

# Social Support, Body Image Perception and Depressive Symptoms, Among University Students in Nigeria, by Gender and Ethnicity

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**Abstract:** Background: The health determinant model indicates that certain socio-cultural, socio-demographic, environmental, and lifestyle factors influence health status and wellbeing of any population group in any given nation, [1]. Previous studies have suggested the need for regional and interregional comparison of health inequalities due to the interaction of these factors. *AIMs:* This study investigated social support, body image perception and depressive symptoms by sex and ethnicity among university students in Nigeria. *Method:* The study was a cross sectional survey. Full time university students were recruited from six universities within the major three ethnic groups in Nigeria. 2500 anonymous questionnaire was sent to students during a class lecture, 1549 responses were valid, while 563 responses were rejected for missing data especially sex and ethnicity and 388 students did not return their questionnaire. The variables examined were, demographic, income status, social support, body image perception and depressive symptoms. Descriptive tests, chi-square tests and analysis of variance (ANOVA) tests were conducted. *Results:* The result showed that depression indicated significant differences by gender and ethnicity, with students from the Hausa ethnic group reporting depression more than other ethnic groups, and female students more than males. Body image indicated a sex\*ethnicity interaction effect for the ideal female body image. Further analysis of the data suggested that Igbo males and Yoruba females' preferred bigger female body size. Irrespective of ethnicity, the study indicated that more female students preferred bigger female body sizes than males. With regard to social support and monthly income, the result indicated sex\*ethnicity interaction effects, where female students from the Hausa ethnic group reported better social support and monthly income. *Conclusion:* The findings indicated that the mental health of female students in the sample were poorer than those of male students and female students from the Hausa ethnic group demonstrating the worst possible health outcome, despite a more favorable social support and income status. This study made a major contribution to the understanding that people who live among regions with conflict and violence may report poor psychological health compared to those that live in a conflict free zones.

**Keywords:** Depression, Body Image Perception, Social Support, Students Health, Health Inequality, Cultural Health Inequality, Public Health, Health Promotion

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## 1. Introduction

Despite evidence of poor health and prevalence of risky health behaviors, literature indicates that university students are the most under-researched group, with regard to their health and lifestyle patterns, [2-4]. Moreover, university

students represent a major segment of the young adult population. They typically enter a dynamic transitional period of new independence from their parents that is characterized by rapid, interrelated changes in body, mind

and social relationships, [5-6]. 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, [7].

There is evidence that majority of university students are minimally engaged in health promoting behaviors and exhibit behavioral health risk, such as tobacco use, alcohol and drug abuse, unhealthy diet and sedentary habits, [8-9]. More so, health risk associated diseases such as depression, psychosomatic complaints are also common among university students, [10, 5]. To better understand socioeconomic status, social support, body image perception and depression among university students in Nigeria, a cross sectional survey was undertaken, which to our knowledge is the first of its kind in Nigeria.

Nigeria is the most populous country in sub-Saharan Africa with an estimated area of 923,773 km<sup>2</sup>, [11] comprising of 36 states and a population of 152 million people, [12]. 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, [13] Fig. 1. 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, 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, [14]. The annual rainfall is more in the south 2000 millimeters than in the north 500-700 millimeters, [11].



**Figure 1.** Map of Nigeria showing the three regions by the intersection of the Niger River and Benue River. Available at: <http://mans.com> [Date of accessed 20<sup>th</sup> July, 2014].

Therefore, the northern region is exposed to a prolonged heat, prolonged drought, and dry seasons, this harsh environmental conditions is 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, [15]. However, no comparative cultural study exists in Nigeria that examines the health differences of the three regions, by gender across any selected population group. In addition, 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, [16].

