptoe *et al.* (2002) argued further that female students usually believe that their health is poorer than those of male students and these may affect their responses to health questionnaires.

When the health symptoms were grouped into factors, the health outcome was different. For example, with regard to pain related factors (Fig. 6.9), among female students there was no significant differences, whereas among male students, Hausa reported low pain related

complaints compared with the other ethnic groups. With regard to female students, it may be possible that the impact of menstrual pain, which is not the focus of the present study, was viewed equally as a problem. It is important to include menstrual pain in a future study among Nigeria students. On the other hand, despite the high violence in the Northern region, the Hausa male students reported less pain compared to other ethnic groups. The reason may be due to other factors, which requires investigation, in addition, to the fact that they may have being used to pain and stress that they could no longer grade minor somatic pains as a problem, due to high incidence of violence and bomb blasts occasioned by Boko Haram in the Northern region.

On the other hand, the analysis of gastrointestinal (GIT) related problems, showed that more female students from the Hausa ethnic group reported GIT problems than other ethnic groups, whereas, their male counterparts reported low GIT related problems compared to other ethnic groups (Fig. 6.7). However, other studies have reported that female health are usually poorer than those of males (Mikolajzyck *et al.*, 2008, Steptoe, 2002). The current study also found that the health of female students was poorer when compared to their male counterparts, especially female students from the Hausa ethnic group. The reason may be due to unhealthy lifestyles, poor environmental conditions, fear, anxiety, and the destruction of existing health care infrastructures in the Northern region by Boko Haram, which may be affecting females more than males. The current study has provided interaction pathways for the first time showing how violence and conflict can affect health status and lifestyle behaviours in Nigeria (Fig. 6.20). More studies are needed on the effect of violence on students health in Nigeria.

### **7.7 Cognitive health**

Cognitive health was measured with three items: general self-efficacy, sense of coherence and locus of control (Table 6.5). A gender by region effects was found for self-efficacy and

the data indicated that irrespective of ethnicity, males scored better than females. In addition, further analysis showed that more Hausa males and Igbo females had better scores than other groups and more Hausa females and Igbo males had the lowest scores, than other groups. On the other hand, sense of coherence analysis indicated interaction effects and irrespective of ethnicity, more females in general scored better than males. Further analysis suggest that Hausa males and Igbo females had better SOC scores and Hausa females and Yoruba males had the lowest SOC scores than other groups. The study indicated that cognitive health factors are both sex and ethnicity dependent, but why male students had better self-efficacy and females' better sense of coherence is difficult to explain, and requires more studies. However, the result of the present study suggested that Hausa males and Igbo females had better cognitive appraisal (Figure 6.7; 6.8; 6.9; 6.10).

Though there is no direct evidence of the effect of cognitive factors on students health, in the present study, only possible explanations can be considered. The study suggested a possible relationship between better psychological and physical health with better scores in cognitive health. For example, the Hausa female students had the lowest scores in both sense of coherence and self-efficacy, compared to other groups and consequently they reported the worst possible health outcome among male and females in any ethnic group. Conversely, the Hausa males, had the best scores in both the sense of coherence and self-efficacy, and the lowest score on the powerful others health locus of control (POHLOC) and consequently this group, reported the best possible health outcome among male and females in any ethnic group.

However, when Igbo males and Yoruba males were examined closely, with regard to the health impact of cognitive factors, a unique health outcome was found. The study found that while the Yoruba male students had the lowest sense of coherence, this group reported the

highest overweight and obesity, highest depression, and the lowest scores on life satisfaction, than other groups. On the contrary, the Igbo males scored the lowest on the self-efficacy scale than other groups, but at the same time the result suggest that this group had the highest score on wellbeing and life satisfaction scales, and low depression. The above findings suggest that it is the sense of coherence rather than self-efficacy that is associated more with both psychological and physical health. Similar findings were reported by previous studies (e.g. Ebert *et al.*, 2002, Ying *et al.*, 2007; Mikolajczyk *et al.*, 2008). However, there are other factors to be considered, before further interpretations of the above findings. For example, the study indicated that Igbo male students are the highest on regular medications, while Yoruba male students are the least on regular medications compared to other groups.

Consequently, it is possible that the Igbo male students used drugs to maintain their health, which must have had interference to the actual effects of cognitive factors on the health outcome on both groups.. Although there are evidence that sense of coherence and self-efficacy were associated with good health, reduced stress and depression, and low scores in health complaints due to its cushioning effects on depression (Mikolajczyk *et al.*, 2008; Gajdosova *et al.*, 2009; Salami, 2010). This needs further investigations.

However, the findings indicated that Hausa males and Igbo females did not support the positive relationship between high cognitive appraisal and increased physical activity reported in the previous studies above. Although in the Nigeria situation, other factors such as lack of motivations for physical activities, fear and anxiety attributed to high incidence of violence and terrorist attacks on schools and universities in Nigeria by the Boko Haram may have contributed in the differences observed. Similarly, Salami (2010) in a study among students in Nigeria (n = 241) found that higher depression among the students was associated with low self-efficacy, similar to what was reported among Yoruba male students in the

present study. There is a need for more studies on effects of self-efficacy on students health in Nigeria.

### **7.9 Body image perception**

In the current study, body image was examined under four categories (Table 6.6). The result showed that among this categories only the students current body size was the least, whereas the indications for bigger ideal body size, ideal male size and ideal female size was higher. This finding supported an earlier study by Cogan *et al.* (1996) which reported that students of African origin preferred bigger body size in both males and females. With regard to ideal female size, sex by ethnicity effects was found, and the result showed that irrespective of ethnicity, males preferred bigger female body size than females (mean 5.25 for males and 5.07 for females).

The present study suggest that the preference for big body image among male students might have contributed to more overweight and obesity among this group. More so Previous studies have also reported that male students are less likely to try to lose weight compared to female students (Wardle *et al.*, 2006). Further analysis of the data suggest that Igbo males and Yoruba females indicated more preference to big female body size compared to other groups, while more Hausa males and Igbo females preferred small female body.

In the current study, the Yoruba ethnic group showed lower fruits intake, and are more physically inactive and consequently reported high overweight and obesity (Table 6.7). These unhealthy behaviours have being associated with overweight and obesity reported in previous studies (e.g. Onyechi and Okolo, 2008; El Ansari *et al.*, 2011). It is important to understand how body dissatisfaction affects adolescents and young adults because their feelings about their bodies can have an effect on their health behaviours into their adult years (Wilkoosz *et*

*al.*, 2011). Moreover, this is the first study among students in Nigeria that was based on ethnicity and interaction effects. There is a need for more studies of body image perception among students from different ethnic groups in Nigeria so that studies can be compared.

### **7.10 Fruits and vegetables consumption**

In the current study, the result suggest that a reasonable number of students (66%) met the recommended number of fruits and vegetables consumptions (Table 6.7). 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; Mikolajczyk *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 6.7 and Appendix 10). 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 6.1). 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. Therefore 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.

### **7.11 Physical activity**

The findings of the current study with regard to physical activity showed that while only (30%) of the sample indicated participation in vigorous physical activity, more than (70%) of the sample were involved in mild and moderate physical activities. In other words, the study indicated that most of the students in the sample are physically inactive (Table, 6.7). On the other hand, the result showed that the physical activity levels reported by the majority of the students underscore the international recommendations of physical activities relevant for health (WHO, 2007). Surprisingly, published studies on physical activities among university students in Nigeria are few, and comparisons very limited.

However, the proportion of students who had low vigorous activity in the current study are more than what was reported by a similar study among university students in Nigeria by (Onyechi & Okolo, 2008) which shows (35%) of students participated in vigorous activity for more than 30 minutes/day for more than four days in a week. The differences between the above mentioned study and the present study may be related to high insecurity in the present day Nigeria, where no particular place is safe from the Boko Haram attack. In addition, lack of motivation for students, due to poor income makes students to think of their daily meal rather than spending their time on physical activity. Onyechi and Okolo, (2008) postulated another possible reason why physical activity rate is decreasing among university students in Nigeria, is students lack of time for physical activity.

In addition, there is evidence that physical activity among university students is below recommended levels in a substantial proportion of students and that the health awareness of the importance of physical activity and wellbeing is lacking. There were no sex and ethnicity effects with regard to vigorous physical activity (Table 6.7). The possible reason for the



absence of any relationship between sex and ethnicity with vigorous physical activity among students in the sample is difficult to establish, and indicated the need for more studies.

Consequently, there is a need for more studies based on both cross sectional studies and face-to-face interview to establish the direction of the distribution of students' physical activity in Nigeria. In addition, the findings of the current study did not support earlier studies (de Quadros *et al.*, 2009; El Ansari *et al.*, 2011) that male students reported higher physical activity than female students. However, the low level of physical activity reported among students in the present study is of public health concern. The World Health Organization (2002) indicated that participating in adequate physical activity and maintaining a normal body weight are the most effective ways of preventing many chronic diseases including hypertension, arthritis, obesity, heart diseases, and diabetes.

### **7.12 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 (6.7). 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 6.7). 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.

### **7.13 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.

#### **7.14 Healthy campus environment**

With regard to keeping the university environment healthy, two common behavioural variables among students was employed: alcohol and smoking. The study indicated that a high percentage of students overall preferred a healthy campus environment with over (86%) and (74%) wanted both smoking and alcohol use to be banned respectively (Table 6.7). However, a similar study conducted among university students in Egypt reported a greater percentage of students (87.3%) strongly agree for total smoking and alcohol ban in university campuses in Egypt. However, Egypt has more majorities of Muslims and an Islamic state unlike Nigeria that is a secular state. The result indicated sex and ethnicity effects with regard to banning smoking on campus, with more female students indicated banning smoking on campuses. Smoking is perceived culturally in Nigeria as males affair and seeing women smoking in certain areas of Nigeria may lead to persecution stigmatisation even stoning to death.

However, previous studies indicated that an increasing number of women are smoking cigarettes in Nigeria. (Adewuya *et al.*, 2006; Fawibe & Shittu, 2011), this might be related to urbanisation, globalization and migration. With regard to banning alcohol on campus, the analysis indicated main effects for ethnicity but not for sex. The result suggests that more students from the Hausa ethnic group wanted both smoking and alcohol use be banned on universities in Nigeria (Table 6.7; Figure 6.16). The possible explanation for this attitude is that the Hausa ethnic group are Muslims and there are various prohibitions among Muslims in the use of alcohol, drugs and smoking. However, there is strong evidence supporting smoking bans and restrictions as effective public health interventions aimed at decreasing exposure to second hand smoke (Moran *et al.*, 2004; Nichtcher *et al.*, 2006).

