International Journal of Public Health Research
2017; 5(4): 49-55
http://www.openscienceonline.com/journal/ijphr
ISSN: 2381-4829 (Print); ISSN: 2381-4837 (Online)

Pondering over the Lifestyle and Hypertension Status of Young Adults in Alakahia: A Semi-Urban Community in Rivers State, Nigeria

Precious Uchenna Obuah[1, *], Bliss Moore[1], Dasetima D. Altraide[2], Eme Olukemi Asuquo[1]

[1]Department of Preventive and Social Medicine, Faculty of Clinical Sciences, University of Port Harcourt, Choba, Nigeria

[2]Department of Internal Medicine, Faculty of Clinical Sciences, University of Port Harcourt, Choba, Nigeria

Email address

Obuahprecious.u@gmail.com (P. U. Obuah), Bliss.moore@uniport.edu.ng (B. Moore), daltraide@yahoo.com (D. D. Altraide), eme.asuquo@uniport.edu.ng (E. O. Asuquo)
[*]Corresponding author

To cite this article

Precious Uchenna Obuah, Bliss Moore, Dasetima D. Altraide, Eme Olukemi Asuquo. Pondering over the Lifestyle and Hypertension Status of Young Adults in Alakahia: A Semi-Urban Community in Rivers State, Nigeria. *International Journal of Public Health Research.* Vol. 5, No. 4, 2017, pp. 49-55.

Received: April 16, 2017; **Accepted**: July 24, 2017; **Published**: September 25, 2017

Abstract

Cardiovascular diseases include hypertension, which is described as a sustained high blood pressure and shown to be associated with the black race. It has been a burden and impedance to the socio-economic development of developing nations, especially in the Sub-Saharan Africa region, which includes Nigeria. Westernization has gradually replaced the traditional way of living in most African nations, with Nigeria as a typical example. Hypertension is now diagnosed among young adults and studies have shown that the disease is associated with their lifestyle. The aim of this study was to determine the prevalence and determinants of hypertension among young adults in a semi-urban community in Rivers State, Nigeria. This was a descriptive cross-sectional study among young adults within the ages of 20 to 35 years, with a cluster sampling technique. Data was collected with a self-administered questionnaire and anthropometric measurements (Taylor's model bath scale and stadiometer) were obtained, including blood pressure (using OMRON sphygmomanometer). Data collected were analyzed using the statistical package for social science (SPSS), version 20. A total of 400 respondents participated in this study: 176 (44%) males and 224 (56%) females. Prevalence of hypertension was 9.3%. Prevalence of risky behaviors were 6.3%, 44.3%, 65.4%, 35.2% and 6.5% for smoking, alcohol consumption, physical exercise, overweight and obesity respectively. Lack of exercise and body mass index were the identified predictors of hypertension. This study finds that the prevalence of hypertension and its determinants among young adults are high and so recommends that both smoking and alcohol anonymous clubs be introduced and established in communities to help reduce the prevalence and to promote weight loss by exercises; this will boost healthy living among young people in the community and with introduction of healthy living campaigns, there will be a drastic reduction in the prevalence of risky behaviors that predispose to hypertension.

Keywords

Hypertension, Risky Lifestyles, Young Adults, Semi-urban Community, Alakahia

1. Introduction

Cardiovascular diseases (CVDs) are a group of malfunctions or disorders that occur or affect the heart and blood vessels [1]. These diseases include coronary heart disease, peripheral arterial disease, cerebrovascular disease and many more. Numerous occurrences of cardiovascular disorders have been linked to abnormal conditions of the vessels that serve as blood pathways to both the neural cells (brain) and the blood pump (heart). Industrialized and under-developing or developing countries are faced with the challenge of cardiovascular diseases; which threatens the economy and development of most countries. Death due to cardiovascular diseases has been ranked as top in the World Health Organization's (WHO) report [1]. It is very possible that if there is no check to the rising prevalence of cardiovascular diseases, it will claim more lives and deteriorate economic growth in the developing countries of the world [2]. WHO's 2012 report on mortality due to chronic illnesses revealed that a higher proportion of deaths resulting from cardiovascular diseases emanated from under-developed and developing countries like those in the Sub-Saharan Africa region. Over 31% of global deaths in 2012 were due to CVDs, with higher proportions of the mortality occurring, more, in countries that are classified as underdeveloped and developing [1].

