Sociological Study Exploring The Societal Impact Of Hypertension Prevelence Among Undergraduate Students: An Examination Of Social Factors And Health Behaviours

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Abstract

This study aims to assess the societal impact of hypertension prevalence, examination of social factors and health behaviors. among undergraduate students. This study was carried out in two colleges in Nsukka town with a total population of 403 (205 male and 198 female) undergraduate students within the age range of 18 to 29years. A questionnaire containing information on demographic, dietary habit, lifestyle, and blood pressure measurement was used for data collection. Frequency, percentages and crosstabs were used to analyze the responses from the respondents. Chi-square test was used to access the significant relationships that exist in the study and to draw final conclusions. Prevalence of hypertension and prehypertension was 3.0%, 6.9% respectively. The prevalence of hypertension increased with age, and blood pressure was higher in female than male (3.0% and 2.9%). Awareness of associated risk factors and screening campaigns within schools are necessary to reduce complications in adulthood.

Keywords: Societal impact, hypertension prevalence, social factors, health behaviours

Introduction

Blood pressure is the force exerted by circulating blood against the walls of the body's arteries, the major blood vessels in the body (WHO, 2013). Since the year 2000, an increasing upward trend of hypertension has been observed (WHO, 2013; WHO, 2017). Between 60 and 100% of the disability- adjusted life-years in sub-Saharan African population is attributed to this burden (Forouzanfer et al., 2017). Although hypertension had been previously known as a disease for adults of 40 years or older in Nigerian society, it is becoming common among the youth (Chen & Wang, 2008). The World Health Organization (WHO) categorizes high blood pressure (BP) as the top risk factor for death rate in the society, accounting for 13% of fatalities globally.

Hypertension is categorized into primary and secondary hypertension. Primary hypertension has an unknown cause and accounts for 90% to 95% of all hypertension cases (Rao et al., 2016). This type of hypertension is strongly associated with lifestyle. Usually, the patients do not have many signs and symptoms but may experience frequent headache, tiredness, dizziness or nose bleeds. Although the cause is not known, several sociological factors such as stress and academic pressure, Socioeconomic Status, lifestyle choices and habits, Social Support Networks, Cultural and Environmental factors, Educational Environment among others could

play a role in essential or primary hypertension. Secondary hypertension has a known cause and accounts for five percent to ten percent of all hypertension cases (Rao et al., 2016). Most common cause of secondary hypertension is an abnormality in the arteries supplying blood to the kidneys. Other causes include airway obstruction during sleep, stress, diseases and tumors of the adrenal glands, lifestyle, spinal cord injury, hormone abnormalities (oral contraceptive estrogen replacement), thyroid disease, toxemia of pregnancy, renal problems such as vascular lesion of renal arteries, diabetic neuropathy, pains as well as anxiety and hypoglycemia. Globally, hypertension among young adults (aged 18-40 years) ranges from 1.8% to 20% (Johnson et al., 2014; Chattopadhyay et al., 2014; Reddy et al., 2015; Rao et al., 2016). In Eastern Nigeria, a prevalence rate amongst adult aged 18 and above range from 12.3% to 30.86% has been reported (Ekwunife et al., 2010, Njoku et al., 2012; Iloh et al., 2014). In Nigeria, the last two decades has seen a rise in the number of prevalence studies concerning hypertension and other non-communicable diseases (Whelton et al., 2018).

Despite the extensive research on hypertension, in various demographic, there is a notable scarcity of studies especially targeting the prevalence, causes and sociological factors contributing to hypertension among undergraduate students. Besides, societal changes, such as increasing reliance on technology, changing dietary habits, and altered stress dynamic, have transformed the lifestyle of students. This shift demands an updated understanding of how these changes affect the prevalence of hypertension in this specific population. Also, given that undergraduates years are a formative period in one's life, identifying the factors contributing to hypertension during this stage could potentially lead to long term health issues and impact future societal health burdens.

The existing interventions often focus on clinical aspects but may overlook social and environmental determinants influencing hypertension among undergraduates students. There is a need for comprehensive interventions addressing these multifaceted influences. The objective of this study is to determine the societal impact of hypertension prevalence among undergraduate students; an examination of social factors and health behaviours. The specific objectives are to:

1. determine the prevalence of hypertension among undergraduate in Nsukka town; and
2. assess the life style characteristics and physical activity level of the respondents.