The findings of the present study indicated very strongly that both male and female students supported banning of smoking and alcohol on all the campuses in Nigeria (Table 6.7). However, the current study is the first to investigate students' opinion on healthy university environment in Nigeria. This study shows that there is a great support by students in Nigeria to ban alcohol and smoking in universities in Nigeria. More so the study suggests that the use of drug and smoking among students in the current sample is very low compared to previous studies in Nigeria. However, these negative attitudes towards alcohol and tobacco use on campuses may be attributed to health promotion campaigns by the public health departments in Nigeria. There is a need to continue educating students on the negative health impacts of smoking, drug use and alcohol consumptions, and continuous research among students as a follow up studies to be monitoring students' health behaviours changes. Although, there is a low level of smoking and drug abuse among students in Nigeria, it is important for more studies to evaluate how violence and conflict can affect lifestyle behaviours. This studies will project how early intervention can be planned to bring a positive lifestyles even in the midst of violence and conflict in any part of Nigeria, based on the interaction pathways shown on (Fig. 6.20).

## **CHAPTER 8 CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS**

### **8.1 Conclusions**

This study focused mainly on the prevalence of health status and health behaviours, and prevalence of these factors by sex and ethnicity in Nigeria. The uniqueness of the present study is that, for the first time, students data were analysed with interaction effects and main effects in Nigeria. Consequently, literature evidence indicates that the findings from this study have not been presented in Nigeria, which makes comparison with previous studies difficult. However, the multi-ethnic and multicultural composition of Nigeria, demands an understanding of how they interact with sex to determine health inequality by sex and ethnicity in Nigeria, especially among university students, for the first time.

The result of the study indicated that the prevalence of health status and lifestyle behaviours among the sample differs between male and female students (main effect) and most important, these differences exist, between ethnic groups and within the same ethnic group (interaction effects). These findings are unique as it suggests that a linear intervention plan for students in Nigeria will not be effective unless it is based on specific targeted groups. For example, intervention for depression among Hausa female is students, or intervention for low income among students from the Yoruba ethnic group, must be specific for these groups.

The result indicated no differences between male and female students, with regard to reporting depression among students from the Yoruba ethnic group. This finding is unique as no similar report was found in previous literature, and the present study is not able to provide an adequate explanation. However, to provide better interventions in the future, it will be important to gain a better understanding of the factors surrounding the mental health condition of Yoruba students by conducting future research on the Psychological health

among this ethnic group in Nigeria. On the other hand, the analysis of student's health status and lifestyles based on the overall sample, which presented the answers to objective one and two, showed different outcomes. With regard to student's health status, the study indicated high stress, depression and obesity. Interestingly, previous studies have demonstrated a direct association between stress, and depression, and between depression and obesity (Bayram & Bilgel, 2008; DeRoma, *et al.*, 2009). The reasons for high stress and depression among students in this study is difficult to explain, however, there is evidence to suspect low monthly income, the hard economic situation in Nigeria, in addition, to the violent campaign against education in Nigeria by the Islamist militants Boko Haram

Moreover, the terror activities initiated in Nigeria by Boko Haram and other militants has been found to increase fear and anxiety (Adebayo, 2014) which may have contributed to high stress and depression among the students, as they try to balance the effects of domestic factors with their academic related workload. It is important for future research among students in Nigeria to determine whether interventions designed to enhance income status are more suited to those designed to enhance motivations for psychological health, in combating depression and overweight and obesity among students in Nigeria.

Another interesting finding in the present study is that though students reported high depression, in addition to overweight and obesity, yet, a good number of students perceived their general health as excellent, rated their life events to be well satisfied and had a normal blood pressure. Previous studies indicated a consistent positive association between depression, overweight and obesity, with high blood pressure, poor general health and wellbeing, and life dissatisfaction (Chhabra *et al.*, 2006; Ogbogbon *et al.*, 2009). There are certain factors that may help in understanding while the result of the present study is different. These factors include cultural considerations, such as the community family system

in Nigeria, which encourages social support as opposed to the nuclear family system among the western nations, which might be a potential risk factor in depression. On the other hand, social support during difficult situations insulates the individual from a direct health impact by offering both financial and moral supports (Tam & Lim, 2007; Abolfotouh *et al.*, 2007; Mikolajczyk *et al.*, 2008). In addition, strong ties with organised religion (e.g. Catholic, Anglican, Pentecostal, Baptist, Methodist or Muslim) may have offered students in the present study protection from psychologically related illness (e.g. high blood pressure, depression).

Data from the present study suggested that religious activity was a way of life to the students, and most students indicated affiliation to one religion or the other. More so, studies have shown that religious affiliation and participation has a positive psychological health impact (Koenig *et al.*, 2001; Miller, 2004; Francis *et al.*, 2004; Idehene & Ojewumi, 2010; Constantine *et al.*, 2010). In addition, most students in the current study indicated being on regular medication for various health conditions, this may have contributed to the good health reported by the students in the present study.

It is also important to consider the differences of lifestyle behaviours when comparing students' health status. In the present study most students are on a healthy lifestyles scale compared to what was reported by previous studies (e.g. Adewuya, 2006; Onyechi & Okolo, 2008; Adams & Rini, 2007). For example, in the present study, students reported very low use of drugs and only few students are current smokers which are potential risk factors in mental health problems especially depression (Steptoe *et al.*, 2002; Kenney & Hollahan, 2008; Erdogan & Erdogan, 2009). However, the high prevalence of depression in the present study might be attributed to the effects of socio demographic factors (monthly income, income status, culture and environmental problems) than to unhealthy lifestyles. With regard



to objective 3 and 4, the interaction effects and main effects indicated that the propensity for health status and lifestyles in the present study was sex and ethnicity dependent. This is one of the unique contributions of the present study. By employing interaction effects and main effects in a large sample (n =1549), in addition to direct measurements of BMI and blood pressure, this study presents a valid arguments on the health status and lifestyles of students within and across ethnic groups in Nigeria.

The findings from the study, suggested that the health of female students is poor when compared with those of male students. So many reasons can be attributed to this observation, including the problems and difficulties associated with females education in Nigeria, such as the obstacles imposed by the Islamist militants that banned western education for females in Nigeria (Adebayo, 2014). Another problem is cultural. Women are over laboured in Nigeria, because little value is attached to their life compared to males and consequently female students are forced to combine their high academic workload with the over demanding domestic works, (Olibie *et al.*, 2013; 2012), which may have contributed to their general poor health.

Although more studies are needed to understand the cause of poor health among women, however, there is an urgent need for intervention to protect women from economic, cultural and psychological abuse in Nigeria. Woman's rights, including the right for good education and the right to be considered equal with men must be ensured. This is the duty of the Federal governments of Nigeria, the United Nations Organisation, and the World Council for Women, and other pressure groups in Nigeria. The present study also suggests that Hausa females and Yoruba males had the worst health outcomes that included depression, overweight and obesity.

Possible explanation for poor health among Hausa female students may include difficult conditions of living in the Hausa dominated Northern region due to the life threatening activities of the Boko Haram militants. However, the increasing rate of mental health and obesity among Yoruba male students will require more studies among students in that ethnic group. Although, there is a need for counselling centres to be established on campuses, to take care of students increasing mental health problems. In addition, health education and health promotion programmes on the health implications of overweight and obesity and on the health benefits of physical activities should be initiated.

In addition, the findings of this study suggested that lifestyle behaviours indicated significant associations with ethnicity more than sex. This is a unique finding, because this will determine the direction for future health intervention in Nigeria. The finding indicates the influence of culture and ethnicity as a key factor in health inequality in Nigeria. While more studies are needed to establish this observations, this study suggest that health interventions in Nigeria to be effective should be directed towards ethnicity and cultural changes.

For example, the abuse of women and depriving them of good education is rooted in culture, so also is the banning of women from certain physical activities. These cultural norms may have contributed to poor health reported by female students in the present study. However, due to the uniqueness of this study it is difficult to compare the results with others already existing in Nigeria. Consequently, similar studies are needed in Nigeria among university students in order to compare and to understand the cultural contributions to health inequalities in Nigeria.

## **8.2 Implications for the findings**

### **8.2.1 Implications for practice**

The findings from this study have benefit for future practical application in counselling students by counselling professionals and therapists. The results of this study suggest a possible relationship of depression, overweight and obesity and inactivity, therapists will employ this finding when advising students on the need to be physically active. This study converges with other studies (e.g. Adewuya, 2006; Mikolajczk *et al.*, 2008), in supporting the use of physical activity as an effective component of therapeutic intervention in depression, and obesity. The study also supported the effectiveness of cognitive health indicators (e.g. self-efficacy, SOC) as beneficial in the intervention for psychological health, the present study, suggested that groups with better cognitive health (Hausa males and Igbo females) reported better health. There is a need for health interventionist to map out strategy that will target student's cognitive health as a therapy for psychological illness.

### **8.2.2 Implications for Ministry of Public Health and policy makers**

The outcome of this investigation provides information that can be utilized by the Departments of Health (DOH) and policy makers in Nigeria on the prevalence of illness and lifestyle related risk factors. This will enable for appropriate budgetary allocation for young adolescents health especially students. This will also encourage the Ministry of Health in Nigeria to build more health centres in the campuses and allocate money for the training of counsellors, nurses, cognitive behavioural therapist, nutritionists and psychologist who works to provide information and motivation for students. In addition, it is expected that by adopting the recommendations from this study, the government and other health care givers

in Nigeria will save more money due to early intervention rather than waiting until the disease or disability or death has occurred.

### **8.2.3 Implications for research**

Since the present study is the first to investigate students health status and lifestyles by interaction effects and main effects, and presented information on students health and lifestyles, by regions and within region, there for the findings of the present study will serve as a baseline information for future studies among students in Nigeria. The findings from this study will also provide reference as it stimulates more cultural studies internationally.

## **8.3 Strengths of the study**

### **8.3.1 Sample selection**

A multistage random sampling was employed to achieve representativeness of the studied population. Students were recruited from six universities across Nigeria, across different academic years and disciplines. It is believed that to enhance the strength of a study, representativeness of a population under study is of major importance in sample selection (Cohen, 1992; Dowdall & Weichsler, 2002). In addition, the present study is unique, it is the first study in Nigeria that employed rigorous data analysis involving plotting of interaction effects and main effects to examine students health and lifestyles by gender and ethnicity in Nigeria,

### **8.3.2 Sample size**

The present study employed a large sample (n =1549) compared to most previous studies in Nigeria. The large sample in the current study enabled the various statistical analysis to be carried out. Researchers agreed that a scientifically valid sample of sufficient size is

important to detect small to medium sized effects (Dowdall & Weichsler, 2003; Cohen, 1992). Researchers also argued that when sample size is large, it enhances the power of a test, that is, the ability of a test to identify if there is a difference between the groups under investigation (Cohen, 1992).

