

# KNOWLEDGE, PHYSICAL ACTIVITY AND HEALTH-RELATED QUALITY OF LIFE OF HYPERTENSIVE PATIENTS IN CROSS RIVER STATE, NIGERIA

Nkere, Effioanwan Irene Duke<sup>1</sup> and Ajibola, Clement A.<sup>2</sup>

<sup>1</sup>Dept. of Human Kinetics or Health Education  
University of Calabar, Calabar.

## Abstract

*This study described the relationship between hypertension and health-related quality of life (HRQOL) among hypertensive patients in Cross River State, using an adapted World Health Organization Quality of Life-BREF (WHOQOL-BREF) questionnaire to assess 336 hypertensive patients from ten (10) selected hospitals of Cross River State. Two null hypotheses were formulated and tested at a 0.05 level of significance. The study adopted the expose factor design and the sampling technique involved four stages of stratified, simple random and purposive sampling technique. A simple linear regression statistical tool was used for data analysis. The results revealed that there was a significant influence of knowledge and physical activity on the Health-related quality of life of hypertensive patients. Based on these findings, it was recommended that all public health practitioners should redirect education towards preventive/risk reduction practices, health-seeking behaviour and early diagnosis to ensure maintenance of desirable HRQOL.*

**Keywords:** *Knowledge, Physical activity, Health-related quality of life, Hypertensive patients*

## Introduction

For all nations development, effective health and education delivery are important thus the popular saying that health is wealth. To maintain this health status effective educational process is required. Nigeria, like other non-industrialised countries has the health education and administrations focused on forestalling, controlling and taking care of infectious issues, for example, malaria and tuberculosis. Yet, as of late, non-communicable disorders have developed into expanding issues (Omoleke, 2013). One of the highest widespread non-communicable disorders internationally is hypertension and is accountable for an extended 45% of death attributable to heart diseases and 51% of death owing to stroke worldwide (WHO, 2013).

Hypertension is a chronic condition but preventable disease and it is one of the major causes of permanent disabilities and unexpected death, which reduces the quality of life of the individuals as well as that of the family members. There is a prediction that hypertension will increase by 24% to 80% by the year 2025 for developed and developing countries respectively (WHO, 2013). If this prediction comes true, it, therefore, means that more than half (1/2) of the world's adult population will be living with hypertension and its associated effects. To prevent this from occurring, curb its detrimental effect and improve the quality of life of people already living with hypertension, knowledge has to be enhanced by the provision of information on hypertension through the media, health education and health talks during visits to the hospital, city walk and a lot of other means. Hypertensive patients who are exposed to this information and teachings are expected to develop a high level of knowledge and follow the prescribed physical exercise to have a good health-related quality of life.

But despite the availability of information, health education in clinics, placement on physical exercise and behavioural modification therapy, patients with hypertension still report to the hypertensive clinics with a low level of health-related quality of life. Therefore, it became necessary to investigate the reason for this observation. Could it be as a result of the level of knowledge or physical activity? Thus the study investigates the influence of knowledge and physical activity of the hypertensive patient of Health-related Quality of Life of hypertensive patients in Cross River State, Nigeria.

Hypertension is a worldwide epidemic, particularly among the adult population because of the greater incidence and related morbidity as well as death within this age bracket (Lewington, Clarke, Qizilbash, Peto and Collins, 2002). Its burden and that of other non-communicable ailments are speedily growing, with the African region being the most affected area in the world [*World Health Organization* (WHO), 2013]. The United Nations together with other key public health stakeholders have acknowledged non-communicable diseases as a global concern (Adeloye, Basquill, Aderemi, Thompson and Obi, 2015). WHO (2013) predicted that hypertension affects approximately one billion persons globally and it is the major risk factor for various other cardiovascular disorders. Yet, major issues concerning hypertension control are at the least reporting level in nearly all regions of the world (Mills, Bundy, Kelly, Reed, Kearney and Reynolds, 2016).

