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Impact of Exercise and Diets in the Reduction of Risk Factors of Hypertension among Clergymen and Women in Lagos State

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ABSTRACT

Hypertension is the commonest cardiovascular disorder affecting at least 20% of adult population in several countries. It is one of the important risk factors for cardiovascular mortality accounting for 20-30% of all deaths. Hypertension is a dangerous disease. It remains silent without any symptoms but causes continuous damage to person's cardiovascular system. The study therefore, examines the impact of exercise and diets in the reduction of risk factors of hypertension among clergymen and women in Lagos State. To achieve this, two research questions and two hypotheses were postulated for the study. A quasi-experimental design of non-randomized pre-test and post-test using health education intervention as treatment was adopted for the study. The population consists of all clergymen and women of all churches in Lagos State. The purposive sampling technique was employed to select one hundred and eighty (180) participants among clergymen and women of all churches in Lagos State. Risk factors of hypertension were measured on a 4-point Likert-type scale anchored by Strongly Disagree (SD), Disagree (D), Agree (A) and Strongly Agree (SA). Points were assigned to the options from 1-4 for positive items and from 4-1 for negative items. The descriptive statistic of frequency count and percentage were used to describe demographic data while the inferential statistics of t-test was used to test hypotheses. In conclusion, this study found that the prevalence of hypertension among the study population was very high and the study observed that lack of exercise and unhealthy dietary practices was one of major causes of hypertension among clergymen and women. On the basis of these findings, it was recommended that regular exercise and good dietary behaviour should be encouraged among the clergymen and women who are hypertensive, because exercise increases blood flow through all arteries of the body. Hypertensive patients should be encouraged to change their lifestyle practices to prevent complications, by eating low salt diets and not adding salt to food since this is significantly associated with occurrence of hypertension complications.

Keywords: clergy, dietary behaviours, regular exercise

INTRODUCTION

Globally, hypertension is the leading risk factor for morbidity and mortality, causing an estimated 9.4 million deaths in 2010 (Campbell, Lackland & Niebylski, 2014). Hypertension is the commonest cardiovascular disorder affecting at least 20% of adult population in several countries (World Health Organisation, 2008). It is one of the important risk factors for cardiovascular mortality accounting for 20-30% of all deaths. It became evident in the early 1970s that only about half of the hypertensive subjects in the general population of most developed countries were aware of the condition, and only about half of those aware of the problem were being treated. The proportion treated in developing countries would naturally be far less (Jugal, Neeru, Charu & Neeta; 2016). Hypertension is a dangerous disease. It remains silent without any symptoms but causes continuous damage to person's cardiovascular system. According to World Health Organisation (2013), hypertension has been given the name "Silent Killer" as the disease does not cause any harm by itself but predisposes to other cardiovascular diseases like stroke and myocardial infarction. It is a major risk factor for cardiovascular disease, chronic renal disease and stroke (International Society of Hypertension, 2015).

Hypertension can be defined as a persistent raised blood pressure of 140/100mmHg (systolic blood pressure \geq 140mmHg and diastolic blood pressure \geq 100mmHg). It is one of the most common disorders in the world. The damage it does to the arteries and organs leads to considerable suffering and burden-

some healthcare costs. Hypertension is arguably the most important modifiable risk factor for coronary heart disease (the leading cause of premature death

in the UK) and stroke (the third leading cause) (British Heart Foundation, 2012). The Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure introduced the term “pre-hypertension” for systolic blood pressure levels of 120 to 139mmHg and diastolic BP levels of 80 to 89mmHg. Evidence supporting a pre-hypertensive state has been demonstrated in several studies, chief among them is the longitudinal Framingham Heart Study, which showed that BP in the pre-hypertensive range preceded the diagnosis of hypertension in 90% of subjects aged ≥ 55 years and that patients with prehypertension are at twice the risk to develop hypertension as those with lower values (Vasan, Beiser, Seshadri, Larson, Kannel & Agostino, 2002). Another study conducted to illustrate the global burden of blood-pressure-related disease found that most of the disease burden caused by high blood pressure is borne by low income and middle-income countries, by people in middle age, and by people with pre-hypertension (Lawes, Vander Hoorn & Rodgers, 2008).