### **8.3.3 Range of variables**

Since the present study investigated health status and lifestyles of university students, it employed numerous variables that are reported in literature in the study of students' health Status and lifestyle risk factors. In addition, variables selected for inclusion in the current study was also based on the factors mentioned in the numerous health determinant models discussed in detail in chapter three in the present study. To employ many related variables that was used in other similar studies is an advantage of the current study (Sober, 1981; Chassini *et al.*, 1987).

### **8.3.4 Subjective and objective measures**

Previous studies were limited by recall and selective response bias, which questions the generalizability of such studies (Duncan *et al.*, 2001). The current study employed self-reported measures together with direct measurements of BMI (height, weight) and blood pressure (systolic and diastolic). The present study has an advantage, no study was found in literature that combined such measurements in a large sample of students in Nigeria. This direct measurements may have contributed to the different findings reported in the present study.

### **8.3.5 Use of validated items**

Another advantage of the present study is the use of validated items (e.g. BDI, PSS) that are commonly used in the study of students' depression and stress. The result of the present study

can be compared with similar studies across the world. In addition, using validated items, makes it possible for the current study to be repeated or reproduced by other researchers in Nigeria or elsewhere.

## **8.4 Limitations of the study**

### **8.4.1 Sample limitation**

Participants for the present study were limited to six universities in Nigeria. It should be expected that the experiences and needs of other students might not be accurately reflected by the investigation. Another caution inherent in the current investigation concerns the homogeneity or lack of diversity, of participants. Consequently, since the participants involved only students in higher institutions, the findings may not reflect the true condition of adolescent youths in Nigeria. Additionally, since not all the universities in Nigeria were used, there may be variations between universities that may have been overlooked. Consequently, there is a need for more studies among university students in Nigeria.

### **8.4.2 Instrument limitation**

Another limitation of this study may be due to the self-report nature of the instruments. Due to the instruments relying on the participants' perceptions, the accuracy of the study could be influenced by imprecise self-reports or mistaken perceptions of a situation. Due to participants, trying to anticipate the socially "correct" answer rather than honestly, the reliability of instruments is always a concern in self-report situations. Although overestimation of good health and underestimation of poor health are the general tendency observed by researchers studying different populations, university students inclusive (Duncan, et al., 2001). However to minimize reporting bias, the current study employed both objective and subjective measures.

### **8.4.3 Limitations from the methodology**

The findings of the current study may be limited because of the methodology utilized. Similar to all cross sectional studies, the present study can only be interpreted based on observed associations of variables, and not on cause and effect relationship with a causal interpretability of results. In spite of the various limitations anticipated, the current study took adequate steps in the research process to minimize bias. The large number of participants, the high response rate obtained, the multistage method of sampling, and the full geographical representation of students' population, with a rigorous statistical analysis, makes the current study a true reflection of what may be obtainable among university students in Nigeria.

## **8.5 Recommendations**

### **8.5.1 On the pattern of health interventions in Nigeria**

The findings from this study suggested that students health status and lifestyles are both sex and ethnicity dependent. Consequently, health interventions for university students in Nigeria, should not be generalized. On the other hand, intervention should be based on health need for a specific group. The current study recommends mental health intervention, based on counselling for Hausa females and Yoruba males. It also recommends physical activity for all the students in general, but in particular to Hausa females and Yoruba males that are developing overweight and obesity.

Implications for drugs use and smoking should be discussed with students from Hausa ethnic group, while dietary advice should be provided to students from Yoruba ethnic group. Financial help should be given to all the students with special attention to students from the Yoruba ethnic group. The important of cognitive health should be provided to all the students with special attention to Hausa female students and Igbo males.

### **8.5.2 On health promotion**

The study recommends that university authorities and school health departments be engaged in a coordinated health promotion programs. These programmes should include health awareness and health education, which should be tailored towards promoting positive lifestyles. The important of physical activity and healthy diets as stated above should be emphasized to all the students. In addition, the present study recommends that governments in Nigeria together with the university authorities should establish programs to promote and encourage healthy diet on the campus. There should be video shows on overweight and obesity documentaries, including health awareness, promotion and education seminars. There should be also pamphlets, leaflets and food-based dietary guidelines.

More so, the findings from the current study supports previous studies (e.g., Gan *et al*, 2011, El- Ansari *et al.*, 2011, El- Ansari *et al.*, 2012), in recommending high intake of fruits and vegetables daily for good health. The study also recommends that fitness and exercise programmes be encouraged and be promoted on all campuses in Nigeria. The important of exercise should be the focus of such centres. Students should be encouraged to do juggling and other vigorous exercises for at least (3-4 times) of 30- minutes duration weekly. The current study supported other studies (e.g. Mikolajczk *et al.*, 2008; Onyechi & Okolo, 2008; Bianchni *et al.*, 2009), that physical activity can be used to address preventable lifestyle-related diseases such as obesity, depression.

#### **On counselling students**

The present study recommends that the school authorities should establish counselling centres in all the campuses in Nigeria. Students should be encouraged to report at these centres to be screened for psychological disturbances that may jeopardize their ability to



achieve academic excellence. In addition, the counselling centres should be encouraged to target students' potential weak points in problems solving ability to enhance their mood and self- confident. Similarly, the school support centres should be encouraged to train students in problem solving techniques to enable critical thinking and intellectual functioning. It is the view of the current study that if students can be motivated to the level of problem solving ability and increased self-efficacy, then they can manage their academic related emotional burdens.

#### **8.5.4 Financial support for students**

There should be availability of loans, bursary, and scholarship boards in the campuses where students will be directed for financial advice and solutions. Establishing financial solution boards for students is important since most students reported income insufficiency, which may be related to psychological illnesses and depression. These findings supported previous observations. For instance, Marmot (2006) postulated that health care can be reformed by helping patients manage not just their disease but also common underlying needs such as psychosocial supports, coping skills and sense of control.

#### **8.5.5 On further research**

The present study agrees with the observations made by Thomas & Nelson (1996) that a cross-sectional design puts limits on directional analysis and comments of relationships. It recognizes the need for future study that will repeat the present study using different research designs. First, it recommends the use of longitudinal research designs that may explore the trends like change in smoking and uses and opinions as years pass in school. There may even be a need for a follow up study of the students after graduation, since it is possible for students to continue with unhealthy lifestyles adopted at the university campuses from their

peers. Second, the present study recommends the need for employing qualitative strategy based on face-to-face interview with students' participants. It is believed that this method may yield a different type of data from the students own lived experiences and reasons for not stopping unhealthy behaviours like smoking or sedentary lifestyles despite being aware that such lifestyles are harmful to health. Finally, this study will encourage more studies of this nature that will explore how ethnicity and cultural differences in Nigeria are influencing health inequality among male and female students in Nigeria. The findings from this study, is believed to have fulfilled the research objectives and will be welcomed by research critics and public health scientists in Nigeria.

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## **APPENDICES**

Public Health



### **Appendix 1 HEALTH AND WELL-BEING QUESTIONNAIRE**

#### **STUDENT'S HEALTH**



This section will examine self-reported health, physical health, health awareness and the importance of environmental health

First we would like to ask you about your general health condition. (QUESTIONS 1-6)				
1. How would you describe your general health?				
1. Excellent	2. Very good	3. Good	4. Fair	5. Poor
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. To what extent do you keep an eye on your health?				
1. Not at all	2. Not much	3. To some extent	4. Very much	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Have you seen a medical doctor in the past six months?				
1. <input type="checkbox"/>	2. <input type="checkbox"/> Yes			
4. If yes; how often? 1. 1-2 times <input type="checkbox"/> 2. 3-4 times <input type="checkbox"/> 3. 5-6 times <input type="checkbox"/> 4. 7 and above <input type="checkbox"/>				
5. What were the reasons for seeing the doctor 1. Fever <input type="checkbox"/> 2. Surgery <input type="checkbox"/> 3. Psychological <input type="checkbox"/> 4. others <input type="checkbox"/>				
6. During the past twelve months, have you been so ill that you had to stay in bed?				
1. <input type="checkbox"/> NO	2. Yes <input type="checkbox"/>			
7. If yes; how often? 1. 1-2 times <input type="checkbox"/> 2. 3-4 times <input type="checkbox"/> 3. 5-6 times <input type="checkbox"/> 4. 7 and above <input type="checkbox"/>				
8. What was the illness 1. Fever <input type="checkbox"/> 2. Surgery <input type="checkbox"/> 3. Psychological <input type="checkbox"/> 4. Other <input type="checkbox"/>				
9. Do you regularly take any medication?				
1. <input type="checkbox"/> NO	2. <input type="checkbox"/> Yes,	10. If yes what kind of medication		
1. Anti-pyrexia <input type="checkbox"/>	2. Anti-inflammatory <input type="checkbox"/>	3. Haematinics <input type="checkbox"/>	4. Antibiotics <input type="checkbox"/>	5. Antidepressants <input type="checkbox"/>
6. Others <input type="checkbox"/>				
11. if yes why do you take those medication?				
1. Fever <input type="checkbox"/>	2. Surgery <input type="checkbox"/>	3. Psychological <input type="checkbox"/>	4. Others <input type="checkbox"/>	
12. To what extent do you agree with the following statements?				
	Strongly Disagree	Disagree	Agree	Strongly agree
There should be no smoking at the university-----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alcohol should not be sold at the university-----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is enough healthy food offered at the university-----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks. (WHO WELLBEING INDEXE)

	Over the last two weeks	All of the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
1	I have felt cheerful and in good spirits	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
2	I have felt calm and Relaxed	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
3	I have felt active and vigorous	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
4	I woke up feeling fresh and rested	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
5	My daily life has been filled with things that interest me	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

This section will examine psychological Health

14. The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling how often you felt or thought a certain way. (PERCEIVED STRESS)

0 = Never. 1 = Almost Never. 2 = Sometimes. 3 = Fairly Often. 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? ----	0	1	2	3	4
2. In the last month, how often have you felt you were unable to control the important things in your life? ----	0	1	2	3	4
3. In the last month, how often have you felt nervous and "stressed"? -----	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems? -	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way? -----	0	1	2	3	4
6. In the last month, how often have you found you could not cope with all the things that you had to do? ---	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life? -----	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things? -----	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control? -	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not ----- Overcome them? -----	0	1	2	3	4

15. The following questions refer to your present attitude to life. In every question please indicate how frequently you have experienced the following feelings during the past few days (DEPRESSIVE SYMPTOMS)



	0	1	2	3	4	5
1. I feel sad						
2. I feel discouraged about the future						
3. I feel I have failed						
4. It is hard for me to enjoy things						
5. I feel guilty						
6. I feel I am being punished						
7. I am disappointed in myself						
8. I am critical of myself for my weaknesses or mistakes						
9. I have thoughts of killing myself						
10. I cry						
11. I feel annoyed and irritated						
12. I have lost interest in other people						
13. I put off making decisions						
14. I am worried about my appearance						
15. I have to force myself to do anything						
16. I don't sleep well						
17. I am tired and listless						
18. I have no appetite						
19. I am worried about my health						
20. I lost interest in sex						

## 16. PSYCHOSOMATIC SYMPTOMS (PHYSICAL HEALTH)

The next part is about health problems and various strains in your life.