METHODS

Design and Study Settings

Cross-sectional survey design would be adopted in this study. The study was carried out in Nsukka Town, Enugu state, Nigeria. Nsukka is one of the seventeen local government areas that make up Enugu state, South-east Nigeria. Nkpunanor, Ihen'owerre, Nru Nsukka are the three

villages that makes up nsukka town. The Igbo language is extensively spoken in the LGA while the religion of Christianity is widely practiced in the area. Nnotable landmarks in the area include the University of Nigeria Nsukka popularly known as UNN, a federal university founded by Nnamdi Azikiwe in 1955. UNN has three major campuses in Enugu- nsukka campus (UNN), Enugu campus (UNEC) and Ituku- Ozala and The college of education Nsukka which is privately funded and managed. The school offers more courses in social science and technology

Participants

The study population consists of undergraduate in the university of Nigeria Nsukka with total population of 50242 and The college of education Enugu state with total population of 4608. The sample size will be determined using single population proportion formula at 95% confidence interval at with 5% margin error. The prevalence (P), of hypertension amongst young adult in Enugu state was 20.7% (Umegbolu et al., 2016). Sample size =413. A proportionate sampling technique was adopted; this strategy is used when the population is composed of several subgroups that are vastly different in number. The number of participants from each subgroup is determined by their number relative to the entire population. The following stages are the stages of the sampling involved. University of Nigeria Nsukka and The College of Education barracks were used as the study area. Three departments were randomly selected from each faculty, the population of students aged 18-29 years was used. Proportionate sampling was used to determine the number of students in each department that will be used for the study. Random sampling was used to select students from each department for the study.

Method of data collection

Data for the study was collected using questionnaire and blood pressure measurement. A questionnaire was used to collect personal and socio – demographic data from the respondents. Information on dietary pattern, lifestyle pattern, medical and family history were included on the questionnaires

Blood pressure measurement

This was taken using a digital BP machine OMRON (PK-HAEM-7321, made in Vietnam) which has been validated for clinical use. Measurement will be done while the subject is seated in a relaxed state, with the left arm placed on a table at a level with the heart position. Two BP readings will be taken at a 5-minuites rest interval. The average of these two readings was taken as the BP for each subject.

Table 1: **Blood pressure classification**

Classification	Systolic	Diastolic
Normal	<120mmHg	<80mmHg
Prehypertension	121-129mmHg	<80mmHg
Hypertension(stage one)	130-139 mmHg	80-89mmHg
Hypertension (stage two)	>140mmHg	>90mmHg

Source: AHA, 2017

Statistical Analysis

The data collected was coded and analyzed using computer software, Statistical Product for service solution (SPSS, version 20). The result was presented as means, frequencies and percentages. Chi-square and Pearson's coefficient was used to define relationship among variables. Significance was accepted at ($P< 0.05$).

Ethical clearance and informed consent

Application for ethical clearance certificate was made to the Health Research and Ethics Committee, University of Nigeria Teaching Hospital (UNTH) Ituku-Ozalla, Enugu State. The work commenced as soon as the ethical clearance is granted. A written consent was obtained from each of the respondents to participate in the study. After detailed explanation of what the study entails and its purpose, the respondents were given the consent form to sign. Strict confidentiality of all information collected was assured.

Results

Table 2 shows the socio-demographic data of the respondents. About half (50.9%) of the respondents were male while less than half (49.1%) were females. More than half (58.6%) of the respondents were within 21-25 years while one-third (32.0%) were within 18-20 years. Majority (96.0%) of the respondents were Christians while few (2.5%) were Traditional believers. Most (95.5%) of the respondents were Igbos while 3.5% were Hausas. Majority (96.5%) of the respondents were single while only 3.5% were married. Most (95.0%) were fulltime students while 5.0% were part-time students.