The current study also focused on gender differences in health status and. The female gender in Nigeria has been subjected to various degrees of discrimination, isolation, intimidation and stigmatization in comparison to their male counterparts, [17] and this may have a detrimental effect on mental and physical health. For instance, the first question people usually ask with regard to a new-born child in Nigeria is: "Is it a boy or a girl?" [18] Such a question carries a great deal of significance for the child's entire life. A study of this nature for the first time will provide evidence of health inequality by gender which may draw the attention of stakeholders for urgent redress.

## 2. Why University Students in Nigeria

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, [19]. These are young adults, and the attitude and lifestyle behaviors 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, [20-21] and university years may present a unique opportunity to develop healthy lifestyle behaviors in a particular manner. Also, Nigeria is a developing economy and in recent times have been designated the largest economy in Africa, [22, 11], 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, [21, 23]. In addition, this study was centered on university students in Nigeria because literature review indicated few studies on the health status of university students in Nigeria especially with regard to sex and ethnicity. However, while these studies have provided valuable data about university students' health issues, most of these studies have considerable limitations that necessitated further studies. Some of these limitations are:

Convenience sample: Most studies on students in Nigeria

are based on convenience sample, [24-25]. In this case, the researcher might select participants based on those that are easily available and by virtue of their easy accessibility to him. In other words, it have been noted that if the method used to select the sample is not random, there is the probability that human judgment will affect the selection process, making some members of the population more likely to be selected than others, [26, 27]. 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.”* The current study is based on a national and regional representative sample among university students in Nigeria.

**Sample size:** Literature shows that most previous studies on university students' population in Nigeria employed small sample size, [28, 24]. 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, [29-30] and large sample size increases power, [31]. The current study was based on a very large sample ( $n = 1549$ ).

**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. It is important to conduct a new study that is based on internationally validated items among university students.

**Cultural comparative studies:** None of the studies in Nigeria examined regional differences with regard to students health status. Most of the studies are based on a single region with no investigation of interaction for inter or intra ethnic effect, [10, 24-25]. The need for inter-cultural studies have been emphasized based on the reported differences in health across ethnic groups, [32]. 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 fulfill the goal of university education, promoting health and wellbeing of students means promoting effective learning and human development, [5, 33]. Despite evidence of poor health and prevalence of risky health behaviors, literature indicates that university students are the most under-researched group, with regard to their health and lifestyle patterns, [3-4]. To better understand the prevalence of social support, mental health indicators and body image perception, a cross sectional survey of university students in Nigeria was undertaken, which to our knowledge is the first of its kind in Nigeria.

### 3. Depression

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”[34], 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, [35]. Students commonest challenge to depression is stress and several factors have been reported to increase stress among university students, such as academic workload, chronic illness, and financial problems, [36-37]. [10] in a cross sectional study, examined the socio-demographic correlates of depressive disorder among 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 (18%) of students met the criteria for depressive disorders, with (3%) having major depressive disorders and 6% having minor depressive disorders.

On the other hand, some studies found that female students reported depression more than male students, [38, 5], others found no significant differences between male and female students, [27, 39]. However, [40] 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. On the contrary, [41] 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 that may lead to depression.

### 4. Body Image Perception

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 behaviors into their adult years, [42]. Data from the Youth Risk Surveillance Report indicated that 28% of high school students in the United States described themselves as slightly or very overweight, [43]. The prevalence increased as students moved from the ninth grade in the twelfth grade. A total of 44% reported that they were trying to lose weight, and this percentage was higher for girls than for boys. 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, [44]. 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, [45]. On the contrary, developing countries still associate fatness with economic powers, [46]. 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, [47]. Similarly, evidence still show 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, [48]. However, studies regarding body image perception especially among the young adults and university students' population is still very limited, [33]. However, the Youth Risk Surveillance Report, [43] also indicates that (33%) of Hispanic students, (26%) of white students, and (23%) of black students describe themselves as overweight. 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, [44, 49]. An earlier study by, [50], 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, [51], reported that male and female students of Asian origin, indicated for a bigger body size than the Caucasians, [51]. However, he called for more studies that will provide information on the cultural differences of body image among university students.