HOW OFTEN DID YOU HAVE THE FOLLOWING PROBLEMS DURING THE LAST MONTH

	1	2	3	4
	NEVER	RARELY	SOMETIMES	VERY OFTEN
1. Stomach trouble/Heartburn.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Back pain.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Fatigue.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Breathing difficulties.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Trembling hands.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Rapid heartbeat, circulatory problems.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Dizziness.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Diarrhoea.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Constipation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Headaches.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Sleep disorder/insomnia.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Depressed mood.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Difficulties to concentrate.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Abdominal problem.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Nervousness/Anxiety.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Neck and shoulder pain.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**17. TO WHAT EXTENT do you feel burdened in the following areas? (STRESSOR**

						
	Not at All					Very Strongly
	0	1	2	3	4	5
1. Studies in general _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Exams, assignments, presentations _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Lack of practical relevance of studies _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Anonymity at university _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

						
	Not at all					Very strongly
	0	1	2	3	4	5
5. Bad job prospects _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Problems with parents _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Problems with fellow students _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Problems with friends _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Relationship with significant other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Sexuality _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Housing _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Health problems _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Financial situation _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Workload in addition to studying _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Isolation in general _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Isolation at the university _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Lack of time for studies _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Bad working condition _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18.

Please indicate how you use the following styles in COPING with stress No 1-5

1-3 on problem focused coping

(1) Working hard on my academic work.

- 0 = Never
- 1 = Seldom
- 2 = Sometimes
- 3 = Often
- 4 = Most of the time

(2) Doing my assignment in time.

- 0 = Never
- 1 = Seldom
- 2 = Sometimes
- 3 = Often
- 4 = Most of the time

(3) Spending time with my family.

- 0 = Never
- 1 = Seldom
- 2 = Sometime
- 3 = Often
- 4 = Most of the time

4-6 on seeking social support

(4) Getting help from family.

- 0 = Never
- 1 = Seldom
- 2 = Sometime
- 3 = Often
- 4 = Most of the time

(5) Getting help from classmates.

- 0 = Never
- 1 = Seldom
- 2 = Sometimes
- 3 = Often
- 4 = Most of the time

(6) Getting help from spouse partners.

- 0 = Never
- 1 = Seldom
- 2 = Sometimes
- 3 = Often
- 4 = Most of the time

7—12 by using tension reduction

<p>(7) By prayer and meditation.</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>	<p>(8) By involving in religious activities.</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>	<p>(9) By smoking cigarette</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>
<p>(10) By using alcohol.</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>	<p>(11) By staying lonely.</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>	<p>(12) By taking drugs</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>

13- 15 RECREATION AND SPORT

<p>(13) By listening to music</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>	<p>(14) By going to movie</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>	<p>(15) By exercising and playing game.</p> <p><input type="checkbox"/> 0 = Never</p> <p><input type="checkbox"/> 1 = Seldom</p> <p><input type="checkbox"/> 2 = Sometime</p> <p><input type="checkbox"/> 3 = Often</p> <p><input type="checkbox"/> 4 = Most of the time</p>
--	--	--

**19. THIS SECTION ABOUT PSYCHOLOGICAL RESISTANT (COGNITIVE WELLBEING)**

**SENSE OF COHERENCE**

11. Here is series of questions relating to various aspects of your lives. Each question has seven possible answers. Please mark the number, which expresses your answer, with number, with number 1 and 7 being the extreme answers. If the words under 1 are right for you, circle 1 : if the words under 7 are right for you, circle 7. If you feel differently, circle the number which best expresses your feeling. Please give only one answer to each question.

# 1. Do you have feeling that you don't really care about what goes on around you?

4. until now your life has had:

1	2	3	4	5	6	7
No clear goals						very clear goals
Or purpose at all						and purpose

---

5. Do you have the feeling that you're being treated unfairly?

1	2	3	4	5	6	7
Very often						very seldom or never

---

6. Do you have the feeling that you are in an unfamiliar situation and don't know what to do?

1	2	3	4	5	6	7
Very often						very seldom or never

---

7. Doing the thing you do every day is:

1	2	3	4	5	6	7
A source of deep						a source of pain
Please and satisfaction						and boredom

---

8. Do you have very mixed-up feelings and ideas?

1	2	3	4	5	6	7
Very often					very seldom	
						Or never

---

9. Does it happen that you have feelings inside you would rather not feel?

1	2	3	4	5	6	7
Very often						very seldom or never

---

10. Many people- even those with a strong character- sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

1	2	3	4	5	6	7
Never						very often

---

11. When something happened, have you generally found that:

1	2	3	4	5	6	7
You overestimated Or underestimated Its importance						you saw things in the right proportion

---

12. How often do you have the feeling that there's little meaning in the things you do in your daily life?

1	2	3	4	5	6	7
Very often						very seldom or Never

---

13. How often do you have feelings that you're not sure you can keep under control?

1	2	3	4	5	6	7
Very often						very seldom

---

## 20. (SELF- EFFICACY)

The question in this scale asks you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling how often you felt or thought a certain way

1= NOT AT ALL TRUE   2 = HARDLY TRUE   3 = MODERATELY TRUE   4 = VERY OFTEN

1	I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
2	If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
3	It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
4	I am confident that I could deal efficiently with unexpected events.	1	2	3	4
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
6	I can solve most problems if I invest the necessary effort.	1	2	3	4
7	I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
8	When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
9	If I am in trouble, I can usually think of a solution.	1	2	3	4
10	I can usually handle whatever comes my way.	1	2	3	4

## 21. LOCUS OF CONTROL

For each of the following statements, use the scales provided to indicate the extent to which you agree or disagree

<p>(1) If I get sick, it is my own behaviour that determines how soon I get well again.</p> <p><input type="radio"/> 1 strongly</p> <p><input type="radio"/> 2 Moderately</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately</p> <p><input type="radio"/> 6 Strongly Agree</p>	<p>(2) I am in control of my health.</p> <p><input type="radio"/> 1 Strongly Disagree</p> <p><input type="radio"/> 2 Moderately Disagree</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately Agree</p> <p><input type="radio"/> 6 Strongly Agree</p>	<p>(3) When I get sick am to blame</p> <p><input type="radio"/> 1 Strongly Disagree</p> <p><input type="radio"/> 2 Moderately Disagree</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately Agree</p> <p><input type="radio"/> 6 Strongly Agree</p>	<p>(4) The main thing that affects my health is what I myself do.</p> <p><input type="radio"/> 1 Strongly Disagree</p> <p><input type="radio"/> 2 Moderately</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately Agree</p> <p><input type="radio"/> 6 Strongly Agree.</p>
<p>(5) If I take care of myself, I am avoid illness.</p> <p><input type="radio"/> 1 Strongly Disagree</p> <p><input type="radio"/> 2 Moderately Disagree</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately Agree</p> <p><input type="radio"/> 6 Strongly Agree</p>	<p>(6) If I take the right actions I can stay healthy.</p> <p><input type="radio"/> 1 Strongly Disagree</p> <p><input type="radio"/> 2 Moderately Disagree</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately Agree</p> <p><input type="radio"/> 6 strongly Agree</p>	<p>(7) Following doctor's orders to the letter is the best way to stay healthy.</p> <p><input type="radio"/> 1 strongly Disagree</p> <p><input type="radio"/> 2 Moderately Disagree</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately Agree</p> <p><input type="radio"/> 6 Strongly Agree</p>	<p>(6) When I become ill, it's a matter of fate</p> <p><input type="radio"/> 1 Strongly Disagree</p> <p><input type="radio"/> 2 Moderately Disagree</p> <p><input type="radio"/> 3 Disagree</p> <p><input type="radio"/> 4 Agree</p> <p><input type="radio"/> 5 Moderately Agree</p> <p><input type="radio"/> 6 Strongly Agree</p>

## 22. THIS SECTION WILL ASSESS YOUR RELIGIOSITY (16-17)

Please answer the following questions by selecting the one answer that best describes how frequently you engage in the activities

(1) How often do you attend church or other religion or spiritual meets?

- 6 More than once a week
- 5 Once a week
- 4 A few time a month
- 3 A few times a year
- 2 Once a year or less
- 1 Never

(2) How often do you spend time in private religious or spiritual activities such as prayer meditation, or the study of religious texts (e.g., Bible, Koran, Torah, etc.)?

- 6 More than once a day
- 5 Daily
- 4 Two or more time
- 3 Once a week
- 2 A few times a month
- 1 Rarely or never

For the following, use the scales provided to select the single answer that best characterizes how true each of the statements is for you

(3) In my life, I experience the presence of the Divine (i.e., God).

- 5 Definitely True
- 4 Tends to be true
- 3 Unsure
- 2 Tends NOT to be True
- 1 Definitely NOT True

(4) My religious beliefs are what really lie behind my whole approach to life.

- 5 Definitely True
- 4 Tends to be true
- 3 Unsure
- 2 Tends NOT to be True
- 1 Definitely NOT True

(5) I try hard to carry my religion over into all other dealings in life.