Table 2. Socio-demographic data of the respondents

Variable	Frequency	Percentage
Sex		
Male	205	50.9
Female	198	49.1

Total	**403**	**100.0**
Age group (years)		
18-20	129	32.0
21-25	236	58.6
26-29	32	7.9
≥ 30	6	1.5
Total	**403**	**100.0**
Religion		
Christian	387	96.0
Traditional	10	2.5
Islam	6	1.5
Total	**403**	**100.0**
Ethnic group		
Igbo	385	95.5
Yoruba	4	1.0
Hausa	14	3.5
Total	**403**	**100.0**
Marital status		
Single	389	96.5
Married	14	3.5
Total	**403**	**100.0**
Current student status		
Full-time	383	95.0
Part-time	20	5.0
Total	**403**	**100.0**

Table 3 shows the dietary pattern of the respondents. Majority (84.9%) skipped meal while few (15.1%) did not skip meal. More than half (52.6%) skipped breakfast, about one-third (38.0%) skipped lunch while very few (9.4%) skipped dinner. About 25.4% attributed their meal skipping to time constraint, 20.8% was due to lack of money, 19.3% was due to preference while 15.8% was due to lack of appetite. Almost half (49.9%) of the respondents ate fast foods 1-2 times/week, 22.3% ate fast foods daily while 16.1% ate fast foods 3-5 times/week. A higher percentage (67.7%) of the respondents add salt to food that has already been cooked while others (32.3%) did not do so. Majority (73.0%) of the respondents did not add salt to food at table even if it was

added to food during cooking while others (27.0%) did so. About 24.6% ate fried foods < 4 times daily, 22.3% ate fried foods occasionally while 16.4% at fired foods 4-6 times/week.

Table 3. Dietary pattern of the respondents

Variable	Frequency	Percentage
Skip meal		
Yes	342	84.9
No	61	15.1
Total	**403**	**100.0**
Meal commonly skipped		
Breakfast	180	52.6
Lunch	130	38.0
Dinner	32	9.4
Total	**342**	**100.0**
Reason(s) for skipping meals		
Time	87	25.4
No food	48	14.0
Preference	66	19.3
No money	71	20.8
Appetite	54	15.8
Religion	16	4.7
Total	**342**	**100.0**
Frequency of eating fast foods		
once daily	90	22.3
1-2 times a week	201	49.9
3-5 times a week	65	16.1
>5 times a week	47	11.7
Total	**403**	**100.0**
Add salt to food after it has been cooked		
Yes	130	32.3
No	273	67.7
Total	**403**	**100.0**
Add salt to food at table even if it was added to food during cooking		
Yes	109	27.0
No	294	73.0

Total	**403**	**100.0**
Frequency of eating fried foods		
once daily	32	7.9
<4 times a week	99	24.6
4-6 times a week	66	16.4
once a week	72	17.9
Occasionally	90	22.3
Rarely	44	10.9
Total	**403**	**100.0**

Table 4 shows the dietary diversity score of the respondents. A higher percentage (69.0%) of the respondents had medium dietary diversity score, some (27.0%) of them had high dietary diversity score while very few (4.0%) had low dietary diversity score.

Table 4. Dietary diversity score of the respondents

Variable	Frequency	Percentage
Low dietary diversity score	16	4.0
Medium dietary diversity score	278	69.0
High dietary diversity score	109	27.0
Total	**403**	**100.0**

Table 5 shows the physical activity status of the respondents. A good number (65.0%) of the respondents did not engage in vigorous-intense activity while about one-third (35.0%) of them engaged in vigorous-intense activity. More than half (52.5%) of the respondents engaged in vigorous intense activity daily while some (19.9%) did so 4-6 times/week. Nearly all (98.8%) of the respondents indulged in moderate-intensity activity while very few others (1.2%) did not indulge in moderate-intensity activity. Less than half (47.7%) of the respondents engaged in moderate-intensity activity daily, 28.9% engaged in moderate-intensity activity <3 times/week

while 19.3% engaged in moderate-intensity activity 4-6 times/week. Majority (84.9%) of the respondents' school had recreational facilities while only few (15.1%) did not have.