## 5. The Effects of Social Support on Health Status

[52] 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." (p. 127). They 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, [53]. With regard to gender, few studies examined the gender differences in the perception of social support and their findings were controversial. Whereas, [54] found that students that reported depressive symptoms also reported low social support, in both male and female. On the other hand, [55] found that female students significantly reported more negative social exchange than male students did. In addition, [53] 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 to 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. [54] found that low social support was related to students' self-reported chronic illness, sleep problems and social isolation. On the other hand, [55] found that negative

social support correlates more with students' physical symptoms and mental health problems than positive social support. Alternatively, [5] 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; however, they called for more studies on the health impact of social support on students.

## 6. Research Methods and Measures

### 6.1. Consent and Confidentiality

A letter for approval was presented by hand directly to each Vice Chancellor (VC) of the participating universities in Nigeria. The letter contained the required information concerning the research: title, objectives and the data collection techniques. 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. The same information was passed to students before data collection with an anonymous questionnaire.

### 6.2. Sample Size and Sampling Strategy

A questionnaire was sent to 2500 male and female university students in Nigeria and 2112 participants completed and returned their questionnaire, a total of 318 potential participants did not return their questionnaire, while 563 responses were judged to be invalid due to missing of important data (e.g. gender /and or ethnicity) which was the basic criteria for the data analysis. 1549 respondents provided all the required data correctly which was entered into the SPSS for data analysis. The overall participation was about 84.5%.

### 6.3. Justification of the Sample Size

With regard to sample size, [37] (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, [56] 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 [56]. On the other hand, [30] 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, [30], 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.

#### 6.4. Multistage Sampling Strategy for Data Collection

##### 6.4.1. Sampling of Universities

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. To our knowledge, this is the first time that students are sampled from the three university categories

in Nigeria, in a comparative study. 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, [57] comprising the three different university categories (Federal, State and Private) within the three main geopolitical zones in Nigeria North (Hausa) South (Yoruba) and East (Igbo) that constitute the Federal Republic of Nigeria, [16].

The universities 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 see Table 1 below.

*Table 1. Sampled universities and courses of study.*

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

##### 6.4.2. Sampling of Students Course of Study

The Dean of Students Office (DSO) in participating universities provided the researchers 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 and physics into the department of science so that similarities will be achieved in all university categories. Then, two courses of study with regard to their respective universities were selected at random from a box specific for each university category and the outcome of these random sampling is shown in (Table 1).

##### 6.4.3. Sampling of Academic Year

Students' year of study was stratified into (1st, 2nd, 3rd, 4th, 5th, 6th) academic years. However, the cut-off year for the study 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 up to years (1-4) academic programs. Therefore fixing a cut-off year at (1-4) ensured identical sample with similar experiences. Other studies, [58] applied similar cut-offs in students population.

##### 6.4.4. Sampling of Participants

A total of (n = 2500) students sample of both male and female was given a questionnaire. To ensure that these samples have equal representation by institution, by course of study and by the academic year of study, the following steps were taken: First, the intended sample of (n = 2500) 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 were shortlisted (cut off point) from each academic discipline, consequently, the sample (n = 208) was shared into four, allowing (n = 52) students to be recruited from each academic year (e.g. 1, 2, 3, & 4). All the students in each lecture room were given a questionnaire, the recruitment exercise for each year goes on, until the estimated number of participants was met. [58] applied similar strategy in a students' population.

#### 6.5. Measures

##### 6.5.1. Depressive Symptoms

These items were adopted from Beck Depression Inventory (M – BDI – 20). The item 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”). 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 was validated by, [5] they also reported high internal consistency reliability (Cronbach’s alpha of 0.90, 0.92 & 0.87) in Germany, Poland and Bulgaria respectively. The cut of score M-BDI  $\geq 35$  is considered depression, [23, 5] Similar cut off was used in the current study.