Hypertension is the term commonly substituted with high blood pressure and sometimes also referred to as a sustained increase in the pressure exerted by blood on the walls of the circulatory vessels [3]. The Seventh Report of the Joint National Committee on prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC 7) defines hypertension as a systolic blood pressure more than 139.9mmHg and values higher than 89.9mmHg diastolic blood pressure. Anthony et al. in 2008 [8], agreed that increase in the pressure of blood flow is a noticeable risk that could lead to disorders that affects the arteries, veins and even the heart and is also the commonest risk factor associated with adults who develop CVDs [4]. An abnormally increased pressure of the blood is a chronic medical situation whereby blood flow via blood vessels becomes higher than the expected and is affected by increased resistance from the wall of the vessels, this automatically places a demand on the heart to measure up with the commensurate measure of the volume of blood that will satisfy the abnormality of the vessels [5, 6, 7]. Due to the asymptomatic nature of hypertension, some researchers prefer to call it the "silent killer" (Hendriks et. al, 2012), this is not far from the fact that hypertension can ensue in an individual without noticeable symptoms and the sufferer could die of the disease due to lack of proper management of the condition, which at first was not detected. People could survive hypertension if the condition is detected early enough and managed [9, 10, 11].

Around the globe, CVDs are registered as being responsible for over 17 million mortalities annually, and about one in every three of the total deaths are due to issues concerned with hypertension: which accounts for an estimated mortality of 9.4 million worldwide, per annum [12]. Hypertension has been also associated with over 45% of the deaths due to cardiac disorders and about 51% of the mortalities resulting from stroke [13]. Hypertension has been identified as the cause for which about half the cost of over US$500 billion earmarked for major non-communicable diseases around the globe is spent [19]

Sustained high blood pressure has been associated with several cardiovascular disorders and kidney disorders. Sustained high blood pressure was identified as a risk to chronic kidney disease in the studies carried out by Alebiosu et al., (2006) and Ijeoma (2010) [14, 15]. Most cases of stroke are linked to the presence of hypertension [16]. Several studies have noted that hypertension is associated with obesity and overweight, which are developed as a result of uncontrolled eating habits or eating less nutritious foods.

Elevated blood pressure (BP) has been identified as a cause of impaired cognitive function among young people and this is common when treatment or management of the disease is not performed early enough [17]. The ability of sustained high blood pressure to cause the impairment of cognitive function among the elderly, which often present as dementia has been, reported (Paglieri, et. al. 2004) indicating that hypertension can be very harmful to young adults if developed. Some studies have demonstrated that hypertensive adolescents and their normotensive contemporaries have a significant difference in their mental performance; where the former have relatively lower performance in cognition, the latter have a higher mental performance, and this could be the same in any age category.

Studies that have been carried out to determine the relationship between high pressure in blood flow (high blood pressure) and obesity have repeatedly shown a statistically significant association. Though these studies have shown significant associations, the strength of the associations differ [18]. Hypertension when developed in children tend to persist as age increases, therefore, predisposing young people to developing hypertension and other CVDs in early life [36]. Obesity as a risk factor of hypertension is on the increase, with over 5.1% prevalence among young people [35].

The exposure and adaptation of young adults to risky lifestyles that predispose them to the acquisition of deadly non-communicable diseases are foresighted. This is with respect to the thriving market of alcoholic beverages and drinks, tobacco companies, and food processing companies (flooding the market with canned foods stuffed with high preservatives, which is capable of causing or increasing the chance of cancer).