Table 5. Physical activity status of the respondents

Variable	Frequency	Percentage
Engage in vigorous intense activity		
Yes	141	35.0
No	262	65.0
Total	**403**	**100.0**
Frequency of engaging in vigorous intense activity		
Daily	74	52.5
<3 times weekly	28	19.9
4-6 times weekly	12	8.5
Rarely	27	19.1
Total	**141**	**100.0**
Indulge in moderate-intensive activity		
Yes	398	98.8
No	5	1.2
Total	**403**	**100.0**
Frequency of engaging in moderate-intensive activity		
Daily	186	47.7
<3 times weekly	119	28.9
4-6 times weekly	77	19.3
Rarely	16	4.1
Total	**398**	**100.0**
School have recreational facilities		
Yes	342	84.9
No	61	15.1
Total	**403**	**100.0**

Table 6 shows the alcohol consumption pattern of the respondents. A good number (61.3%) of the respondents took alcoholic drink in the past 12 months while some (38.7%) did not take alcohol. More than half (52.6%) of the respondents who took alcohol did so for some days while some (21.7%) of them did not know the exact frequency of their consumption of alcohol. More

than one-third (39.2%) of the respondents consumed wine while some (28.3% vs 20.3%) of them consumed palm wine and beer, respectively.

Table 6. Alcohol consumption pattern of the respondents

Variable	Frequency	Percentage
Drank alcohol in the past 12 months		
Yes	247	61.3
No	156	38.7
Total	**403**	**100.0**
If yes, frequency of alcohol consumption in the last 12 months		
Everyday	24	9.6
Some days	133	52.6
Not sure/ Don't know	54	21.7
Refuse to say	36	14.5
Total	**247**	**100.0**
Type of alcohol consumed		
Beer	82	20.3
Wine	158	39.2
Palm wine	114	28.3
Spirit	62	15.4

Table 7 shows the respondents' tobacco smoking habit and sleeping pattern. Majority (89.3%) of the respondents did not smoke tobacco while 10.7% smoked tobacco. Among those who smoke, more than half (53.5%) of them were not sure of their frequency of smoking while more than one-third (37.2%) smoked some days. Cigarette, marijuana and shisha were smoked by 3.2%, 4.2% and 6.7% of the respondents. Among those who smoked cigarette, 38.4% of them smoked 1-3 times/week while 30.8% smoked daily and 4-6 times/week. Among those who smoked marijuana, 47.0% smoked it daily while 29.4% smoked it 1-3 times/week. For those who smoked shish, majority (81.5%) of them smoked it 4-6 times/week while others (18.5%) smoked it 1-3 times/week. More than half (52.9%) of the respondents never inhaled smoke from cigarette smokers while others (47.1%) inhaled smoke from cigarette smokers. More than half (51.4%) of the respondents slept for 7-9 hours per day while more than one-third (38.4%) slept for 4-6 hours daily.

Table 7. Respondents' tobacco smoking habit and sleeping pattern

Variable	Frequency	Percentage
Smoke tobacco		
Yes	43	10.7
No	360	89.3
Total	**403**	**100.0**
If yes, frequency of smoking tobacco		
Some days	16	37.2
Not sure/Don't know	23	53.5
Refuse to say	4	9.3
Total	**43**	**100.0**
Type of tobacco smoked		
Snuff	0	0.0
Cigarette	13	3.2
Marijuana	17	4.2
Shisha	27	6.7
Frequency of smoking cigarette		
Daily	4	30.8
1-3 times week	5	38.4
4-6 times/week	4	30.8
Total	**13**	**100.0**
Quantity of cigarette smoked		
1 stick	13	100.0
Total	**13**	**100.0**
Frequency of smoking marijuana		
Daily	8	47.1
1-3 times week	5	29.4
4-6 times/week	4	23.5
Total	**17**	**100.0**
Quantity of marijuana smoked		
1 scoop	13	76.5
2 scoops	4	23.5
Total	**17**	**100.0**
Frequency of smoking shisha		
1-3 times week	5	18.5
4-6 times/week	22	81.5

Total	**27**	**100.0**
Quantity of shisha smoked		
1 shot	6	22.2
2 shot	21	77.8
Total	**27**	**100.0**
Inhale smoke from cigarette smokers		
Yes	190	47.1
No	213	52.9
Total	**403**	**100.0**
Duration of sleep per day		
2-3 hours	9	2.2
4-6 hours	155	38.4
7-9 hours	211	51.4
> 9 hours	28	7.0
Total	**403**	**100.0**

Table 8 shows the respondents' stress classification. A good number (61.3%) of the respondents had medium stress, more than one-third (36.0%) had high stress while very few (2.7%) had low stress