### 6.5.2. Body Image Perception

Body image perception was measured by an items adopted from, [48] It consists of a series of nine female and nine male body shaped drawings (VAS) format ranging from very underweight (extremely anorectic figure 1) to very obese (figure 9), using 4- questions, and participants were asked to:

1. Select one figure (1-9) you think represent your current body shape and size,
2. Select one ideal figure (1-9) you would like to look like in both body shape and size
3. Select one figure (1-9) that represent your ideal female figure,
4. Select one figure (1-9) that represent your ideal male figure,

A higher score represent a greater desired body size. Similar items were used in the study of university students by, [50-51].

### 6.5.3. Social Support (SSQS)

Social support (availability and satisfaction) were measured with a six – item version of the social support questionnaire validated by, [52]. Students were asked to rate their satisfaction with the social support the received. The

rating is the same for each item and is based on a six – point scale from 6 = very satisfied to 1 = very dissatisfied. A higherscore represents a higher social support satisfaction. However, [54]reported items internal consistency of 0.90, and 0.93 in two samples and used the same items on a study of university students.

### 6.6. Statistical Data Analysis for the Present Study

Data analysis was based on gender and ethnicity. Students’ responses to the questions in the present study were transferred to the SPSS statistical package, 20.0 versions for analysis. To answer the research questions and achieve the research objectives, three separate tests were conducted: Descriptive statistics, which provided Preliminary data analysis based on percentage and frequency. Chi square test was employed to explore the relationship between categorical variables. 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 (Turkey HSD).

## 7. Results

Table 2 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 1). The main effects for sex and ethnic indicated that male students’ social support was lower than what was available for female students.

**Table 2.** Two-way ANOVA showing the Mean (SD) of social support and body image.

Variable	Sample	Female (mean (SD))			Male (mean (SD))			p-value /partial Eta squ.		
		Hausa	Igbo	Yoruba	Hausa	Igbo	Yoruba	Sex*ethnic	Sex	ethnic
Social support	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)	0.035*/004	0.001*/.014	0.001*/.009
Currentimage	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)	0.091/.003	0.400 /.001	0.171/.002
Idealimage	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)	0.074/.003	0.016*/.054	0.598/.004
Ideal male	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)	0.202/.002	0.053/.002	0.565/.001
Ideal female	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)	0.001*/.013	0.002*/.006	0.924/.001

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. Thegraphs

presented a clear indication that female students reported social support better than what was reported by male students in all the ethnic groups.

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 (Figure 2).

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.

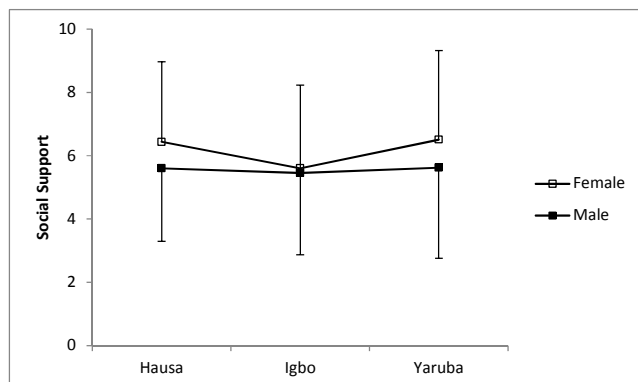


Figure 2. Shows the sex\*ethnic main effects for social support.

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 2), 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 ( $P < 0.05$ ). However, the ideal female body showed significant sex\*ethnic effect, this effect is shown graphically in (Figure 3). There were also main effects for sex where females were higher than males, and no main effects for ethnicity.

One-way ANOVA for females showed an ethnic effect ( $P < 0.001$ ) and post hoc Tukey tests showed that Yoruba females were significantly higher than Igbo females ( $P < 0.009$ ), consequently the result suggests that Yoruba females prefer bigger female body than Igbo and Hausa females. One-way ANOVA for males showed an ethnic effect ( $P < 0.015$ ) and post hoc tests showed that Igbo males were significantly higher than Yoruba males ( $P < 0.05$ ), similarly, the study indicated that Igbo males preferred bigger female bodies compared to Hausa and Yoruba male students.