- 5 Definitely True
- 4 Tends to be true
- 3 Unsure
- 2 Tends NOT to be True
- 1 Definitely NOT True



23. For this section please use the scale provided to indicate how often, you have had thoughts or feelings like those describe in the following statements NRCOPE

<p>1. I have wondered whether God has abandoned me.</p> <p><input type="radio"/> 4 Not at all</p> <p><input type="radio"/> 3 Occasionally</p> <p><input type="radio"/> 2 Frequently</p> <p><input type="radio"/> 1 A great deal</p>	<p>2. I have felt punished by God for my lack of devotion.</p> <p><input type="radio"/> 4 Not at all</p> <p><input type="radio"/> 3 Occasionally</p> <p><input type="radio"/> 2 Frequently</p> <p><input type="radio"/> 1 A great deal</p>	<p>3. I have wondered what I did for God to punish me.</p> <p><input type="radio"/> 4 Not at all</p> <p><input type="radio"/> 3 Occasionally</p> <p><input type="radio"/> 2 Frequently</p> <p><input type="radio"/> 1 A great deal</p>
<p>4. I have question God's love for me.</p> <p><input type="radio"/> 4 Not at all</p> <p><input type="radio"/> 3 Occasionally</p> <p><input type="radio"/> 2 Frequently</p> <p><input type="radio"/> 1 A great deal</p>	<p>5. I have wondered if my church has abandoned me.</p> <p><input type="radio"/> 4 Not at all</p> <p><input type="radio"/> 3 Occasionally</p> <p><input type="radio"/> 2 Frequently</p> <p><input type="radio"/> 1 A great deal</p>	<p>6. I have decided the devil is responsible for bad things that happen to me</p> <p><input type="radio"/> 4 Not at all</p> <p><input type="radio"/> 3 Occasionally</p> <p><input type="radio"/> 2 Frequently</p> <p><input type="radio"/> 1 A great deal</p>
<p>7. I have questioned the power of God.</p> <p><input type="radio"/> 4 Not at all</p> <p><input type="radio"/> 3 Occasionally</p> <p><input type="radio"/> 2 Frequently</p> <p><input type="radio"/> 1 A great deal</p>	<p>24. What is your religion?</p> <p>1 Catholic      2 Protestant      3 Orthodox      4 Islam</p> <p>5 Other, please specify----- 6 None</p>	

25. If you consider the quality of your life: How did things go for you in the last four weeks?

Very Badly	Badly	SO SO	Quite Well	Very well
1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>	4. <input type="checkbox"/>	5. <input type="checkbox"/>

**26. THE SATISFACTION WITH LIFE SCALE:**

Instruction: Using the rating scale provided below, please indicate your agreement with each item. Place the appropriate number on the line preceding the item. Be open and honest in your responses.

**(1). Strongly disagree (2). Disagree (3). Slightly disagree (4). Neither agree nor disagree (5). Slightly agree, (6). Agree (7). Strongly agree,**

1. In most ways my life is close to ideal	1	2	3	4	5	6	7
2. The conditions of my life are excellent	1	2	3	4	5	6	7
3. I am satisfied with my life	1	2	3	4	5	6	7
4. So far I have gotten the important thing I	1	2	3	4	5	6	7



want in my life.							
5. If I could live my life over, I would change almost nothing	1	2	3	4	5	6	7

## 27. SOCIAL SUPORT

Please write the NAMES that is appropriate to the people that are providing you with support for your education ( e.g., PARENTS, FATHER, MOTHER, BROTHER, SISTER, COUSIN, UNCLE, HUSBAND, PARTNER, IN-LAW, FRIEND, CLASSMATES, LECTURER, CHURCH/ SPIRITUAL LEADER etc.) and tick how you are satisfied by such supports.

1. Whom can you really count on to be dependable when you need help

No one  1----- 2----- 3-----  
 4----- 5----- 6-----  
 7----- 8----- 9-----

2. How satisfied?

6- Very      5- fairly      4- a little      3- little      2- fairly      1- very  
 Satisfied      satisfied      satisfied      dissatisfied      dissatisfied      dissatisfied

3. Whom can you really count on to help you feel more relaxed when you are under pressure or tense

No one  1----- 2----- 3-----  
 4----- 5----- 6-----  
 7----- 8----- 9-----

4. How satisfied?

6- Very      5- fairly      4- a little      3- little      2- fairly      1- very  
 Satisfied      satisfied      satisfied      dissatisfied      dissatisfied      dissatisfied

5. Who accepts you totally, including both worst and your best point?

No one  1----- 2----- 3-----  
 4----- 5----- 6-----  
 7----- 8----- 9-----

6. How satisfied?

6- Very      5- fairly      4- a little      3- little      2- fairly      1- very  
 Satisfied      satisfied      satisfied      dissatisfied      dissatisfied      dissatisfied

7. Whom can you really count on to care about you, regardless of what is happening to you?

No one  1----- 2----- 3-----  
 4----- 5----- 6-----  
 7----- 8----- 9-----

8. How satisfied?

6- Very Satisfied      5- fairly satisfied      4- a little satisfied      3- little dissatisfied      2- fairly dissatisfied      1- very dissatisfied

9. Whom can you really count onto help you feel better when you are feeling generally down- in the dumps?

No one  1----- 2----- 3-----  
 4----- 5----- 6-----  
 7----- 8----- 9-----

10. How satisfied?

6- Very Satisfied satisfied      5- fairly satisfied      4- a little dissatisfied      3- little dissatisfied      2- fairly dissatisfied      1- very dissatisfied

11. Whom can you count on to console you when you are very upset?

No one  1----- 2----- 3-----  
 4----- 5----- 6-----  
 7----- 8----- 9-----

12. How satisfied?

6- Very Satisfied      5- fairly satisfied      4- a little satisfied      3- little dissatisfied      2- fairly dissatisfied      1- very dissatisfied

**29. THE FOLLOWING QUESTIONS REFER TO YOUR FOOD INTAKE**

**PLEASE INDICATE HOW MANY TIMES YOU CONSUME EACH OF THE FOOD GROUPS DAILY (WITHIN THE LAST 24HOURS)**

1. FOOD GROUP	FREQUENCY							
2. FRUIT	0	1	2	3	4	5	6	7+
3. VEGETABLES	0	1	2	3	4	5	6	7+
4. MILK, YOGURT & CHEES	0	1	2	3	4	5	6	7+
5. MEAT, POULTRY FISH, DRY, BEANS, EGGS, NUTS	0	1	2	3	4	5	6	7+
6. BREAD, CEREAL RICE, PASTA	0	1	2	3	4	5	6	7+
7. FATS, OILS	0	1	2	3	4	5	6	7+
8. SWEETS, CHOCOLATE AND SUGAR	0	1	2	3	4	5	6	7+

**30. THIS SECTION WILL ASK YOU ABOUT YOUR MEAL FREQUENCY**

**PLEASE THICK THE FREQUENCY YOU TAKE THE FOLLOWING MEALS**

<b>1. MEAL</b>	<b>ALWAYS/OFTEN 1</b>	<b>SOMETIMES 2</b>	<b>NEVER 3</b>
<b>2. BREAKFAST</b>			
<b>3. LUNCH</b>			
<b>4. DINNER</b>			
<b>5. FASTFOOD</b>			

**31. PHSICAL ACTIVITIES.**

The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that

**1. during the last 7 days.** On how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

----- **Days per week** (If No vigorous physical activities PLEASE **Skip to question 3**)

**2. How much time did you usually spend doing vigorous?**

Physical activities on one of those days?

----- **Hours per day**

----- **Minutes per day**

Don't know/Not s

Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time

3. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or double tennis? Do not include walking

----- **Days per week**

No moderate physical activities **Skip to question 5**

4. How much time did you usually spend doing **moderate** physical activities on one of those days ?

----- **Hours per day**

----- **Minutes per day**

Don't know/ Not sure

Think about the time you spent **working** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

5. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

----- **Days per week**

No walking **Skip to question 7**

6. How much time did you usually spend **walking** on one of those days?

----- **Hours per day**

----- **Minutes per day**

The last question is about the time you spent **sitting** on weekday the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television.

7. During the **last 7 days**, how much time did you spend **Sitting** on a **week day**?

----- **Hours per day**

----- **Minutes per day**

Don't know/ Not sure

### 32.SUBJECTIVE MEASUREMENT

Question 1 – 2 wills ASK YOU ABOUT YOUR SELF:

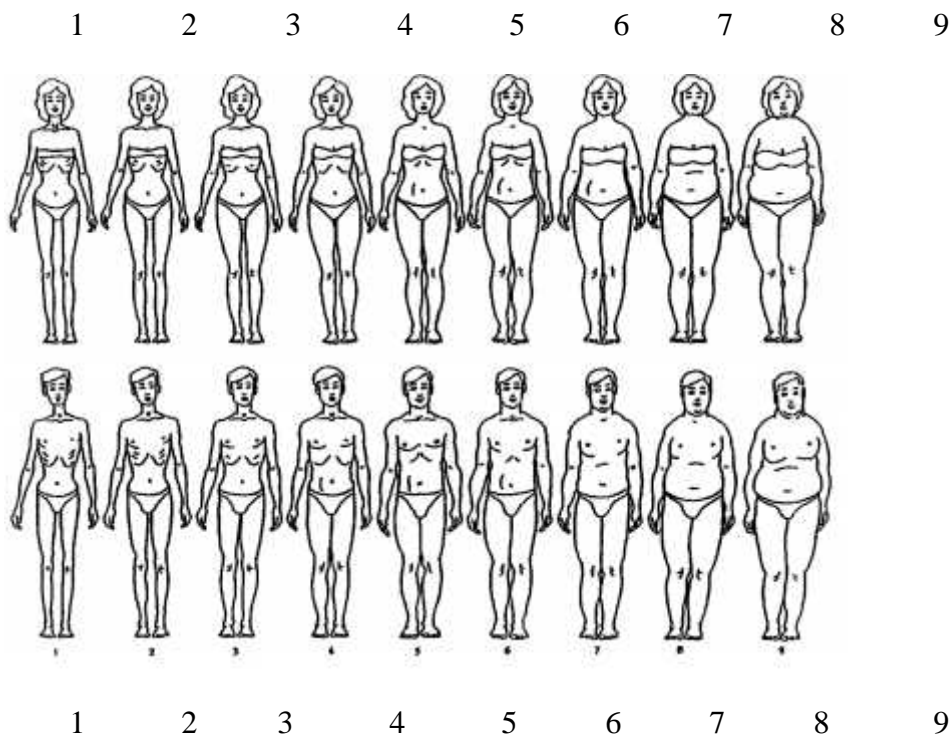
1. What is your height? -----m-----  
-----cm

2. What is your weight? -----Kg

**33. THIS SECTION WILL ASK YOU ABOUT BODY IMAGE PERCEPTION**

Please look closely to the female figures (1-9) and male figures (1-9) and answer question 1-4 that follows.

**Female figures**



**Male figures**

1. Please select one figure you think that represent your current body shape and size.

1.  2.  3.  4.  5.  6.  7.  8.  9.

2. Please select one figure you think is your ideal (i.e. how you would like to look like body shape and size)

1.  2.  3.  4.  5.  6.  7.  8.  9.

3. Please select one figure that represent an ideal female figure (i.e. how a woman should look)

1.  2.  3.  4.  5.  6.  7.  8.  9.

4. Please select one figure you think that represent an ideal male figure (i.e. how a man should look like)

1.  2.  3.  4.  5.  6.  7.  8.  9.

The next part is about smoking, drugs and alcohol uses.