In sub-Saharan Africa, hypertension is the greatest rapidly increasing cardiovascular disorder causing hospitalization and mortality and affecting over twenty million people (Okwuonu, Ojima, Okaka and Akemokwe, 2014). It is positioned leading within non-communicable ailment within Nigeria, with an outcome extending from 8% to 46.4% in males and females in rural as well as urban populations. The burden of hypertension in Nigeria is great and still increasing (Bello, 2013). This "prevalence of hypertension in Nigeria could form a considerable section of the total burden in Africa (Adeloye *et al*, 2015). This

rapidly increasing prevalence has resulted in significant modifications that have ensued in the form of health and disease distribution in various unindustrialized countries (Abubakar, Muhammad, Ahmed and Idris, 2017). Blood pressure involves force applied by flowing blood on the arteries walls, the main blood vessels within the human body. Two symbols letter is used to denote blood pressure. Hypertension based on Mlunde (2007), is a pulse of 140/90 mmHg (millimetres of mercury) or more, in light of any event two readings on isolated events. It is generally under-assessed and ignored because of the way that it is for the most part asymptomatic. Most people with hypertension are unconscious of the issue because there is generally no admonition signs or manifestations. Indications like migraines, nosebleeds, unpredictable heart rhythms, vision changes, and humming in the ears, exhaustion, sickness, disarray, uneasiness, chest agony, and muscle quakes may happen after certain intricacies are prominent. It is along these lines, fundamental that pulse is estimated consistently (WHO, 2019).

The pervasiveness of hypertension differs from country to country. The WHO African District has the greatest raised prevalence of hypertension (27%) however the WHO Area of the Americas has the smallest commonness of hypertension (18%) (WHO, 2019), an appraisal of the latest things demonstrations that the number of grown-ups with hypertension expanded from 594 million in 1975 to 1, 13 billion in 2015, with the increment seen to a great extent in low-and centre pay nations (WHO, 2019). It is anticipated that approximately 1 billion individuals globally will live with hypertension by 2025 (WHO, 2021). Of WHO's six locales, the African area has the most noteworthy commonness of hypertension assessed at 46% of grown-ups, as indicated by WHO's Worldwide status report on non-communicable diseases 2010 (WHO, 2019). Raheem, Taiwo and Oye, (2017), in their study in Ibadan on Awareness of hypertension and its impact on blood pressure control among elderly Nigerians realised that among those who were aware of the presence of hypertension and were on treatment, 77.3% still had uncontrolled hypertension. Elderly Nigerians have a high prevalence of hypertension, and many of those who are affected are unaware that they have it.

Risk factors for hypertension incorporate race, age, family ancestry, being overweight/fixated, poor physical activity, utilizing tobacco and smoking, helpless pressure on the board and some other constant conditions (WHO, 2013). It very well may be constrained by way of life changes as the norm, first-line treatment for hypertension. This incorporates normal actual exercise, stress decrease, drug, solid weight, and sound eating routine (Poulter, Prabhakaran and Caulfield, 2015).

Education is fundamental to expanding information, improving avoidance and self-care rehearses for hypertension among adult patients (Ozoemena, *et al*, 2019). Health Education motivates people with interests and brings up interest in others towards enhancing their condition of living. It helps in enhancing accountability for health conditions as individuals, family members and community members; health education is therefore an operational tool that aids

improvement of health. It improves knowledge and provides ideas that reshape the everyday habits of people with unhealthful lifestyles in developing countries like Nigeria (Omonu, 2016). People with greater levels of education frequently experience better health-related quality of life (HRQOL), and education has been generally acknowledged as a factor in this relationship (Gholami, Jahromi, Zarei and Dehghan, 2013). A healthy lifestyle encompasses the ability to assess personal health, the provision of information, behaviour change and individual or group counselling that ultimately leads to the adoption of a healthy quality of life (Ajibola and Akpan, 2007).

Assisting people with the understanding that hypertension is a sensible situation can expand their certainty involving livelihood with an ongoing infection and achieve an adjustment in conduct towards better health results and quality of life. Knowledge is one variable that shows the familiarity, awareness, or understanding of a situation which is acquired through an educative process, discovery, experiences or learning. The understanding of the meaning, causes and process of management of hypertension can be shown with practical skills or theoretical understanding. The knowledge of management of hypertension among individuals shows the range of the individual's information or understanding. It alerts the health educator on areas the individual is not aware of or has or little understanding that would require further emphasis to promote understanding. This knowledge could be acquired through a formal or systematic process of education (Boghossian, 2007). Knowledge of hypertension management is low in Nigeria as recorded by Ahaneku, Osuji, Anisiuba, Ikeh, Oguefufur and Ahaneku (2011), in Sokoto (3.5%) and 30% in Nsukka. Kilica, Uzunçakmak and Edec, (2016), documented from their study that the ratio of subjects with controlled blood pressure is positively correlated with knowledge level, however this relationship is not significant ( $p > 0.05$ ).