Exercise is a key component of lifestyle therapy for the primary prevention and treatment of hypertension. A number of studies consistently demonstrate beneficial effects of exercise on hypertension with reductions in both systolic and diastolic blood pressure with as much as 5–7 mmHg reductions in those with hypertension (Diaz, & Shimbo, 2013). Acutely, exercise has been associated with immediate significant reductions in systolic blood pressure. This immediate reduction in blood pressure after exercise can persist for almost 24 hours and is referred to as post-exercise hypotension with the most pronounced effects seen in those with higher baseline blood pressure (Carlson, Dieberg, Hess, Millar, & Smart, 2014). More frequent or chronic exercise results in more sustained reductions in blood pressure referred to as the exercise training response (Ash, Eicher & Pescatello, 2013). Although age, sex, or ethnicities do not appear to change the blood pressure response to exercise, it should be noted that most studies have been limited by primarily studying only populations of middle-aged men of European descent (Mendis, 2014). The reduction in blood pressure with physical activity is thought to be due to attenuation in peripheral vascular resistance, which may be due to neurohormonal and structural responses with reductions in sympathetic nerve activity and an increase in arterial lumen diameters, respectively (Cuspidi, Facchetti, Bombelli, Sala, Tadic & Grassi; 2015).

Lifestyle factors, including physical inactivity, are important modifiable risk factors in the development of hypertension (Campbell, Lackland & Niebylski; 2014). In addition to standard anti-hypertensive therapy, the benefits of physical activity on hypertension and cardiovascular disease have been well demonstrated (Cuspidi, Facchetti, Bombelli, Sala, Tadic & Grassi; 2015). The reduction in blood pressure with physical activity is thought to be due to attenuation in peripheral vascular resistance, which may be due to neuro hormonal and structural responses with reductions in sympathetic nerve activity and an increase in arterial lumen diameters, respectively (Mendis, 2014). Dietary intake has shown to be risk factors for multiple health concerns such as, cardiovascular disease, hypertension, and diabetes. The daily consumption of more fruits and vegetables may reduce susceptibility to many diseases (Centre for Disease Control, 2015). Study demonstrated strong evidence that a diet high in vegetables, fruit, legumes, whole grains, fish and poultry and low in red and processed meats, refined grains, sweets, desserts, French fries and high fat dairy may reduce the risk of cardiovascular disease (Hu, Jousilahti, Antikainen, Katzmarzyk & Toomilehto; 2010). Cappuccio, Capewell, Lincoln & McPherson, (2011) stated that high salt intake is related with high BP. Cappuccio and colleagues say high salt intake may cause high BP and cardiovascular outcomes. Centre for Disease Control (2015) reported that dietary intake has shown to be risk factors for multiple health concerns such as, cardiovascular disease, hypertension, and diabetes. The daily consumption of more fruits and vegetables may reduce susceptibility to many diseases. Guillaumie, Godin & Vezina-Im, (2010) conducted a systematic review that specifically examined studies regarding health-behaviour theories to predict participant fruit and vegetable intake (FVI). The authors noted that the social cognitive theory and theory of planned behaviour were the most commonly used theories in reviewed research studies. Reducing salt intake reduces blood pressure in adults and children and lowers the risk of cardiovascular disease, stroke and coronary health disease in adults. This is critical because children with elevated blood pressure often become adults with elevated blood pressure (Bello, 2013). Recent systematic review concluded that reduced salt intake reduces blood pressure and has no adverse effects in adults and children (Aburto, 2013). Many priests die of hypertension mainly for lack of adequate knowledge of it; and those who know, die out of carelessness or of not being able to handle it with seriousness. The Clergy Health Initiative suggests that the number of vacation days clergy take is inversely linked to the likelihood that they will have high blood pressure. That

is, pastors who take less vacation time are more likely to report having high blood pressure than those who take more time away.

The study therefore, examines the impact of exercise and diets in the reduction of risk factors of hypertension among clergymen and women in Lagos State.

Specific objectives of the study were to:

- a. assess the prevalence of risk factors of hypertension among clergymen and women in Lagos State.
- b. assess the impact of exercise in reduction of risk factors of hypertension among clergymen and women in Lagos State.
- c. assess the impact of diet in reduction of risk factors of hypertension among clergymen and women in Lagos State.

The three questions were answered for the study:

- a. What is the prevalence of risk factors of hypertension among clergymen and women in Lagos State?
- b. Will exercise have significant impact on reduction of risk factors of hypertension among clergymen and women in Lagos State?
- c. Will diet have significant impact on reduction of risk factors of hypertension among clergymen and women in Lagos State?