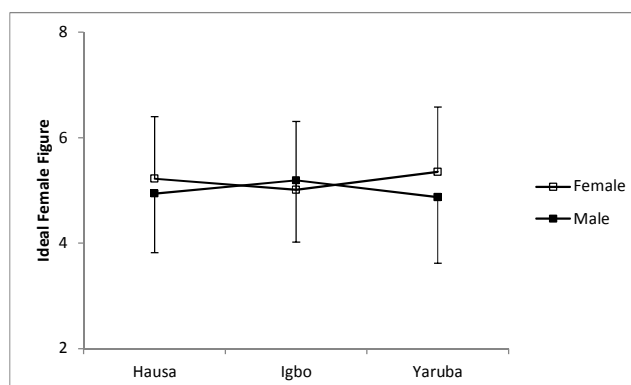


Figure 3. Shows the sex\*ethnic main effect for the ideal female figure.

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  $P < 0.05$

## 8. Depression and Monthly Income

Table 3 presents the Chi- square analysis of students' mental health indicator, and monthly income 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 3. Frequency (%) of depression and monthly income by sex and ethnicity.

VARIABLE	Sample	Female	Male	P/PHI	Hausa	Igbo	Yoruba	P/PHI
Depression								
Low < 35	1065 (69)	535(63)	525(76)	0.001*	315(59)	396(73)	357(75)	0.001*/.148
High > 35	484 (31)	313(37)	169(24)		215(41)	147(27)	120(25)	
Monthly-income								
High >£50	578(37)	333(39)	245(35)	0.001*/.048	277(50)	170(31)	132(28)	0.001*/.044
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)	

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. 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 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.

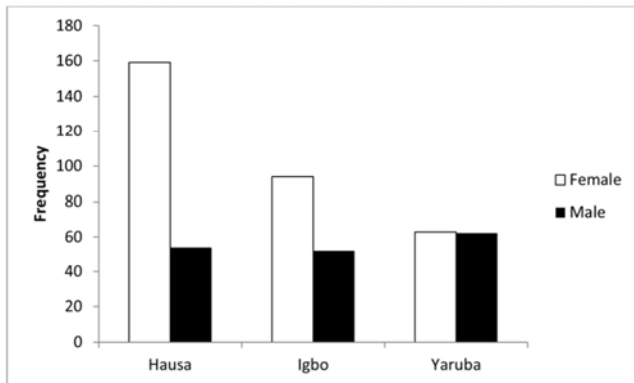


Figure 4. Frequency of those reported as depressed by gender and ethnicity.

## 9. Discussion

### 9.1. Depressive Symptoms

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, [59, 10]. Some of these difficulties are related to poor income status, poor health and poor accommodation, violence and terrorism within university campuses by Islamist militants, in addition to poor infrastructure facilities, [59, 60].

An earlier study of depression among university students in Nigeria by, [10], showed that only (8.3%) of the sample reported depression. Although, [10], measured students depression with the MINI, which is used mainly for hospitalized patients in measuring chronic and pathological depression, [61]. This may in part account for the low prevalence of depression reported by, [10] In addition, [10] conducted his study when there was less terrorism and violence attacks on students in Nigeria in addition to a better economic status 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. On the other hand, a study among students from different European countries by, [5], found that (34%) of Germans (34%) of Polish and (39%) of Bulgarians reported depression with depressive score  $\geq 35$ . Students' depression in the current study is slightly lower when compared to those European countries reported above.

With regard to the study of, [5] the differences in the prevalence of depression between the present study and those European data, may be attributed to cultural differences in the perception and interpretation of stress and depression.