Lifestyle influences, like physical inactivity, are crucial modifiable risk factors in the development of hypertension and level of quality of life. The benefits of physical activity on hypertension and improvement of Health-related quality of life have been well demonstrated. Exercise is a vital component of lifestyle therapy to living healthy and for the primary prevention and treatment of hypertension. It causes immediate significant reductions in systolic blood pressure which persist for almost 24 hours and is referred to as post-exercise hypotension and has been documented to reduce both systolic and diastolic blood pressure with as much as 5–7 mmHg reductions in those with hypertension. Physical activity is associated with improved mental health and well-being, both factors are closely linked to health-related quality of life (HRQoL). Studies that analyse the effect of aerobic physical activity on HRQoL have shown inconsistent results (Villalobos, Vinuesa, Pedret, Basora, Basora, Arija, 2019). Battaglia, Bellafigliore, Alesi, Paoli, Bianco, and Palma, (2016), showed that supervised physical activity results in a positive health status. Villalobos *et al.* (2019) study showed that, total physical activity

significantly improved the HRQOL measures of physical functioning (+10.19 points), bodily pain (+7.32 points), general health (+2.53 points), and mental health (+5.65 points).

Health-related “satisfaction is a major indicator to evaluate hypertensive patients' management results. An efficient audit of 20 examinations disclosed that individuals with hypertensive had a lower satisfaction compared to normotensive individuals” (Trevisol, Moreira, Kerkhoff, Fuchs and Fuchs, 2011). The Personal satisfaction of hypertensive patients will generally be more regrettable among persons with other diseases because the individual is confronted with different morbidities and consistently don't have satisfactory assets and abilities to deal with both morbidities simultaneously accordingly driving a low quality of life (Sazlina, Zaiton, Nor Afiah and Hayati, 2012). Health-Related Quality of Life (HRQoL), including the physical and mental well-being of an individual, is an important concept in health research and can help to inform decisions on prevention and treatment of ill health (Chai, Nigg, Pagano, Motl, Horwath and Dishman, 2010). Knowledge level was positively related to ratio of subjects with blood pressure under control but not significant ( $p > 0.05$ ).

The health-related quality of life (HRQOL) of hypertensives may be influenced by blood pressure, adverse effects of drugs used to treat hypertension, knowledge of hypertension management, or other factors, such as physical activity, the labelling effect, or beliefs and attitudes about illness and treatment. HRQOL is an important indicator to evaluate hypertensive treatment outcomes and understanding HRQOL of individuals living with hypertension will help policymakers and healthcare managers design and implement culture-specific support and care. When compared to healthy people, hypertensive patients showed lower HRQOL scores in the areas of physical health ( $p < 0.05$ ), psychological well-being ( $p < 0.01$ ), and overall quality of life ( $p < 0.01$ ) (Adedapo, Akunne and Adedokun, 2015). Controlling blood pressure had no impact on HRQOL in the domain ( $p > 0.05$ ) (Adedapo, Akunne and Adedokun, 2015) and high-intensity, unsupervised activity did not improve HRQOL as documented by Conradsson, Littbrand, Lindelöf, Gustafson and Rosendahl, (2010).

Reviewed literature serves as the empirical background for the study. In the entire review, it was discovered that reviewed work on knowledge of hypertension management and health-related quality of life showed that these factors have influence on HRQOL of hypertensive patients. Different views were documented on Knowledge, physical activity and health-related quality of life. Most authors showed a relationship between knowledge of hypertension management and HRQOL but a few showed a relationship between physical activity and the health-related quality of life. Despite all the complications of hypertension and the relevance of knowledge and physical activity on the quality of life, reviewed literature on such research in Nigeria is scanty, especially local literature. No empirical work studied the physical activity and health-related quality of life in

Cross River State. Most of the available studies are foreign based research and review were solely focused on others including patients with other diseases, such as diabetes, only very few were solely on hypertension. In the Cross River State and Nigerian setting, there is also the need to provide empirical data. The present study, therefore, fills the gaps between the foreign and the local. Also, the appraisal of the literature reviewed revealed a gap in health education and health promotion services for hypertensive patients that this study will help fill from its findings. The goal of the present study was therefore to extend the knowledge through empirical evidence that the study may provide in revealing the influence of knowledge, and physical activity on health-related quality of life of hypertensive patients.