**34. Which of this Single statement from (1-8) about your smoking habit is correct**

1. I have never smoked a cigarette, not even a puff. \_\_\_\_\_
2. I have only even tried one or two cigarettes. \_\_\_\_\_
3. I used to smoke sometimes, but I don't k now. \_\_\_\_\_
4. I don't smoke cigarettes, but smoke a pipe or cigars. \_\_\_\_\_
5. I smoke cigarettes but not as many as one per day. \_\_\_\_\_
6. I usually smoke between 1 and 10 cigars per day. \_\_\_\_\_
7. I usually smoke between 10 and 20 cigarettes per day. \_\_\_\_\_
8. I usually smoke more than 20 cigarettes per day \_\_\_\_\_

9. Would you like to reduce the amount of cigarettes you smoke?

1. Yes  No

10. Please rate the importance of not smoking for health by ticking any of the boxes below

1.  2.  3.  4.  5.  6.  7.  8.  9.  10.

11. PLEASE DO YOU KNOW THAT THERE IS A LINK BETWEEN CIGARETTE SMOKING AND DISEASES SUCH AS LUNG CANCER OR HEART DISEASE?

1. Yes  2. No

12. Have you tried to quit smoking within the last 12 months? 1.  Yes 2.  No

13. Have you ever used drugs?

Yes, regularly  Yes, but only a few times  Never

14. If yes, which drug(s) have you used?

1. Marijuana  2. Cocaine  3. Opiates  4. Amphetamines  5. Pain killers

6. Steroids  7. Sedative  8. Tranquilizer  9. Stimulants  10. Others

**35. NOW ANSWER QUESTIONS ABOUT YOUR ALCOHOL USE PLEASE:**

	Please tick the box that is applicable to you about your alcohol use below	0	1	2	3	4
1	How often do you have a drink containing alcohol	Never	Monthly or less	2 - 4 times per week	2 - 3 times per week	4+times Per week
2	How many units of alcohol do you drink on a typical day when you are drinking?	1 - 2	3 - 4	5 - 6	7 - 9	10 +
3	How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4	How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5	How often during the last year have you failed to do what was normally expected from you because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost

6	How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
7	How often during the last year have you had a feeling of guilt or remorse after drinking	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
8	How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
9	Have you or somebody else been injured as a result of your drinking?	No	Less than monthly	Yes, but not in the last year	Weekly	Yes, during the last year
10	Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?	No	Less than monthly	Yes but not in the last year	Weekly	Yes, during the last year

**36. FINALLY WE WOULD LIKE TO ASK YOU A FEW QUESTIONS ABOUT YOUR STUDIES.**

1. What is the name your of university? -----  
-----

2. Which region in Nigeria is your university located?

1. Northern region       2. Eastern region       3. Western region



3. What is your year in school?

1<sup>st</sup> year undergraduate       2<sup>nd</sup> year undergraduate       3<sup>rd</sup> year undergraduate

4<sup>th</sup> year undergraduate       5<sup>th</sup> year or more undergraduate       Graduate or professional

Adult special       Other, please specify.

---

4. How do you study?

---

5. How important is it for you to have good grades at the university?

Very important      Somewhat important      Not very important      Not at important

---

6. How do you rate your performance in comparison with your fellow students?

Much better      Better      The same      Worse      Much worse

---

7. Which of the following grade point average (GPA) rightly describe your academic achievement in the last examination?

1. Excellent (3.5 – 4.0)

2. Very good (3.0- 3.49)

3. Good (2.5 – 2.99)

4. Acceptable (2.0 – 2.49)

5. Weak ( below 2.0 )

6. Do not know

37. PLEASE ANSWER SOME PERSONAL QUESTIONS IN THE FOLLOWING SECTIONS.

1. How old are you? ..... years

2. What is your sex?       Female       male

3. What is your nationality? .....

4. What is your ethnic origin or tribe? - 1. Hausa/ Fulani       2. Yoruba       3. Igbo/Ibo       5. Others

5. What is your region? 1. Northern       2. Western       3. Eastern       4. Others

6. What is your monthly income disposal after paying rent and utilities?

(Please sum up your income from all sources)

7. Would you say the amount of money you have is.

Always sufficient      Mostly sufficient      Sometimes insufficient      Always insufficient

8. How do you finance your studies? ( please check all that apply)

Parents' support       Job during semester       Scholarship

Student       job during breaks       Other, please specify:

9. WHAT IS THE HIGHEST DEGREE THAT YOUR PARENTS HAVE?

	MOTHER	FATHER
No formal education	<input type="checkbox"/>	<input type="checkbox"/>
Grades 1 - 5	<input type="checkbox"/>	<input type="checkbox"/>
Grades 9 - 11	<input type="checkbox"/>	<input type="checkbox"/>
High school degree	<input type="checkbox"/>	<input type="checkbox"/>
Bachelor's degree	<input type="checkbox"/>	<input type="checkbox"/>
Master's degree	<input type="checkbox"/>	<input type="checkbox"/>
Ph.D. or equivalent	<input type="checkbox"/>	<input type="checkbox"/>

10. What is your marital status?

Single       Married       Other, please specify:.....

11. Do you have a boyfriend / girlfriend?

Yes       No

12. Do you have children?

Yes       No

If yes, how many? I have   children (please indicate the number)

13. Where do you live (during school)?

- I live alone
- I live together with my partner
- I live with my parents
- I live with room mates
- Other.....

38. OBJECTIVE MEASUREMENTS:

Please, now I will like the objective measurements of the following:

56. Height ..... M..... CM

57. Weight ..... in Kg

58. BMI .....

59. Waist circumference ..... in cm

60. Hip circumference ..... in cm

61. Waist – hip circumference ration (WHR) .....

62. Blood pressure (systolic) ..... in mmHg

63. Blood pressure (diastolic) ..... in mmHg

64. Pulse rate ..... per sec.

65. Waist height ratio (WHtR) .....

## **Appendices 2 : Sample of permission letter to universities in the study**

DEAR Sir,

### **RE: PERMISSION TO SAMPLE STUDENTS FOR AN ACADEMIC HEALTH RESEARCH**

I am conducting research on ‘The health status and health behaviours of students in higher education institutions (HEI) in Nigeria’ among students sample from several universities across the country. The aim of the study primarily is for a partial fulfilment for a doctorate degree (PH.D) in public health in the above named institution in England. However, the study intends to contribute to knowledge regarding students’ health and well-being in Nigeria, and how it compares fairly to those of other students internationally.

Dear Sir, permit me to recruit students from your institution for participation in the study. Participation is voluntary, and requires all participants to fill a questionnaire and also undergo some objective measurements such as BMI and BP, measurements. There is no physical nor psychological harm anticipated in the study. Moreover, any student can withdraw from the study at any time without any legal implication.


Dear Sir, accept my extraordinary thanks and gratitude.

Thanks.

Yours faithfully,

Dr. Agwu Michael Ezenna.

Appendices 3-8 (pp. 250- 255) permission to sample students by universities in Nigeria



# ODUDUWA UNIVERSITY

(Licensed by the Federal Government of Nigeria No 38)

Ipocumodu, PMB 5533  
Ife Ife, Osun State,  
Nigeria, West Africa.

OFFICERS OF THE UNIVERSITY

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**DR. OLUWADARE OLUWADARE**  
Ph.D., D.D.T.  
(The Dean of the)

**President / Chairman**  
**Board of Trustees**  
**DR. (CHIEF) D. A. ADEGOVIN**  
M.B., B.S., M.D., M.C.M.  
F.M.S., F.R.C.P. (C), M.D.  
M.C.S. (S)

**Pro Chancellor /**  
**Chairman of Senate**  
**PROF. OLUWUYIWA BANDA**  
M.Sc., Ph.D., F.R.C.P., CDR

**Vice Chancellor**  
**PROF. J. ADELEKE OJUNWALE**  
B.Sc., Ph.D., M.P.H., M.Sc.M

**Ag. Registrar & Secretary**  
**to Council**  
**MR. I. FOLGBUNSO ALOBA**  
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**Ag. Librarian**  
**MR. OLUWAFEMI ISHOLA**  
B.L.S., Dip. Lib. (M.A.)

**Surgeon**  
**MR. F. C. RESENE**  
B.Sc. (Account), ACA, NPA

**Legal Advisor**  
**DR. M. ADUNGBA OLUWALAYE**  
LL.B., LL.M., F.R.C.L., S.B.B.

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**Website:**  
[www.oduduwauniversity.edu.ng](http://www.oduduwauniversity.edu.ng)

**E-mail:**  
[info@oduduwauniversity.edu.ng](mailto:info@oduduwauniversity.edu.ng)

**Bankers:**  
**Bankers:**  
28, 2019

2<sup>nd</sup> May, 2018.

Dr. Agwu Michael Ezenna,  
Department of Public Health,  
GL 2 GUIN,  
United Kingdom.

Dear sir,

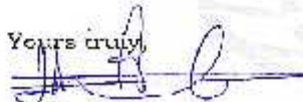
**Re: Permission to Sample Students for an Academic Health Research**

Please refer to your letter dated 29<sup>th</sup> of April, 2018 on the above subject matter.

This is to inform you that the vice-chancellor has approved your request to conduct the research among the students.

Meanwhile, it should be noted that participation by students should be voluntary and that no physical or psychological harm should be done on any student in the course of carrying out the research.

Please accept the assurance of the Vice-Chancellor's warm regards.

Yours truly,  
  
**Aloba I.F.**  
**Ag. Registrar.**

TRAINING FOR HUMAN DEVELOPMENT

*OUI, yes, the house of the role models!*



# UNIVERSITY OF UYO, UYO

P.M.B. 1017, UYO, AKWA IBOM STATE, NIGERIA

FACULTY OF BUSINESS ADMINISTRATION (FBA)

*Office of the Dean*

VICE CHANCELLOR: Prof. (Mrs.) Comfort M. Ekpo  
B.Sc., B.A., M.Ed. (Zaria) Post (Uyo)

DEAN: Prof. Ntiedo J. Umoru  
B.Sc., M.B.A., Ph.D., CPA, FRCM, FRM  
April 17, 2013

Dr. Agwu Michael Ezenna  
Department of Public health  
University of Gloucester  
GL2 9HW

Dear Sir,

## PERMISSION TO ADMINISTER QUESTIONNAIRE

With reference to your letter dated 6<sup>th</sup> April 2013 and seeking permission to conduct research in our institution, I am pleased to inform you that the Dean, Faculty of Business Administration has directed me to inform you that your request to conduct a research in our faculty has been granted.

Thank you.

Dr. Bassey A. Akpakpan  
Vice - Dean



# AKWA IBOM STATE UNIVERSITY

**Vice-Chancellor:**

Professor S. W. Peters, FAS  
B.Ed (Keds\*) M.Phil., Ph.D (Rutgers, U.S.A)  
e-mail: s.w.peters.2006@yahoo.com

**Registrar & Secretary to Council:**

Mr. Samuel J. Udoekong  
B.A. (Hons), FGSM, VBA, (Unicoll Unit, Akpa)  
Phone: 08021721383  
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*Office of the Registrar*

**Main Campus:**

1st/Alaquer, West Erin L.G.A.,  
T.M.B. 1167, Uyo,  
Akwa Ibom State  
Nigeria.