When students depression was compared by sex, there was a significant differences between male and female students ( $P = 0.001$ ) with female students reported depression more than male students (Table 3). The reason may be due to the consequences of female education by Boko Haram that are abducting and killing especially female students in Nigeria sending waves of terror across Nigeria, [62]. 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, [10, 39], 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, [63], which has found that female students were more likely to seek professional psychological help than male students an indication of depressive symptoms.

However, [64] 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, [64, 65]. Although, certain factors have been reported to increase stress and depression among university students, such as financial problems and chronic ill health, [27, 5]. 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 4), despite better income and social support. In addition the result indicated that both male and female Yoruba students had the same score in depression. The underlying reason(s) for this finding is not clear, and may require further investigation. However, because of the uniqueness of the present study, it is difficult to compare the findings of the study to previous research in Nigeria, 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 and Igbo female students which cannot be conclusively explained by the findings of the current study alone, in order to plan appropriate intervention for this particular group.

### 9.2. Body Image Perception

In the current study, body image was examined under four categories (Table 2). 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, [50], 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 suggests 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, [66]. 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. 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 behaviors into their adult years, [42]. 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.. There is also a need for more studies on how students' body image perception may influence students health status and lifestyle behaviors.

### 9.3. Socio-economic Status and Social Support

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. This situation reflected the current general economic situation in Nigeria. 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, [67]. African cultural norms encourages community participation, and extended family system, which can be achieved through blood relationship or belonging to an organized 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 program.

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 2 and Figure 3) 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 2 and Figure 3). 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, [67, 18] consequently, the training of boys in school is given more priority, both financially and morally, than girls in the past.

The present study also indicated socioeconomic inequality based on ethnicity, with Hausa ethnic group having a better socioeconomic status than others (Table 2 and 3, Fig. 2). This finding supported previous observations in Nigeria, [68, 11]. Northern Nigeria has been the seat of power and Hausa ethnic group have been ruling Nigeria since the time of independence, [69-70]. 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, [71-72, 11]. However, 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, [65] 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. 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, [59, 10, 24] are based only on monthly income and on a comparison between male and female students without looking into the cultural or ethnic impact.

## 10. Conclusions

This study focused on the prevalence of depression, social support and body image perception by sex and ethnicity among university students in Nigeria. The uniqueness of the present study is that, for the first time, students data were analyzed with interaction effects and main effects in Nigeria, with regard to sex and ethnicity. 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 these variables examined 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' health in Nigeria will not be effective unless it is based on specific targeted groups. For example, intervention for depression among Hausa female students must be specific for this group. The result indicated no differences between male and female students, with regard to reporting depression among students from the Yoruba ethnic group (Figure 3). 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 intervention 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. However, it is possible to link the high depression reported by students from the Hausa ethnic group to the terror activities initiated in Nigeria by Boko Haram and other militants which has been found to

increase fear and anxiety, [62] The outcome of the interaction effects and main effects of the present study indicated that the propensity for depression, social support and body image was sex and ethnicity dependent. This is one of the unique contributions of the present study. In addition the result suggested that the health of female students is poor when compared with those of male students. However, there is a need for more studies with students sample in Nigeria so that comparisons can be made, as this study is the first to examine body image perception among university students in Nigeria.

#### WHAT IS ALREADY KNOWN ON THIS SUBJECT

Previous studies indicated that female students reported poor mental health than males, with a better socioeconomic status. Although, no available study on students body image perception among university students in Nigeria. However, there is evidence that body image perception is dependent on gender and culture.

#### WHAT DOES THIS STUDY ADD

While this study can agree with most of this key findings of the previous studies, it also make some unique propositions:

1. That cultural differences is the major contribution of health inequality in Nigeria rather than gender.
2. That people who live in regions with high conflict and violence are more likely to have poor mental health, irrespective of socioeconomic status.
3. That the mental health of students from the Hausa ethnic group is poorer when compared to students from the other ethnic group.
4. This is the first study to establish an interaction between gender and ethnicity in students health status in Nigeria, the findings will fill a gap in knowledge.

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