### **Methodology**

The research design that was adopted for this study is expose facto design. The area of this study is the Cross River State of Nigeria. Cross River State is one of the thirty-six (36) States of the Federal Republic of Nigeria, Cross River State has 573 public primary health care facilities, 18 private primary health care facilities, 22 public secondary care facilities, 117 private secondary care facilities and two (2) public tertiary health care facilities. The tertiary facilities – the University of Calabar Teaching Hospital and the Federal Neuropsychiatric Hospital, Calabar – are owned by the federal government, while the primary health care facilities and secondary facilities are owned by the Cross River State government and private firms (Eriki *et al*, 2015). The population of the study were all patients diagnosed with hypertension, attending the hypertensive clinic in tertiary and secondary government hospitals in Cross River State. The population covered only people between 18- 77years. As observed in the Hospital Outpatient Registers (2019), the number of patients with hypertension (18-77years) that attended clinics in the secondary and tertiary hospitals between January - June 2019 was 2,673.

A multi-stage sampling procedure was adopted for the study. First, a stratified sampling method was used to place the hospitals according to their level of care (tertiary and secondary). The only tertiary institution was selected. A second stage, stratified sampling was used again placing the secondary hospitals according to their senatorial districts (southern, central and northern). In a third stage, a simple random sampling method was used to select three hospitals each from each senatorial district. The researcher achieved this by writing the names of all the public secondary hospitals that attend to hypertensive patients on pieces of paper, folding the papers into small ball-like shapes, turning the papers into a cup, the papers were mixed and the researcher asked another person to pick off the paper balls from the cup with replacement. Nine (9) secondary care hospitals were selected. At the hospital level, the fourth stage, a purposive sampling method was adopted to select the sample for the study from the total population of adults with hypertension.

**Inclusion Criteria:** The eligibility criteria for study participants were; prior diagnosis of hypertension; attending the clinic (hypertensive or medical outpatient) of the hospital; above the age of 18 years; able to speak and understand the English language; having no significant physical or psychological disabilities that would prevent them from participating in the study. Using Krejcie and Morgan's (1970) table of sample size determination, to obtain a representative statistical sample for the empirical research, the sample comprised of three hundred and thirty-six (336) adults with hypertension selected. The instrument was used for this study was a questionnaire designed by the researcher.

The researcher visited the hospitals in the states, permission was obtained from the ethical committees of the Ministry of Health, Cross River State and Heads of each hospital. Six (6) research assistants were trained on how to guide the respondents to fill the instrument and retrieve it from them. A total of three hundred and thirty-six copies of instruments were distributed to the patients in the 10 selected hospitals for study over three months.

Each copy of the duly completed retrieved instrument was assigned a numerical value. A key was developed for each of the constructs of the instruments in a tabular form after data collection. The items were coded and scores were assigned to each of them according to the weight of the questions. The study showed that the majority of respondents 57%, were between the ages of 58-67 years and 50.9% of the total patients were males. Most patients (36.7%) attained the tertiary level of education and 36.7% were known hypertensive of fewer than five years duration. The computed percentages for these demographic variables in the study are presented in Table 1.

**Table 1: Distribution of demographic variables**

S/N	Variables	N	%
1.	Age		
	18-27years	5	1.5
	28-37 years	16	4.6
	38-47 years	48	14.7
	48-57 years	62	18.4
	58-67 years	192	57
	68- 77years	13	3.8
	<b>Total</b>	<b>336</b>	<b>100</b>
2.	Sex		
	Female	165	49.1
	Male	171	50.9
	<b>Total</b>	<b>336</b>	<b>100</b>
3.	Educational attainment		
	No formal education	36	10.7
	Primary education	31	9.3
	Secondary education	109	32.4
	Tertiary education	122	36.3
	Others	38	11.3
	<b>Total</b>	<b>336</b>	<b>100</b>
4.	Years as a known Hypertensive		
	Less than 5years	123	36.7
	6-10years	98	29.2
	11-15years	102	30.4
	More than 15years	13	3.7
	<b>Total</b>	<b>336</b>	<b>100</b>

The table shows the socio-demographic variables of the respondents majority 57% were between 58-67 years. More males (50.9%) than females (49.1%) participated and those in tertiary level of education were the highest with 36.3%. also, most participants were known hypertensive patients of less than 5 years.