Alakahia community in Rivers State is majorly occupied by students of the University of Port Harcourt. Most of these students are within the age bracket of 19 to 40 (including both the undergraduate and postgraduate school students). This community is flooded with beer parlors and bars and restaurants and a great number of the residents of this community patronize these businesses. There are too many young adults dwelling in Alakahia community and there are numerous outlets engaged in businesses that make substances, which predispose to hypertension, available to the consumers (mostly young adults), increasing their exposure to some of the risky behaviors that lead to hypertension; this feature makes Alakahia community a good site for this study.

2. Materials and Method

At 4°89', 4°90'N latitude and 6°92', 6°94'E longitudinal points is the location of a community in Obio/Akpor Local Government Area, Rivers State, Nigeria, called Alakahia. It lays along the East-West road, between Choba and Rumuosi communities, and serves as host community of the only tertiary hospital in Rivers State, the University of Port Harcourt Teaching Hospital (UPTH). The community has close proximity to the University of Port Harcourt, Nigeria, and serves as a choice location for students and staff who reside off-campus. It is a semi-urban community whose original occupants are peasant farmers but the indigenous young adults of this community are majorly students and artisans.

Most of the inhabitants of this community are young, both indigenes and foreigners. An assumed age range of the young people in the community spans from 17 to 37 years of age, suggesting that the same population must be under the influence of behavioral modifications to fit into westernized dispositions (boisterous social activities). This was a choice community because it comprised lots of people of the age of interest for the study and also has necessary features that can fuel risky health behaviors among young adults; examples include beer parlors and fast food restaurants.

It was a descriptive cross-sectional study carried out in a semi-urban community in Rivers State. The target population for this study were young adults of both sexes, between 20 to 35 years, who, at the time of the study resided in Alakahia community and must have lived in the community for at least one year.

Data was collected with the use of questionnaires and anthropometric tools (sphygmomanometer, stadiometer and weighing scale). The self-administered questionnaire was pre-tested in a neighboring community that shares the same demographic features as Alakahia. Research assistants who were graduates of human physiology were recruited and trained by a nurse matron on how to accurately use the anthropometric instruments.

The questionnaire was a modified WHO STEPS instrument for chronic disease risk factor surveillance. The adopted study instrument was divided into two sections: the first section was designed to illicit information concerned with the socio-demographic variables of the participants and their behavioral (lifestyle) measurements like smoking habits, alcohol consumption, physical activity, and diet; the second part of the questionnaire contained anthropometric measurements from which the body mass index and the blood pressure in millimeter mercury (mmHg) of the participants were obtained.

The height of participants were measured with a stadiometer; they were asked to lean on a wall, and standing bare-foot, feet placed together, arms by the side, on a flat floor, with no hair covering, and a fabricated pointer attached to the tape ensured an accurate measure of height in centimeters. Likewise, weight was measured using a bathroom scale. The scale could measure up to 0.1kg and over 150kg. The weighing scale was standardized using an individual of known weight as a reference and the subjects were weighed without heavy clothes or shoes on. This was done each day and the functionality of the study tools were checked daily.

The blood pressure of participants was measured in sitting position, at no specific time of the day, after they had been advised to rest for at least 10 minutes and without smoking; with their right arm extended and at the level of the heart, the medium size cuff was wound round the right arm, covering about 40% of its width circumference. Maximum inflation level was obtained from a standard mercury sphygmomanometer and auscultation was done over the brachial artery with the aid of a 15 cm stethoscope. The first appearance of the Korotkoff sounds as the cuff is deflated was taken as systolic and the disappearance of the sounds as diastolic, respectively. In cases where Korotkoff sounds remain audible despite deflation of the cuff, abrupt muffling of the sound was used for the diastolic measurement. Blood pressure was measured to the nearest millimeter mercury (mmHg) on two occasions at an interval of one minute. The systolic and diastolic pressures were measured three times over a period of 3 minutes and the lowest reading was recorded for each subject.

3. Data Analysis

Statistical analysis was performed with SPSS software version 20. As means and standard deviations, continuous variables were reported and categorical variables were reported as proportions and frequencies. Descriptive analysis was performed to determine the proportion of respondents engaged in risky behaviors.