Table 8. Respondents' stress classification

Stress class	Frequency	Percentage
Low stress	11	2.7
Medium stress	247	61.3
High stress	145	36.0
Total	**13**	**100.0**

Table 9 shows the blood pressure classification of the respondents. Majority (97.5% vs 90.1%) of the respondents had normal systolic and diastolic blood pressure, respectively while 2.5% vs 6.9% had elevated systolic and diastolic blood pressure (prehypertension), respectively. Few

(3.0%) of the respondents had diastolic hypertension while none (0.0%) had systolic hypertension. Overall, most (90.1%) of the respondents had normal blood pressure, 6.9% had prehypertension while 3.0% had hypertension.

Table 9. Mean blood pressure of the respondents

Variable	Mean ± standard deviation
Systolic blood pressure (mmHg)	103.66 ± 11.38
Diastolic blood pressure (mmHg)	73.47 ± 8.41

Table 10 shows the blood pressure of the respondents according to sex. About 14.2% of the males and 2.5% of the female respondents had prehypertension while 2.9% of the males and 3.0% of the females had hypertension. Statistically, significant ($p<0.05$) difference was observed in the association between respondents' blood pressure and their sex.

Table 10. Blood pressure classification of the respondents

Blood pressure	Frequency	Percentage
Systolic blood pressure (mmHg)		
Normal (<130)	393	97.5
Prehypertension (130-139)	10	2.5
Hypertension (≥140)	0	0.0
Total	**403**	**100.0**
Diastolic blood pressure (mmHg)		
Normal (<85)	363	90.1
Prehypertension (85-89)	28	6.9
Hypertension (≥90)	12	3.0

Total	**455**	**100.0**
Overall blood pressure class (mmHg)		
Normal (<130/85)	363	90.1
Prehypertension (130/85-139/89)	28	6.9
Hypertension (≥ 140/90)	12	3.0
Total	**455**	**100.0**

Source: International Diabetes Federation (IDF, 2005)

Table 11 shows the blood pressure of the respondents according to age. About 33.3% of respondents aged ≥ 30 years had hypertension compared to 18.8% for those aged 26-29 years, 1.7% of those aged 21-25 years and 0.0% for those aged 18-20 years. Statistically, significant ($p<0.05$) difference occurred in the blood pressure of the respondents according to their age

Table 11. Blood pressure of the respondents according to sex

Blood pressure	**Male**	**Female**	**Total**
	F(%)	**F(%)**	**F(%)**
Overall blood pressure class			
Normal	176(85.9)	187(94.4)	363(90.1)
Prehypertension	23(11.2)	5(2.5)	28(6.9)
Hypertension	6(2.9)	6(3.0)	12(3.0)
Total	**205(100.0)**	**198(100.0)**	**403(100.0)**
	χ^2=11.787	**df=2**	**p=0.003***

F=frequency, %=percentage, df = degree of freedom, x^2=chi-square, p=probability, * = statistically significant ($p < 0.05$).

Table 12 shows blood pressure of the respondents according to their various ages.

Table 12. Blood pressure of the respondents according to age

Variable	18-20 years F(%)	21-25 years F(%)	26-29 years F(%)	≥ 30 years	Total F(%)
Overall blood pressure class					
Normal	115 (89.1)	224(94.9)	21(65.6)	3(50.0)	363(90.1)
Prehypertension	14(10.9)	8(3.4)	5(15.6)	1(16.7)	28(6.9)
Hypertension	0(0.0)	4(1.7)	6(18.8)	2(33.3)	12(3.0)
Total	**129(100.0)**	**236(100.0)**	**32(100.0)**	**6(100.0)**	**403(100.0)**
	χ^2=43.492	**df=6**	**p=0.000***		

F=frequency, %=percentage, df = degree of freedom, x^2=chi-square, p=probability, * = statistically significant ($p < 0.05$).

Discussion

The study showed that, the respondents were more dominated by male (50.9%) than female (49.1%) within the age range of 18-29 years, which is the normal age for undergraduates, and falls within the UNESCO age range for the definition of youth (World Youth Report 2020). The age range used for this study was slightly lower than that reported by Ondium et al. (2018), on prevalence and risk factors of hypertension among young adults (18-35) in north- west Nigeria. Male dominancy in this study is linked to choice of department.