The three hypotheses were tested:

1. Prevalence of risk factors of hypertension will have no significant impact among clergyman and women in Lagos State.
2. Exercise will have no significant impact on the reduction of risk factor of hypertension among clergymen and women in Lagos State.
3. Diet will have no significant impact on the reduction of risk factor of hypertension among clergymen and women in Lagos State.

METHODOLOGY

A quasi-experimental design of non-randomised pre-test and post-test using health education intervention as treatment was adopted for the study. The population consists of all clergymen and women of all churches in Lagos State. The purposive sampling technique was employed to select one hundred and eighty (180) participants among clergymen and women of all churches in Lagos State who have been screened of high blood pressure for the health education intervention. Risk Factor of Hypertension were measured on a 4-point Likert-type scale anchored by Strongly Disagree (SD), Disagree (D), Agree (A) and Strongly Agree (SA). Points were assigned to the options from 1–4 for positive items and from 4–1 for negative items. Exercise was measured in terms of the health education treatment ability to control high blood pressure, to prevent strokes, heart attacks and kidney disease, and to ease one's mind about having high blood pressure with Cronbach alpha for these items was 0.82. An unhealthy dietary intake with Cronbach alpha for these items was 0.68. The data collection process was carried out at various selected churches in Lagos State. The exercise lasted for six (6) weeks among clergymen and women who consented to be involved in the study. Selection was based on outcome of the blood pressure screening and those with blood pressure of 140/100mmHg and above were selected for the health education treatment. This process was used to recruit and select 180 respondents among clergymen and women. All the participants were subjected to Risk Factors of Hypertension Package (RFHP) which consisted of thirty minutes exercise on treadmill and sixty minutes health education lecture of one module per day in each selected church. The descriptive statistic of frequency count and percentage were used to describe demographic data while the inferential statistics of t-test was used to test hypotheses. All tests were carried out at 0.05 level of significance. The Statistical Package for Social Science (SPSS) versions 17.0 were used for analysing the data collected.

DATA PRESENTATION**Table 1: Distribution of respondents by age**

Age	Frequency	Percent
30-39 years	38	21.1
40-49 years	31	17.2
50-59 years	111	61.7
Total	180	100.0

From table 1 above, it could be observed that 21.1% of them were aged 30-39 years, 17.2% were aged 40-49 years, while the remaining 61.7% being the majority were aged 50-59 years.

Table 2: Distribution of respondents by gender

Gender	Frequency	Percent
Female	14	7.8
Male	166	92.2
Total	180	100.0

Table 2 above shows the distribution of respondents by gender indicated that 166 (92.2%) of the total respondents, being the majority, were males, while the other 14 (7.8%) were females representing the minority group.

Table 3: Distribution of respondents by marital status

Marital Status	Frequency	Percent
Single	8	4.4
Married	166	92.2
Widow	3	1.7
Divorced	3	1.7
Total	180	100.0

The distribution of respondents by marital status as shown in table 3 above, revealed that widows were 3 (1.7%) and divorced were 3 (1.7%) respondents of the total respondents, single respondents were 8 (4.4%), while the remaining 166 (92.2%) of the total respondents were married.

Table 4: Distribution of respondents by highest level of education

Highest level of Educ.	Frequency	Percent
Secondary education	80	44.4
Tertiary education	97	53.9
Others	3	1.7
Total	180	100.0

According to table 4 above, it could be ascertained that 44.4% of them had only secondary education and 53.9% of the respondents were certificate holders at various levels of tertiary education, while a minute 1.7% of the total respondents had other forms of education.

Table 5: Distribution of respondents by hypertension stages before and after treatment

Blood pressure (BP)	Normal BP	Pre-Hypertension	Stage 1 Hypertension	Stage 2 Hypertension	Total
BP before treatment	-	27 (15.0%)	90 (50.0%)	63 (35.0%)	180 (100.0%)
BP after treatment	39 (21.7%)	58 (32.2%)	75 (41.7%)	8 (4.4%)	180 (100.0%)

It could be observed from table 5 above that before treatment, no respondent had normal BP, 15% of them were in pre-hypertension stage, 50% were in stage 1 hypertension, while the remaining 35% were in stage 2 hypertension. The table further revealed that after treatment, 21.7% of the total respondents migrated to normal BP, 32.2% of them remained in pre-hypertension stage, 41.7% of them remained in stage 1 hypertension, while the number of respondents remaining in stage 2 hypertension reduced to 4.4% from 35%.