Logistic regression analysis was performed to identify the predictors of hypertension among the respondents. Statistical significance was set at $p \leq 0.05$.

4. Results

Of the total participants (400), 176 (44%) and 224 (56%) were males and females respectively. The mean age of the participants was 28.44±5.39 (28.45±5.33 and 28.43±5.44 for male and female respectively). Two hundred and twenty-two (55.5%) of the respondents had attained tertiary level of education; 136 (34%) earned less than 5000 naira per month while 46 (11.4%) of the participants earned above 75000 naira monthly.

Table 1 shows that 9.3% of the participants were hypertensive and a relative alarming case of pre-hypertension appeared in 46% of the population. Table 2 presents the prevalence of the risky behaviors associated with hypertension. As shown in table 2, 6.3% (25/397) were smokers; the prevalence of alcohol consumption in this community was found to be 44.3% (176/397). There were 65.4% (261/399) of the subjects found to be physically inactive. The study found that 35.2% (139/395) of the participants were overweight and 6.5% (26/400) of the subjects were obese.

Table 1. *Prevalence of hypertension among respondents.*

Variable	Frequency (n=400)	Percent (%)
Hypertension status		
Normal	179	44.7
Pre-hypertensive	184	46.0
Hypertensive	37	9.3

Table 2. *Lifestyle-associated risks of hypertension among respondents.*

Variables		Frequency	Percentages (%)
Tobacco Smoking (n=397)	Yes	25	6.3
	No	372	93.7
Alcohol consumption (n=397)	Yes	176	44.3
	No	221	55.7
Physical exercise (n=399)	Yes	138	34.6
	No	261	65.4
Body mass index (n=400)	Underweight	21	5.3
	Normal	212	53.0
	Overweight	141	35.2
	Obese	26	6.5

In table 3, the findings show that respondents who had less or no physical exercise were more predisposed to hypertension. Ten percent (26/261) of the respondents that had less or no physical exercise were observed to have developed hypertension and only 8.0% (11/138) of the respondents that engage in physical exercise developed hypertension. The association between physical exercise and hypertension status was statistically significant (p=0.003). Respondents in the overweight and obese category were likely to develop hypertension more than those in the underweight and normal weight category ($p < 0.05$)

Logistics regression analysis performed to identify predictors of hypertension in the community revealed that respondents with normal weight were less likely to be hypertensive with an adjusted odd ratio of 2.0 (95% CI= 1.294, 2.965) than the overweight category.

Body mass index and exercise were found to be predictors of hypertension. By an adjusted odd ratio of 2.0 (95%CI: 1.345 and 3.144) respondents that engage in physical exercise were less likely to develop hypertension in comparison with respondents that do not exercise (table 4 and 5).

Table 3. *Association between lifestyles and hypertension status of respondents*

Variables	Hypertension status				
	Normal	Pre-HTN	HTN	X^2	p-value
Tobacco smoking					
Yes	7 (28.0)	14 (56.0)	4 (16.0)	3.742	0.154
No	172 (46.2)	168 (45.2)	32 (8.6)		
Alcohol consumption					
Yes	84 (47.7)	73 (41.5)	19 (10.8)	3.093	0.213
No	94 (42.5)	110 (49.8)	17 (7.7)		
Physical exercise					
Yes	78 (56.5)	49 (35.5)	11 (8.0)	11.713	0.003
No	101 (38.7)	134 (51.3)	26 (10.0)		
Body Mass Index					
Underweight	16 (76.2)	4 (19.0)	1 (4.8)		
Normal	102 (48.8)	90 (43.1)	17 (48.1)	16.780	0.010
Overweight	49 (35.3)	76 (54.7)	14 (10.1)		
Obese	9 (34.6)	13 (50.0)	4 (15.4)		

Table 4: *Regression analysis showing predictors of hypertension*

Variables		OR	p-value	95% CI
				Lower, Upper
Physical exercise	Yes	0.755	0.147	0.517, 1.103
	No	-	-	-
Body Mass Index	Normal	1.032	0.834	0.771, 1.380
	Overweight	-	-	-