**Obio Akpa Campus:**

Obio Akpa, Obio Akpa L.G.A.,  
P.M.S. 1167, Uyo,  
Akwa Ibom State Nigeria

Our Ref: AKSU/REG/144/Vol.1/105

23<sup>rd</sup> April, 2013


**Dr. Agwu Michael Ezenna**  
Department of Public Health  
University of Gloucester  
GL2 9HW  
United Kingdom

## PERMISSION TO SAMPLE STUDENTS FOR AN ACADEMIC HEALTH RESEARCH

This has reference to your letter of 23<sup>rd</sup> April, 2013 on the above subject matter. I am to inform you that the Vice-Chancellor has approved that you sample our student population and administer your questionnaire to determine their health status as requested.

Please accept the best wishes of the Vice-Chancellor in your research work.

Congratulations.

  
**Nduliso J. Orok**  
Principal Asst. Registrar  
For Registrar

**Uyo Liaison Office:**

Plot 29, Ubulim Street, Unit C, Ewet Housing  
Estate, P.M.S. 1167, Uyo, Akwa Ibom State, ([www.aksu.edu.ng](http://www.aksu.edu.ng))

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Akwa Ibom State University, Room 217-218,  
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# OSUN STATE UNIVERSITY

OFFICE OF THE VICE-CHANCELLOR

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Date: 2<sup>nd</sup> May, 2015

Dr. Agwn Michael Ezema  
Department of Public Health  
University of Gloucester  
GL2 9HT  
United Kingdom


**Re: permission to Sample Students for an Academic Health Research**

Your letter on above subject refers.

It is my pleasure to convey the Vice-Chancellor's approval of your request to conduct a research on health status and health behaviours among students in Osun State University.

It is noted that participation of students in the study is voluntary, that there would be no physical or psychological harm to participants and that such students are free to withdraw from the study at any time they so desire.

Please accept the assurance of the Vice-Chancellor's warmest regards.

  
**D. E. Salami**

Deputy Registrar (Vice-Chancellor's Office)

PROFESSOR  
**ADEKUNLE BASHIRU OKESINA** MBBCh (Lagos), FRCPath, FRACCP, UCSI





# OBONG UNIVERSITY

Obong Nlak, P. O. Box 25, Abak  
Akwa Ibom State, Nigeria.

[www.obonguniversity.net](http://www.obonguniversity.net)

Vice-Chancellor

**Prof. Amanam A. Urlo**

B.Sc. - Brigham Young University

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**OFFICE OF THE VICE-CHANCELLOR**

*Our Ref:* OUNVC/GEN/VOL.II/16/250

*Date:* 28<sup>th</sup> April, 2013

Dr. Agwu Michael Ezenna  
Department of Public Health  
University of Gloucester  
GL2 9HW  
United Kingdom

## **TO WHOM IT MAY CONCERN**

This to certify that the bearer Dr. Agwu Michael Ezenna has been authorized by the Vice Chancellor to carry out sample on students population and administer his questionnaire in order to determine their health status required.

I wish you a successful research assignment.

Yours faithfully,

**Mr. Edet Etim**  
Administrative Officer 1  
For Vice Chancellor



**Professor Bamitale Omole**  
BA, M.Sc (IR), MPH, Ph.D (Bordeaux), FGD (The Hague)  
**Vice-Chancellor**

**OBAFEMI AWOLowo UNIVERSITY**  
**ILE-IFE, NIGERIA**

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VC: 87(z)/Vol. II/322

30<sup>th</sup> April, 2013

Dr. Agwu Michael Ezenna  
Department of Public Health  
GL 2 GIW  
United Kingdom

Dear Sir,

**RE: PERMISSION TO SAMPLE STUDENT FOR AN ACADEMIC HEALTH  
RESEARCH**

Please refer to your letter dated 29<sup>th</sup> April, 2013 on the above-mentioned subject.

This is to inform you that the Vice-Chancellor has approved your request to conduct a research on 'health status and health behaviours' among students of this University.

It is noted that participation by the students is voluntary, and that there will be no physical or psychology harm to any student in the course of carrying out the research.

Please accept the assurance of the Vice-Chancellor's warm esteem.

Yours sincerely,

K. A. Bakare  
For: Director  
Vice-Chancellor's Office

**Appendix 9**

**CONSENT FORM**

Please read careful before signing this form. Please note that by signing this form it shows that you are interested in participating in this research and you have given your consent by your own will, to be a participant

Title of project:-----

Name of Research:-----

Please initial box

- 1. I confirm that I have read and understand the information for the above study.-----  
-----
- 2. I understand that my participation is voluntary and that I am free to withdraw at any time.-----
- 3. I agree to take part in the above study-----

-----	-----	-----
Name of participant	Date	Signature
-----	-----	-----
Researcher	Date	signature

## APPENDIX , 10 SAMPLES FROM THE SPSS OUTPUT

### Descriptive statistics: frequency table

#### How would you describe your general health?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	excellent	520	33.6	33.6	33.6
	very good	523	33.8	33.8	67.3
	Good	411	26.5	26.5	93.9
	fair	87	5.6	5.6	99.5
	poor	8	.5	.5	100.0
	Total	1549	100.0	100.0	

#### To what extent do you put eye on your health

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not at all	41	2.6	2.7	2.7
	not much	313	20.2	20.2	22.9
	to some extent	660	42.6	42.7	65.6
	very much	532	34.3	34.4	100.0
	Total	1546	99.8	100.0	
Missing	System	3	.2		
Total		1549	100.0		

#### Have you seen a medical doctor in the last six months

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	767	49.5	49.5	49.5
	yes	782	50.5	50.5	100.0
	Total	1549	100.0	100.0	

**Do you regularly take any medication**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid no	937	60.5	60.6	60.6
yes	610	39.4	39.4	100.0
Total	1547	99.9	100.0	
Missing System	2	.1		
Total	1549	100.0		

**Body mass index calculated in Kg/m2**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid underweight, less than 18.5kg/m2	151	9.7	9.7	9.7
normal weight, 18.5-24.9kg/m2	769	49.6	49.6	59.4
overweight, 25.0-29.9kg/m2	388	25.0	25.0	84.4
obesity, greater than 30.0kg/m2	241	15.6	15.6	100.0
Total	1549	100.0	100.0	

**During the last seven days on how many days did you do vigorous physical activities**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid MET>3 days/60mins per week	466	30.1	30.1	30.1
UNMET<3days/60mins per week	1083	69.9	69.9	100.0
Total	1549	100.0	100.0	

**During the last seven days how many days did you do mild physical activities**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid MET>4days/120mins per week	1255	81.0	81.0	81.0
UNMET<4days/120mins per week	294	19.0	19.0	100.0
Total	1549	100.0	100.0	

**How often do you have stomach trouble**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Never	504	32.5	32.5	32.5
Rarely	436	28.1	28.1	60.7
Sometimes	418	27.0	27.0	87.7
Very Often	191	12.3	12.3	100.0
Total	1549	100.0	100.0	

**How often do you have back pain**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Never	623	40.2	40.2	40.2
Rarely	370	23.9	23.9	64.1
Sometimes	407	26.3	26.3	90.4
Rarely	149	9.6	9.6	100.0
Total	1549	100.0	100.0	

**How often do you have insomnia or sleep disorder**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	236	15.2	15.2	15.2
	Rarely	415	26.8	26.8	42.0
	Sometimes	654	42.2	42.2	84.2
	Very Often	244	15.8	15.8	100.0
	Total	1549	100.0	100.0	

**How often do you have diarrhoea**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	728	47.0	47.0	47.0
	Rarely	401	25.9	25.9	72.9
	Sometimes	358	23.1	23.1	96.0
	Very Often	62	4.0	4.0	100.0
	Total	1549	100.0	100.0	

**How often do you have headaches**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	799	51.6	51.6	51.6
	Rarely	413	26.7	26.7	78.2
	Sometimes	262	16.9	16.9	95.2
	Very Often	75	4.8	4.8	100.0
	Total	1549	100.0	100.0	

**How often do you have difficulties to concentrate**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	428	27.6	27.6	27.6
	Rarley	500	32.3	32.3	59.9
	Sometimes	473	30.5	30.5	90.4
	Very Often	148	9.6	9.6	100.0
	Total	1549	100.0	100.0	

**What is your religion**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	catholic	251	16.2	16.2	16.2
	protestant	693	44.7	44.7	60.9
	orthodox	334	21.6	21.6	82.5
	islam	218	14.1	14.1	96.6
	others	47	3.0	3.0	99.6
	none	6	.4	.4	100.0
	Total	1549	100.0	100.0	

**How old are you**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<20	630	40.7	40.7	40.7
	20-23	667	43.1	43.1	83.7
	> 23	252	16.3	16.3	100.0
	Total	1549	100.0	100.0	



**What is your ethnic origin**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hausa/fulani	530	34.2	34.2	34.2
	Igbo	542	35.0	35.0	69.2
	Yoruba	477	30.8	30.8	100.0
	Total	1549	100.0	100.0	

**What is your monthly income after paying rent and utilities**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High income > ₦10,000	578	37.3	37.3	37.3
	Medium <del>₦5000-₦10,000</del>	612	39.5	39.5	76.8
	low income < ₦5000	359	23.2	23.2	100.0
	Total	1549	100.0	100.0	

**What is the name of your university category**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Federal university	515	33.2	33.2	33.2
	State university	531	34.3	34.3	67.5
	Private university	503	32.5	32.5	100.0
	Total	1549	100.0	100.0	

**Name of your university**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Obafemi Awolowo Uni.	262	16.9	16.9	16.9
University of Uyo	262	16.9	16.9	33.8
Osun state University	261	16.8	16.8	50.7
Akwa Ibom State Uni.	260	16.8	16.8	67.5
Oduduwa Private Uni.	247	15.9	15.9	83.4
Obong Private University	257	16.6	16.6	100.0
Total	1549	100.0	100.0	

**Would you say that the amount of money you have is**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid always sufficient	80	5.2	5.2	5.2
mostly sufficient	191	12.3	12.3	17.5
sometimes insufficient	866	55.9	55.9	73.4
always insufficient	412	26.6	26.6	100.0
Total	1549	100.0	100.0	

**There should be no smoking at the university**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid strongly disagree	152	9.8	9.8	9.8
disagree	63	4.1	4.1	13.9
agree	292	18.9	18.9	32.7
strongly agree	1042	67.3	67.3	100.0
Total	1549	100.0	100.0	