Hypothesis one

Hypothesis one states that exercise will have no significant impact on the reduction of risk factor of hypertension among clergymen and women in Lagos State. The stated hypothesis was tested using the t-test statistical tool at 0.05 level of significance. The result is presented on the table below.

Table 6: T-test result of exercise in the reduction of risk factor of hypertension among clergymen and women

Risk factors of hypertension	N	Mean	SD	SEM	Df	T	Sig.
Exercise before	90	31.8667	5.80430	0.61183	89	2.166	0.033*
Exercise after	90	33.4333	4.03092	0.42490			

From table 6 above, it could be observed that a significant t-value was recorded ($t=2.166$; $P=0.033$) in respect of Exercise of respondents before and after the health intervention. Thus, hypothesis one stated above is hereby rejected in respect of exercise in the reduction of risk factor of hypertension among clergymen and women. It thus implies that exercise had a significant impact in the reduction of risk factor of hypertension among clergymen and women

Hypothesis 2

Hypothesis two states that diet will have no significant impact in the reduction of risk factor of hypertension among clergymen and women in Lagos State. The stated hypothesis was tested using the t-test statistical tool at 0.05 level of significance. The result is presented on the table below.

Table 7: T-test result of diet in the reduction of risk factor of hypertension among clergymen and women

Risk factors of hypertension	N	Mean	SD	SEM	Df	T	Sig.
Dietary practices before	90	20.1444	3.39716	0.35809	89	5.201	0.000*
Dietary practices after	90	22.9333	3.34126	0.35220			

It could be observed from table 4.11 above that significant t-values were recorded ($t=5.201$; $P=0.000$) in respect of dietary practices of respondents before and after the health education intervention. Thus, hypothesis two stated above is hereby rejected in respect of dietary practice in the reduction of risk factor of hypertension among clergymen and women. It thus implies that that diet had a significant impact in the reduction of risk factor of hypertension among clergymen and women.

DISCUSSION

Hypothesis one states that exercise will have no significant impact in the reduction of risk factor of hypertension among clergymen and women in Lagos State. The stated hypothesis was tested using the t-test statistical tool at 0.05 level of significance. It could be observed that a significant t-value was recorded ($t=2.166$; $P=0.033$) in respect of exercise of respondents before and after the health intervention. Thus, hypothesis one stated above is hereby rejected in respect of exercise in the reduction of risk factor of hypertension among clergymen and women. It thus implies that Exercise had a significant impact in the reduction of risk factor of hypertension among clergymen and women. Rodilla, Pascual, Costa, Martin, Gonzalez & Redon (2013) stated that exercise is a key component of lifestyle therapy for the primary prevention and treatment of hypertension. A number of studies consistently demonstrate beneficial effects of exercise on hypertension with reductions in both systolic and diastolic blood pressure with as much as 5–7 mmHg reductions in those with hypertension.

Campbell, Lackland & Niebylski (2014) agreed that the robust beneficial effects of physical activity and exercise on cardiovascular health, the processes and mechanisms by which frequent physical activity promotes cardiorespiratory fitness and decreases CVD risk remain unclear. In the past sever-

al decades, considerable research effort has aimed to identify the major physiological and biochemical contributors to the cardiovascular benefits of exercise, and as a result, significant advances have been made from observational and interventional studies with human participants. Diaz & Shimbo (2013) opined that exercise has been associated with immediate significant reductions in systolic blood pressure. This immediate reduction in blood pressure after exercise can persist for almost 24 hours and is referred to as post-exercise hypotension with the most pronounced effects seen in those with higher baseline blood pressure.

Hypothesis two states that diet will have no significant impact in the reduction of risk factor of hypertension among clergymen and women in Lagos State. The stated hypothesis was tested using the t-test statistical tool at 0.05 level of significance. It was observed that significant t-values were recorded ($t=5.201$; $P=0.000$) in respect of dietary practices of respondents before and after the health education intervention. Thus, hypothesis two stated above is hereby rejected in respect of dietary practice in the reduction of risk factor of hypertension among clergymen and women. This result also corroborated the report of Centre for Disease Control (2015) that dietary intake has shown to be risk factors for multiple health concerns such as, cardiovascular disease, hypertension, and diabetes. The daily consumption of more fruits and vegetables may reduce susceptibility to many diseases. Hu, Jousilahti, Antikainen, Katzmarzyk and Toomilehto (2010) also revealed that, study demonstrated strong evidence that a diet high in vegetables, fruit, legumes, whole grains, fish and poultry and low in red and processed meats, refined grains, sweets, desserts, French fries and high fat dairy may reduce the risk of cardiovascular disease.