Table 5. *Adjusted Odd Ratio for predictors of hypertension.*

Variables		**AOR**	**p-value**	**95% CI**
				Lower, Upper
Physical exercise	Yes	2.057	0.001	1.345, 3.144
	No	-	-	-
Body Mass Index	Normal	1.959	0.001	1.294, 2.965
	Overweight	-	-	-

5. Discussion

The purpose of this study was to determine the prevalence of hypertension and identify its lifestyle associated determinants among young adults. The circular thought that hypertension only occurs in old age has since become a snare that traps young people in the web of poor zeal to quit known risky lifestyles.

5.1. Prevalence of Hypertension Among Respondents

There have been several studies on hypertension with interest in identifying the prevalence of the disease among specific populations like the elderly, pregnant women and among diabetic patients. The prevalence of hypertension in this study was 9.3% among young adults. This falls within the range published by Ogah, et al. (2012) [20] that Nigerian communities have a hypertensive prevalence that spans within 8% to 46%, depending on the target population studied and the type of measurement and cut-off marks with which hypertension was defined. Ekore, et al. (2009) [21] recorded a prevalence of 30% in his study among young adult males and non-pregnant female patients between the ages of 18 and 44 years. Diwe, et al. (2015) [33] had a hypertension prevalence of 12.4% among bank workers, Afaf, et al. (2013) [32] reported 19.5%, Vivek reported 19.8% [31] and several other reports had a prevalence of 15.4%, 26.8%, 20.2% and 22.9% [22]. The 30% prevalence in Ekore’s study among patients within the young adult classification was relatively too high when compared to the 9.4% prevalence reported in this study. This could have been due to the fact that their respondents were treating some other illness while the respondents in our study comprised young adults who were not treating any other illness. Also, the extension of the age of the respondents to 44 years in Ekore’s study must have contributed to the high prevalence of hypertension. Diwe’s study showed a relatively closer prevalence of 12.4% among bank workers. The relative closeness of the prevalence of hypertension between our study and that of Diwe, could be due to the similarity in the age bracket of the respondents used in both studies.

5.2. Prevalence of Risky Behaviors

For decades now, tobacco use, alcohol consumption, diet and physical activity have been identified as modifiable risk factors of hypertension. This study, however, seeks to find out the proportion of the respondents that were engaged in these risky activities. Ibekwe (2015) [23], in a community based study reported a prevalence of 15.8% for smoking, 43.4% for alcohol consumption and a prevalence of 18.8% for obesity, measured with the body mass index. Abdulsalam, et al. (2014) [22], reported a prevalence of 40.6% for alcohol consumption, which was only 2.8% lower than the proportion in Ibekwe’s study, 3.8% prevalence of smoking and 24.0% prevalence of abnormal body weight. This study had a prevalence of 6.3% for smoking; 44.3% for alcohol consumption; 65.4% for physical inactivity; 35.2% were overweight and 6.5% were obese among young adults in Alakahia community. Abdul-Razak, et al. (2016) [24] reported an overweight and obese prevalence of 38.7% and 34.3% among Malaysian adults.

Though the target population differed between this study and Ibekwe’s study, their prevalence of alcohol consumption was almost the same (44.3% and 43.4% respectively). This is indicative that alcohol consumption is high among young adults. However, the prevalence of cigarette smoking in both studies shows a difference. Abdulsalam’s prevalence of 24.0% smoking among his study respondents was quite higher than that of this study. The difference could have resulted from the difference in age group of the respondents in these studies.

In Mishra et al. (2015)’s [34] study on the prevalence of modifiable risk factors of non-communicable diseases, the study reports that 4.6% prevalence of obese, 19.2% prevalence of inactivity and 13.1% of smoking prevalence were found among the respondents. The values in their study were quite lower than those of this study. This could have been due to the study design or the age difference between respondents.