**Table 2 :Mean and standard deviation of the research variables**

S/N	Variables	N	Mean	Std. Deviation
1.	Health related quality of life	336	49.14	9.766
2.	Knowledge	336	29.43	6.777
3.	Physical activity	336	15.84	3.610

The means and standard deviations of the main variables in the study are as shown in Table 2. Describing the general variables of the study, Health-related quality of life had a mean score of 49.14 with a standard deviation of 9.766 while the mean score of knowledge and physical activity were 29.43 and 15.84 with a standard deviation of 6.77 and 3.610 respectively.

**Hypothesis one:** There is no statistically significant influence of knowledge on health-related quality of life of hypertensive patients in Cross River State.

**Table 3:** Simple regression of knowledge on health related quality of life of hypertensive patients in Cross River State.

			Sum of Squares	Df	Mean Square	F-ratio	p-value	B	R <sup>2</sup>
Health related quality of life	Knowledge Regression		12614.787	1	12614.787	217.446	.000 <sup>b</sup>	.629 <sup>a</sup>	.395
		Residual	19318.449	333	58.013				
		Total	31933.236	334					

Table 3 showed the result of the simple regression analysis of the influence of knowledge on health-related quality of life among hypertensive patients in Cross River State. The results from the Analysis of Variance (ANOVA) obtained from the regression was F-ratio = 217.446 for the influence of knowledge on health-related quality of life of hypertensive patients in Cross River State with p-values = .000 (or p > .05) at the degree of freedom (df) 1 and 334. This result implies that the null hypothesis one was rejected and the finding drawn from the result was that there is a significant influence of knowledge on health-related quality of life among hypertensive patients in Cross River State.

The regression model was  $\beta = .629$ . These  $\beta$  values indicated that there is a very strong positive influence of knowledge on health-related quality of life among hypertensive patients in Cross River State. That is, the higher the knowledge, the better the health-related quality of life of hypertensive patients in Cross River State. Again, the R<sup>2</sup> values of .395 indicated that knowledge contributed to 39.5% of the variance of health-related quality of life. This finding implies that the knowledge significantly influences the health-related quality of life of hypertensive patients in Cross River State with relative variances of 32.4%.

**Hypothesis two:** Physical activity does not significantly influence the health-related quality of life of hypertensive patients in Cross River State.

**Table 4:** Simple-regression of physical activity on health related life quality of adults with hypertension in Cross River state

Variables		Sum of Squares	Df	Mean Square	F-ratio	p-value	$\beta$	R <sup>2</sup>
Health related quality of life	Physical activity	17955.475	1	17955.475	426.456	.000 <sup>b</sup>	.730	.542
	Residual	12985.861	334	41.904				
	Total	30941.336	335					

The regression model for the influence of physical activity on health-related life quality was  $\beta = .730$ . These  $\beta$  values indicated that there is a very strong positive influence of physical activity on the health-related quality of life of adults with hypertension in Cross River State. That is, the better the physical activity of the individual, the better the health-related life quality and of adults with hypertension in Cross River State. Again, the R<sup>2</sup> value of .542 indicated that physical activity contributed to 54.2% of the variance of health-related life quality of adults with hypertension in Cross River State respectively. These findings imply that the physical activity of adults with hypertension in Cross River State significantly influences their health-related life quality with relative variances of 54.2%.

### Discussion

Education has been widely identified as a determinant of Health-related Quality of Life (HRQOL), people with higher levels of education often report better HRQOL (Gholami *et al*, 2013). The findings of this study support the findings of Kilica, Uzunçakmak and Edec, (2016) that documented a high level of hypertension control and good quality of life among patients with an adequate level of knowledge of hypertension management. A previous study by Almas, Godil, Lalami, Samani and Khan (2012) also concluded that sufficient knowledge about hypertension management in patients and was associated with better hypertension control. Contrary to this is the report by Raheem, Taiwo and Oye, (2017), who reported in their study that hypertension was uncontrolled with poor quality of life in the majority of their respondent despite the good level of knowledge of hypertension management. Also, Adedapo, Akunne and Adedokun (2015), reported that Hypertensive patients had poorer HRQOL compared with normal individuals in physical health ( $p < 0.05$ ), psychological ( $p < 0.01$ ), and total quality of life domains.