Dietary habit respondents

Regarding the respondents' dietary habits, the study shows that majority of respondents' skipped meals. Most respondents skip breakfast and lunch, however, breakfast was found to be the most skipped meal. This finding corresponds with the findings by Pendergast et al. (2016) who found that breakfast meal was the most frequently skipped meal in comparison to lunch or dinner meal. This result agrees with another study which found that on dietary recall, among the university students, breakfasts were mainly missed, particularly when the students' financial positions were low (Maruf, 2012). Moreover, the four major factors that were responsible for respondents' skipping of meal included; no food, loss of appetite, lack of money and time constraint. This

could be responsible for the respondents' excessive consumption of fast-food from the restaurant. The result also reveals, a higher percentage (69.0%) of the respondents have medium dietary diversity score.

Lifestyle characteristics of the respondent

The result reveals that majority of the respondents don't have a vigorous physical activity. A good number of the respondents, engage in moderate intensive activity on average of three times weekly. Some of the physical activities investigated included brisk walking, jogging, swimming, football, weightlifting, abdominal exercises, push-ups, and dancing. These activities could enhance the well-being and overall health of students. However, this study found that they seldom engage in these activities. This could be because of the long number of hours the students attend classes on daily basis, thereby making them susceptible to, and at high risk of obesity, dyslipidemia and hypertension. (Lauer et al., 2017). Although about one-third of the respondents exercise once or twice a week, only few (1.2%) did not indulge in exercise up to 3-5 times weekly, and less than half (35.5%) spend at least 30mins during vigorous intense exercise. This finding is similar to the study conducted in Osun State Nigeria, where 36.3% of the students studied were actively exercising in public schools. Half of students (50%) were also actively exercising in a study carried out in Nnamdi Azikiwe University Awka, Nigeria. (Maruf et al., 2012). This could be because of the proximity to recreational sites in the school premises, and student's social group sporting schedules. The study further examined the lifestyle of students, in terms of level and frequency of alcohol intake, and smoking of substance (cigarette, and marijuana) which research has shown to increase the risk of hypertension. From the result of this study, majority of the respondents do not consume alcohol, 10.7 % smokes tobacco, while 41.7% inhales smoke from cigarette smokers. Krisela (2010) found that alcohol consumption is associated with prevalence of the metabolic syndrome. In this study, moderate, high and low perceived stress levels were 61.3%, 36%, and 2.7% respectively. The increased level of stress was due to the depressed mood and anxiety over time.

Prevalence of hypertension of the respondents

From this study, the prevalence of high blood pressure was 3.0% and prehypertension was 6.9% using ≥130mmHg SBP and/or ≥ 85mmHg DBP as cut-off points. This is lower than 20.7% prevalence primary hypertension from selected tertiary institution in Enugu state, 8.4% prevalence amongst ile ife, Nigeria, 29% prevalence from the United States, 7.5% from Ethiopia, in which the studies were carried out among adult population generally (Emmanuel & John 2016; Ong et al., 2007; Tadesse & Alemu, 2014). The relatively low prevalence of high blood pressure in this present study was due to the fact that the population were young adults (18-29years). As

many studies agreed, there is a positive relationship between age and hypertension in which the risk of hypertension increases with age. This is mainly due to arterial stiffness as one age. (Shishani et al., 2011; Ahaneku et al., 2011}.

Conclusion

The study showed that the prevalence of hypertension amongst undergraduates in nsukka town was 3.0%. It was found that most of the respondents had poor dietary habit as most of them skip meals (especially breakfast), consume fast-foods which most times are not well prepared. family history of hypertension, and gender were found to have significant association with hypertension. The following recommendations were made;

1. There is need for government and other stakeholders like healthcare practitioners, to facilitate and promote health education amongst undergraduate on the risk factors, symptoms and implications of poor dietary habits and its effect on health.

2. There is need for undergraduates to constantly go for medical checkups to be aware of their health status and treat any suspected health issues at the early stage of development. This is because most young adult believes that hypertensions are conditions that elderly people suffer.

3. These findings indicate that frequent campaigns on earlier detection and intervention should be carried out regularly within the university community targeting students especially.

4. Young adults should be oriented on the health implication of inordinate drinking and smoking of unhealthy substance.

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