Okwuonu et al. (2015)’s [25] study reported a prevalence of 20.3% and 17.3% for both alcohol consumption and tobacco smoking. The prevalence of tobacco smoking (6.3%) in this study was far lower than the value reported by Okwuonu. The prevalence of alcohol consumption in this study was two times the value reported by Okwuonu et al. This must have been influenced by the difference in the lifestyle of the populations studied.

This study shows statistically significant associations between some lifestyle-associated risk (physical exercise and body mass index) and the hypertension status of the respondents, with p-values less than 0.05.

5.3. Predictors of Hypertension

Oduwole et al., (2012) [26] in their cross-sectional study titled Obesity and elevated blood pressure among adolescents in Lagos, Nigeria, concluded that there was a high prevalence of obesity with an increased risk of hypertension among adolescents and revealed that 23.2% of the respondents in the study had a body mass index above the 85th percentile (using the US CDC body mass index chart). Their finding includes the result of Pearson's rho analysis stratified by gender which shows as follows, Males: SBP ($r = 0.31$, $P < 0.01$), DBP ($r = 0.27$, $P < 0.01$), Females: SBP ($r = 0.1$, $P < 0.01$) DBP ($r = 0.27$, $P < 0.01$). Hedayatinejad et al. (2016) [27] stated in their study that hypertension was significantly associated with body mass index, directly; with a p-value of 0.036 ($p<0.05$).

Ekanem et al. (2013) [28] reported that body mass index was a predictor of hypertension in a semi-urban community, with an odd ratio of 1.08 (95% CI: 1.03 to 1.13). Our study agrees that body mass index is a predictor of hypertension.

This study shows body mass index (BMI) prevalence as follows: underweight = 5.3%, normal weight = 53.0%, overweight = 35.2% and obese = 6.5%. There was a statistically significant association between hypertension and BMI (p=0.003) and the logistic regression analysis conducted also showed statistically significant odd ratio. Okafor et al. (2014) [29] had a higher prevalence of BMI and a significant association between BMI and blood pressure (p=0.03), this p-value was very close to that of this study. The difference in the findings from the reviewed literature and this study could be linked to the differences in the study population.

Okwuonu et al. (2015) [25] revealed that body mass index was identified as a predictor of high blood pressure, affecting the diastolic blood pressure directly, with r=0.43. This study also identified body mass index as a predictor of hypertension with an odd ratio of 2 (95% CI = 1.364 to 3.172) and chi-square value ($X^2 = 16.780$) (p-value= 0.010).

6. Conclusion

Sequel to the findings of this study, the researcher concludes that the prevalence of hypertension among the respondents in the study is relatively high and a cause for concern, and if the lifestyle of young adults in the studied community is not modified, this prevalence may double in the nearest future. The prevalence of the determinants of hypertension is high and a threat to young adults in Alakahia, where most young adults do not or rarely engage in physical exercise. The researcher further concludes that body weight (defined by BMI scale) and lack or inadequate physical exercises are the possible predictors of hypertension among young adults dwelling in Alakahia community. Awareness campaigns and proper health education are some useful mediums via which young adults could be enlightened on the benefits of engaging in moderate to vigorous physical activities and the benefits of weight loss. Establishing smoking and alcohol anonymous clubs will go a long way to reduce uptake or usage of alcohol and cigarette smoking. By involving the community in health interventions concerning how they can handle risky habits, the government can achieve a reduction in the prevalence of hypertension in the future [30]

References

[1] World Health Organization (2015). Global Health Observatory (GHO) data. Raised blood pressure.

[2] Gaziano, T. A., Bitton, A., Anand, S., Abrahams-Gessel, S., & Murphy, A. (2010). Growing Epidemic of Coronary Heart Disease in Low- and Middle-Income Countries. Current Problems in Cardiology, 35 (2), 72–115.

[3] Arnett, K. D. (2001). Arterial Stiffness and Hypertension. 2nd Virtual congress of Cardiology, Argentine Federation of cradiology. Fac.org.ar (accessed 28, February, 2017).