The study revealed that physical activity significantly influences the health-related quality of life of hypertensive patients this is supported by the study of Villalobos *et al*,(2019) showed that total physical activity had a positive effect significantly on the following HRQOL items: Physical Functioning (+10.19 points), Bodily Pain (+7.32 points), General Health (+2.53 points) and Mental

Health (+5.65 points). The study by Battaglia *et al.* (2016), showed that supervised physical activity advice reported a positive relationship, but contrary to this is the study by Conradsson *et al.* (2010) that revealed that unsupervised activity with high intensity did not report any benefit on HRQOL. This disparity might be due to the different instruments used for the studies.

Despite global reports that suggest that hypertension is a silent killer, this study presents a high proportion of the level of knowledge of hypertension management. This can mislead participants into reluctantly waiting at home to manage themselves. Early and regular screening of hypertension may be ignored thus resulting in elevated high blood pressure. The population should be educated that detection of hypertension is only by screening. Knowledge of hypertension management is important for better control of hypertension and also improvement of quality of life of individuals and family members. The acquisition of knowledge and understanding through thought, experience, and the senses improve understanding. Thus the practice to prolong life. This is possible due to available information given in clinics and the media allowing the opportunity to gain an understanding of the condition and proper management which results in a better outcome.

### **Conclusion and recommendations**

It was concluded in this study that there was a significant positive influence of knowledge and physical activity on health-related quality of life of hypertensive adult patients in Cross River State. The results obtained the following recommendations:

- i. The government authority should ensure that public hospitals are adequately equipped and staffed with qualified health care providers including health educators with good communication skills to continuously provide accurate information on health issues especially chronic conditions like hypertension to affected persons and family members.
- ii. Health care providers should use the provided knowledge to develop strategies of empowering the patients to improve knowledge level and understand the blood pressure reading to improve quality of life
- iii. Researchers, other health agencies and Non-Governmental Organizations should make use of these data in their functioning and advocacy programmes for higher knowledge levels in different segments of the society.
- iv. Individuals with hypertension should engage in supervised physical activity to improve their quality of life.

## References

- Abubakar, S., Muhammad, L.U., Ahmed, A., and Idris, F. (2017). Knowledge, attitude, and adherence to nonpharmacological therapy among patients with hypertension and diabetes attending the hypertension and diabetes clinics at tertiary hospitals in Kano, Nigeria. *Sahel Medical Journal*. 20 (13),102-8
- Adedapo, A.D., Akunne,O.O. and Adedokun, B. O., (2015). Comparative assessment of determinants of health-related quality of life in hypertensive patients and normal population in south-west Nigeria. *Int Journal of Clinical Pharmacological Ther*. 53(3):265-71.
- Adeloye, D., Basquill, C., Aderemi, A.V., Thompson, J.Y., and Obi, F.A. (2015). An estimate of the prevalence of hypertension in Nigeria: a systematic review and meta-analysis. *Journal of Hypertension*. 33(1), 230–242.
- Ahaneku, G.I., Osuji, C.U., Anisiuba, B.G., IKeh, V.O., Oguefufur, S.C., and Ahaneku, J.E.(2011). Evaluation of blood pressure and indices of obesity in a typical rural community in eastern Nigeria. *Annal of African Medicine*, 10,120-6.
- Ajibola, C. A. and Akpan, S. C. (2007). Overcoming barriers to physical activity. *International Council of Sport Science and Physical Education*, 49, 1-8
- Almas, A., Godil, S. S., Lalani, S., Samani, Z.A. and Khan, A. H. (2012). Good knowledge about hypertension is linked to better control of hypertension; A multicentre cross sectional study in Karachi, Pakistan. *BioMed Central Resource*. 5(23), 579
- Battaglia, G., Bellafiore, M., Alesi, M., Paoli, A., Bianco, A., and Palma, A. (2016). Effects of an adapted physical activity program on psychophysical health in elderly women. *Clinical Intervention of Aging*. 11:1009–15.
- Bello, M. (2013). Nigerians wake up to high blood pressure. *Bull World Health Organisation*. 91, 242– 243.
- Boghossian, P. (2007). Fear of knowledge: against relativism and constructivism, Oxford: Clarendon Press, ISBN 978-0199230419, Chapter 7, pp. 95–101.
- Chai, W., Nigg, C.R., Pagano, I.S., Motl, R.W., Horwath, C., Dishman, R.K. (2010). Associations of quality of life with PA, fruit and vegetable consumption, and physical inactivity in a free living, multi-ethnic population in Hawaii: a longitudinal study. *International Journal of Behavioural Nutrition and Physical Activity*. 7 (83): 10.1186/1479-5868-7-83.
- Conradsson, M., Littbrand, H., Lindelöf, N., Gustafson, Y., and Rosendahl, E. (2010). Effects of a high-intensity functional exercise programme on depressive symptoms and psychological well-being among older people living in residential care facilities: a cluster-randomized controlled trial. *Aging Mental Health*. 14, 565–76.
- Gholami, A., Jahromi, L. M., Zarei, E., and Dehghan, A. (2013). Application of WHOQOL-BREF in measuring quality of life in health-care staff. *International Journal of Preventive Medicine*. 4 (7), 809-817.
- Kilica, M., Uzunçakmakb, T. and Edec, H.(2016). the effect of knowledge about hypertension on the control of high blood pressure. *International Journal of the Cardiovascular Academy*. 2( 1), 27-32
- Krejcie, R.V., and Morgan, D.W., (1970). determining sample size for research activities. *Educational and Psychological Measurement*.