**Alcohol should not be sold at the university**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid strongly disagree	132	8.5	8.5	8.5
disagree	184	11.9	11.9	20.4
agree	329	21.2	21.2	41.6
strongly agree	904	58.4	58.4	100.0
Total	1549	100.0	100.0	

**How many times do you consume fruit daily**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Met > 2-4 servings daily	1029	66.4	66.4	66.4
Unmet < 2-4 servings daily	520	33.6	33.6	100.0
Total	1549	100.0	100.0	

**How many times do you consume vegetable daily**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid met > 3-4 servings daily	966	62.4	62.4	62.4
Unmet < servings daily	583	37.6	37.6	100.0
Total	1549	100.0	100.0	

**group depression score categories**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid low<35	1065	68.8	68.8	68.8
high>35	484	31.2	31.2	100.0
Total	1549	100.0	100.0	

**group stress score categories**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	low<15	215	13.9	13.9	13.9
	high>15	1334	86.1	86.1	100.0
	Total	1549	100.0	100.0	

**Life satisfaction label**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dissatisfied	522	33.7	33.7	33.7
	Satisfied	1027	66.3	66.3	100.0
	Total	1549	100.0	100.0	

**WHO wellbeing index**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	194	12.5	12.5	12.5
	high	1355	87.5	87.5	100.0
	Total	1549	100.0	100.0	

**Samples from chi- square analysis output**

**What is your sex \* How old are you**

Crosstab

			How old are you			Total
			<20	20-23	> 23	
What is your sex	female	Count	373	356	119	848
		% within What is your sex	44.0%	42.0%	14.0%	100.0%
	% within How old are you	% of Total	59.2%	53.4%	47.2%	54.7%
		% of Total	24.1%	23.0%	7.7%	54.7%
male	Count	Count	257	311	133	701
		% within What is your sex	36.7%	44.4%	19.0%	100.0%
	% within How old are you	% of Total	40.8%	46.6%	52.8%	45.3%
		% of Total	16.6%	20.1%	8.6%	45.3%
Total	Count	Count	630	667	252	1549
		% within What is your sex	40.7%	43.1%	16.3%	100.0%
	% within How old are you	% of Total	100.0%	100.0%	100.0%	100.0%
		% of Total	40.7%	43.1%	16.3%	100.0%

## SAMPLES FROM ANOVA ANALYSIS

### Univariate Analysis of Variance

**Between-Subjects Factors**

		Value Label	N
What is your sex	1	female	847
	2	male	701
What is your ethnic origin	1	Hausa/fulani	530
	2	Igbo	541
	3	Yoruba	477

**Descriptive Statistics**

Dependent Variable: SOCsum

What is your sex	What is your ethnic origin	Mean	Std. Deviation	N
female	Hausa/fulani	53.9327	11.55632	312
	Igbo	56.4982	10.49970	281
	Yoruba	53.5630	10.75169	254
	Total	54.6730	11.03768	847
male	Hausa/fulani	53.5321	10.62999	218
	Igbo	52.5423	10.83690	260
	Yoruba	50.6547	9.33810	223
	Total	52.2496	10.36776	701
Total	Hausa/fulani	53.7679	11.17607	530
	Igbo	54.5970	10.83531	541
	Yoruba	52.2034	10.20888	477
	Total	53.5756	10.80365	1548

**Tests of Between-Subjects Effects**

Dependent Variable: SOCsum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4620.607 <sup>a</sup>	5	924.121	8.099	.000	.026
Intercept	4355204.390	1	4355204.390	38169.772	.000	.961
sex	2234.565	1	2234.565	19.584	.000	.013
ethnic	1509.201	2	754.601	6.613	.001	.009
sex * ethnic	870.132	2	435.066	3.813	.022	.005
Error	175943.550	1542	114.101			
Total	4623855.000	1548				
Corrected Total	180564.157	1547				

a. R Squared = .026 (Adjusted R Squared = .022)

**Post Hoc Tests**

**What is your ethnic origin**

**Multiple Comparisons**

Dependent Variable: SOCsum

Tukey HSD

(I) What is your ethnic origin	(J) What is your ethnic origin	Mean Difference (I-J)	Std. Error	Sig.	95% Con
					Lower Bound
Hausa/fulani	Igbo	-.8291	.65283	.412	-2.36
	Yoruba	1.5646	.67416	.053	-.01
Igbo	Hausa/fulani	.8291	.65283	.412	-.70
	Yoruba	2.3937*	.67090	.001	.81
Yoruba	Hausa/fulani	-1.5646	.67416	.053	-3.14
	Igbo	-2.3937*	.67090	.001	-3.96

Based on observed means.

The error term is Mean Square(Error) = 114.101.

\*. The mean difference is significant at the .05 level.

**Descriptive Statistics**

Dependent Variable: SelfefficacySum

What is your sex	What is your ethnic origin	Mean	Std. Deviation	N
female	Hausa/fulani	30.5353	4.77049	312
	Igbo	31.7687	4.77791	281
	Yoruba	30.7126	5.57026	254
	Total	30.9976	5.04987	847
male	Hausa/fulani	32.1835	5.13624	218
	Igbo	30.6808	4.94155	260
	Yoruba	31.3946	4.97891	223
	Total	31.3752	5.04555	701
Total	Hausa/fulani	31.2132	4.98597	530
	Igbo	31.2458	4.88313	541
	Yoruba	31.0314	5.30746	477
	Total	31.1686	5.04978	1548

**Tests of Between-Subjects Effects**

Dependent Variable: SelfefficacySum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	576.960 <sup>a</sup>	5	115.392	4.577	.000	.015
Intercept	1484942.952	1	1484942.952	58905.639	.000	.974
sex	65.347	1	65.347	2.592	.108	.002
ethnic	23.118	2	11.559	.459	.632	.001
sex * ethnic	508.235	2	254.118	10.080	.000	.013
Error	38872.034	1542	25.209			
Total	1543303.000	1548				
Corrected Total	39448.994	1547				

a. R Squared = .015 (Adjusted R Squared = .011)



## Post Hoc Tests

### What is your ethnic origin

#### Multiple Comparisons

Dependent Variable: SelfefficacySum

Tukey HSD

(I) What is your ethnic origin	(J) What is your ethnic origin	Mean Difference (I-J)	Std. Error	Sig.	95% Con
					Lower Bound
Hausa/fulani	Igbo	-.0326	.30686	.994	-.75
	Yoruba	.1818	.31688	.834	-.56
Igbo	Hausa/fulani	.0326	.30686	.994	-.68
	Yoruba	.2144	.31535	.775	-.52
Yoruba	Hausa/fulani	-.1818	.31688	.834	-.92
	Igbo	-.2144	.31535	.775	-.95

Based on observed means.

The error term is Mean Square(Error) = 25.209.

#### Descriptive Statistics

Dependent Variable: POHLOC

What is your sex	What is your ethnic origin	Mean	Std. Deviation	N
female	Hausa/fulani	3.3974	1.29396	312
	Igbo	3.1673	1.40298	281
	Yoruba	3.3661	1.40994	254
	Total	3.3117	1.36821	847
male	Hausa/fulani	3.3945	1.51805	218
	Igbo	3.7308	1.73667	260
	Yoruba	3.1614	1.48898	223
	Total	3.4451	1.60941	701
Total	Hausa/fulani	3.3962	1.38912	530
	Igbo	3.4381	1.59581	541
	Yoruba	3.2704	1.44951	477
	Total	3.3721	1.48330	1548

### Tests of Between-Subjects Effects

Dependent Variable: POHLOC

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	55.453 <sup>a</sup>	5	11.091	5.108	.000	.016
Intercept	17306.320	1	17306.320	7970.306	.000	.838
sex	5.362	1	5.362	2.469	.116	.002
ethnic	9.057	2	4.528	2.085	.125	.003
sex * ethnic	40.942	2	20.471	9.428	.000	.012
Error	3348.221	1542	2.171			
Total	21006.000	1548				
Corrected Total	3403.674	1547				

a. R Squared = .016 (Adjusted R Squared = .013)

### Post Hoc Tests

#### What is your ethnic origin

### Multiple Comparisons

Dependent Variable: POHLOC

Tukey HSD

(I) What is your ethnic origin	(J) What is your ethnic origin	Mean Difference (I-J)	Std. Error	Sig.	95% Con
					Lower Bound
Hausa/fulani	Igbo	.2302	.11234	.101	-.03
	Yoruba	.0313	.11544	.960	-.23
Igbo	Hausa/fulani	-.2302	.11234	.101	-.49
	Yoruba	-.1989	.11826	.213	-.47
Yoruba	Hausa/fulani	-.0313	.11544	.960	-.30
	Igbo	.1989	.11826	.213	-.07

Based on observed means.

The error term is Mean Square(Error) = 1.866.

### Descriptive Statistics

Dependent Variable: Select one figure that represent an ideal female figure

What is your sex	What is your ethnic origin	Mean	Std. Deviation	N
female	Hausa/fulani	5.21	1.182	312
	Igbo	5.02	1.295	281

	Yoruba	5.34	1.227	254
	Total	5.19	1.239	847
male	Hausa/fulani	4.95	1.110	218
	Igbo	5.18	1.166	260
	Yoruba	4.88	1.262	223
	Total	5.01	1.186	701
Total	Hausa/fulani	5.11	1.159	530
	Igbo	5.10	1.236	541
	Yoruba	5.12	1.263	477
	Total	5.11	1.218	1548

### Tests of Between-Subjects Effects

Dependent Variable: Select one figure that represent an ideal female figure

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	37.268 <sup>a</sup>	5	7.454	5.089	.000	.016
Intercept	39605.489	1	39605.489	27040.811	.000	.946
sex	13.502	1	13.502	9.218	.002	.006
ethnic	.149	2	.075	.051	.950	.000
sex * ethnic	25.320	2	12.660	8.644	.000	.011
Error	2258.500	1542	1.465			
Total	42694.000	1548				
Corrected Total	2295.767	1547				

a. R Squared = .016 (Adjusted R Squared = .013)

## Post Hoc Tests

### What is your ethnic origin

#### Multiple Comparisons

Dependent Variable: Select one figure that represent an ideal female figure

Tukey HSD

(I) What is your ethnic origin		(J) What is your ethnic origin		Mean Difference (I-J)	Std. Error	Sig.	95% Con
							Lower Bound
Hausa/fulani	Igbo			.01	.074	.987	-.
	Yoruba			-.02	.076	.976	-.
Igbo	Hausa/fulani			-.01	.074	.987	-.
	Yoruba			-.03	.076	.930	-.
Yoruba	Hausa/fulani			.02	.076	.976	-.
	Igbo			.03	.076	.930	-.

Based on observed means.

The error term is Mean Square(Error) = 1.465.