[4] McCarron P., Smith G. D., Okasha M., McEwen J. (2000), Blood pressure in young adulthood and mortality from cardiovascular disease. Lancet. Apr 22; 355 (9213): 1430-1431.

[5] Kumar, P., Clark, M. (2009). Clinical Medicine; 7th ed. Spain: Saunders Elsevier: 798–805.

[6] Shaikh, R. B., Mattew, E., Sreedharan, J., Muttappallymyatlil, J., Al-Sharbalti, S., Basha, S. A. (2011). Knowledge regarding risk factors of hypertension among entry year students of a medical university. J Family Community Med. 18: 124–9.

[7] Akpa, M. R., Emem-Chioma, P. C., Odia, O. J. (2013). Current epidemiology of hypertension in Port Harcourt Metropolis, Rivers State, Nigeria. Retrieved from: http: www.ajol.info/index.php/phmedj/article/view/38922.

[8] Athonys F, Eugene B, Dennis K, (2008), Hypertensive Vascular Disease. Volume 2. 17. USA: McGraw-Hill Companies; pp. 1549–1562.

[9] Parr, J. D., Lindeboom, W., Khanam, M. A., Perez, Koehlmoos, T. L. (2011). Diagnosis of chronic conditions with modifiable life style risk factors in selected urban and rural areas of Bangladesh and socio-demographic variability there in. BMC Health serv Res. 11: 309.

[10] Bani, I. A. (2011). Prevalence and related risk factors of essential hypertension in Jazan region, Saudi Arabia. Sudanese J Public Health. 6: 45–50.

[11] Asekun-Olarinmoye, E., Akinwusi, P., Adebimpe, W., Isawumi, M. A., Hassan, M. B., Olowe, O. (2013). Prevalence of hypertension in the rural adult population of Osun State, South Western Nigeria. Int J Gen Med. 6: 317–22.

[12] Lim, S. S., Vos, T., Flaxman, A. D., Danaei, G., et. al. (2012) A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 380 (9859): 2224-60.

[13] World Health Organization (2008). Causes of Death 2008 [online database]. Geneva, (http ://www.who.int/healthinfo/global_burden_disease/cod_2008_sources_methods.pdf.).

[14] Alebiosu, C. O., Ayodele, O. O., Abbas, A., Olutoyin, A. I. (2006) Chronic renal failure at the Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria. Afr Health Sci. Sep. 6 (3): 132-138.

[15] Ulasi, I. I., Ijoma, C. K. (2010) The enormity of chronic kidney disease in Nigeria: the situation in a teaching hospital in South-East Nigeria. J Trop Med. 501957.

[16] Sani, M. U., Wahab, K. W., Yusuf, B. O., Gbadamosi, M., Johnson, O. V., Gbadamosi, A. (2010). Modifiable cardiovascular risk factors among apparently healthy adult Nigerian population-A cross sectional study. BMC Res Notes. 3: 11.

[17] Lande, M. B., Kaczorowski, J. M., Auinger, P. (2003) Elevated blood pressure and decreased cognitive function among school-age children and adolescents in the United States. J Pediatr. 143: 720-724.

[18] Falkner, B. (2009). Hypertension in children and adolescents: epidemiology and natural history. Pediatr. Nephrol. 25 (7): 1219–1224.

[19] World Health Organization. WHO Report on the Global Tobacco Epidemic Warning About the Dangers of Tobacco. Italy: WHO; 2011. [updated 2014]. [cited 2013].

[20] Ogah, O. S., Okpechi, I., Chukwuonye, I. I., Akinyemi, J. O., Onwubere, B. J., Falase, A. O., Sliwa, K. (2012). Blood pressure, prevalence of hypertension and hypertension related complications in Nigerian Africans: A review. World Journal of Cardiology, 4 (12), 327–340.

[21] Ekore, R., Ajayi, I., & Arije, A. (2009). Case finding for hypertension in young adult patients attending a Missionary Hospital in Nigeria. African Health Sciences, 9 (3), 193–199.