- Lewington, S., Clarke, R., Qizilbash, N., Peto, R., and Collins, R. (2002). Age-specific relevance of usual blood pressure to vascular mortality: A meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*, 360, 1903–13
- Mills, K. T. Bundy, J., Kelly, T. N., Reed, J. E., Kearney P. M., Reynolds, K. (2016). Global disparities of hypertension prevalence and control. a systematic analysis of population-based studies from 90 countries. *Circulation*. 134 (6)11-15.
- Mlunde, L. (2007). Knowledge, attitude and practices towards risk factors for hypertension in kinondoni municipality, Dar es Salaam'. *Dar Es Salaam Medical Students' Journal*. 14(2), 59-62.
- Okwuonu, C. G., Ojimadu, N.E., Okaka, E.I. and Akemokwe, F.M. (2014). Patient-related barriers to hypertension control in a Nigerian population. *International Journal of General Medicine*. 3(7), 345—353
- Omoleke, S. A. (2013). Chronic non-communicable disease as a new epidemic in Africa: focus on The Gambia. *Pan African Medical Journal*. 14, 87-99.
- Omonu, J. B. (2016). Health education as an effective tool in combating malaria among school and community population. *Nigerian School Health Journal*. 28 (3), 110-117.
- Ozoemena, E.L., Iweama, C.N., Agbaje, O.S., Prince C. I. Umoke, P. C.I., Ene, O. C., Ofili, P.C., Agu, B.N., Orisa, C.U., Agu, M. and Anthony, E. (2019). Effects of a health education intervention on hypertension-related knowledge, prevention and self-care practices in nigerian retirees: A quasi-experimental study. *Arch Public Health*, 77(23 ) <https://doi.org/10.1186/s13690-019-0349-x>
- Poulter, N. R., Prabhakaran, D. and Caulfield M. (2015). Hypertension. *Lancet*, 386(21), 801-812
- Raheem, R. Y., Taiwo, A.,and Oye, G. (2017). Awareness of hypertension and its impact on blood pressure control among elderly Nigerians: report from the Ibadan study of aging
- Sazlina, S.G., Zaiton, A., Nor Afiah, M. Z., and Hayati, K. S (2012). Predictors of health related quality of life in older people with non-communicable diseases attending three primary care clinics in Malaysia. *Journal of Nutrition, Health and Aging*. 16 (5), 498-502.
- Trevisol, D. J., Moreira, L. B., Kerkhoff, A., Fuchs, S. C. and Fuchs, F.D. (2011). Health-related quality of life and hypertension: a systematic review and meta-analysis of observational studies. *Journal of Hypertension*. 29 (2), 179-188
- Villalobos, F. Vinuesa, A. RoserPedret, R. TeresaBasora, T. JosepBasora, J. Arija, V. (2019). Physical activity and health-related quality of life in adults: The “Pas a Pas” community intervention programme. *Mental Health and Physical Activity*, 17, 100-13.
- WHO (2013). Nigerians wake up to high blood pressure. *Bulletin of the World Health Organization* 91(4), 242-243. doi: <http://dx.doi.org/10.2471/BLT.13.020413>
- WHO (2019). Hypertension. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/hypertension>
- WHO (2021). Hypertension. Retrieved November 22, 2021, from <https://www.who.int/news-room/fact-sheets/detail/hypertension>