[22] Abdulsalam, S., Olugbenga-Bello, A., Olarewaju, O. & Abdus-salam, I. (2014). Socio-demographic Correlates of Modifiable Risk Factors for Hypertension in a Rural Local Government Area of Oyo State South West Nigeria. International Journal of Hypertension, 14 (9).

[23] Ibekwe, R. (2015). Modifiable Risk factors of Hypertension and Socio-demographic Profile in Oghara, Delta State; Prevalence and Correlates. Annals of Medical and Health Sciences Research, 5 (1), 71–77.

[24] Abdul-Razak, S., Daher, A. M., Ramli, A. S., Ariffin, F., Mazapuspavina, M. Y., Ambigga, K. S., for the REDISCOVER Investigators. (2016). Prevalence, awareness, treatment, control and socio demographic determinants of hypertension in Malaysian adults. BMC Public Health. 16: 351.

[25] Okwuonu, C. G., Ngoka, S. C., Chimezie, O. J., Eze, T. H., Uwanurochi, K., & Mbanaso, A. U. (2015). Towards prevention of hypertension in Nigeria: a study of prehypertension and its associations among apparently healthy adults in Umuahia, South-East Nigeria. International Journal of Preventive Medicine, 6, 61.

[26] Oduwole, A. A., Ladapo, T. A., Fajolu, I. B., Ekure, E. N. & Adeniyi O. F. (2012) Obesity and elevated blood pressure among adolescents in Lagos, Nigeria: a cross-sectional study. BMC Public Health, 12: 616. DOI: 10.1186/1471-2458-12-616.

[27] Hedayatinejad, M., Hedayatinejad, E., Fayazi, S. & Zarea, K. (2016) The Prevalence of Hypertension and Its Relation to Age, Body Mass Index, and Physical Activity Among High School Girls in Daniel Susa, Iran 2014. Jundishapur Journal of Chronic Disease Care, 5 (1): 29020.

[28] Ekanem, U., Opara, D., & Akwaowo, C. (2013). High blood pressure in a semi-urban community in south-south Nigeria: a community - based study. African Health Sciences, 13 (1), 56–61.

[29] Okafor, C. I., Anyaehie, U., & Ofoegbu, E. N. (2014) The magnitude of obesity and its relationship to blood pressure among the residents of Enugu metropolis in South East Nigeria. Ann Med Health Sci Res, 4: 624-629.

[30] Minkler, M. (2005). Community-based research partnerships: challenges and opportunities. Journal of Urban Health: Bulletin of the New York Academy of Medicine, 82 (2), Supplement 2, ii3–ii12.

[31] Kashyap, V., Kumar, C., Haider, S., Singh, S. B. and Sagar V. (2015). Prevalence of Hypertension and Its Association with Selcted Socio-Demographic Factors in a Rural Area of Jharkhand. Journal of Dental and Medical Sciences (IOSR-JDMS), 14: 01-06.

[32] Afaf S. Abd El-Mohsen, Mona M. Abd El Maksoud and Tagered T. Shokier Prevalence of Hypertension among Youth in Helwan University Life Sci J, 10 (3): 2304-2308.

[33] Diwe K. C, Enwere O. O, Uwakwe K. A, Duru C. B, Chineke H. N. (2015). Prevalence and awareness of hypertension and associated risk factors among bank workers in Owerri, Nigeria. Int J Med Biomed Res 4 (3): 142-148.

[34] Mishra, S. R., Neupane, D., Shakya, A., Adhikari, S., and Kallestrup, P. (2015). Modifiable Risk Factors for Major Non-communicable Diseases among Medical Students in Nepal. Journal of community Health 40 (5): 863-868.

[35] Olusanya, J. O. & Omotayo, O. A. (2011). Prevalence of obesity among undergraduate students of Tai Solarin University of Education, ijagun, ijebu-ode. Pakistan Journal of Nutrition, 10 (3923): 940-946.

[36] Rademacher, E. R. and Sinaiko, R. A. (2009). Albuminuria in Children. Current Opinion in Nephrology and Hypertension 18 (3): 246-251.