Hackam et al. (2013) agreed that, scientific findings and clinical guidelines recommend dietary sodium reduction among people with and without hypertension in order to treat hypertension prior to any pharmaceutical interventions. Sodium Working Group (SWG) (2010) asserted that, dietary sodium reduction has suggested a voluntary sodium reduction approach along with other strategies. Dasgupta et al. (2014) asserted that, lowering dietary sodium intake, the Canadian Hypertension and Education Programme (CHEP) recommends the DASH (Dietary Approaches to Stop Hypertension) diet plan for both hypertensive patients and normotensive individuals at increased risk of developing hypertension.

CONCLUSION AND RECOMMENDATION

Based on the findings of this study, it was concluded that the prevalence of hypertension among the study population was very high and the study observed that lack of exercise and unhealthy dietary practices was one of major causes of hypertension among clergymen and women; and the risk factors of hypertension among clergymen and women as regard to their lifestyle's modification.

Based on the findings of the study, it was recommended that all clergymen and women having high blood pressure should be adherent to daily monitoring of blood pressure and checking excessive weight gain. Regular exercise and good dietary behaviour should be encouraged among the clergymen and women who are hypertensive, because exercise increases blood flow through all arteries of the body. Good management of stress, more relaxation and eating more fiber diet and low cholesterol will help the flow of blood especially in hypertensive patients. Hypertensive patients should be encouraged to change their lifestyle practices to prevent complications by eating low salt diets and not adding salt to food since this is significantly associated with occurrence of hypertension complications. All clergymen and women who are hypertensive should strictly adhere to health education intervention programmes for their lifestyle's modification and behaviour on hypertension treatment.

REFERENCES

- Ash, G.I., Eicher, J.D. & Pescatello, L.S., (2013). The promises and challenges of the use of genomics in the prescription of exercise for hypertension: the 2013 update. *Curr. Hypertens. Rev*; 9:130–147.
- Bello M, (2013) Nigerians wake up to high blood pressure. *Bull World Health Organ*; 91:242-3.
- British Heart Foundation, (2012). A compendium of Health Statistics. Health Promotion Research Group. Retrieved from www.bhf.org.uk. 17th September 2018
- Campbell, NRC, Lackland, D.T & Niebylski, ML (2014). The World Hypertension League and International Society of Hypertension Executive Committees. High Blood Pressure: Why Prevention and Control Are Urgent and Important—A 2014 Fact Sheet from the World Hypertension League and the International Society of Hypertension. *J. Clin. Hypertens*; 16:55153.

- Carlson, D.J, Dieberg, G., Hess, N.C., Millar, P.J. & Smart, N.A., (2014). Isometric Exercise Training for Blood Pressure Management: A Systematic Review and Meta-analysis. *Mayo Clin. Proc*; 89:327–334
- Center for Disease Control, (2015). High blood pressure facts. Retrieved from Center for Disease <http://www.cdc.gov/bloodpressure/facts.htm>. Accessed,
- Terry, W., (2020). Global Health Initiative. Strategies to help pastors develop holistic health practices.
- Cuspidi, C., Facchetti, R., Bombelli, M., Sala, C., Tadic, M. & Grassi, G., (2015). Prognostic value of left ventricular mass normalised to different body size indexes: findings from the PAMELA population. *J. Hypertens*; 33:1082–1089.
- Dasgupta, K., Quinn, R.R., Zarnke, K.B., Rabi, D.M., Ravani, P. and Daskalopoulou, S.S., (2014). The Canadian Hypertension Education Programme recommendations for blood pressure measurement, diagnosis, assessment of risk, prevention, and treatment of hypertension. *Canadian Journal of Cardiology*. 30, 485–501.
- Diaz, K.M, & Shimbo, D., (2013). Physical Activity and the Prevention of Hypertension. *Curr. Hypertens. Rep*;15:659–668.
- Hackam, D.G., Quinn, R.R., Ravani, P., Rabi, D.M., Dasgupta, K. and Daskalopoulou, S.S, (2013). The Canadian Hypertension Education Programme recommendations for blood pressure measurement, diagnosis, assessment of risk, prevention, and treatment of hypertension. *Canadian Journal of Cardiology*. 29, 528–42.
- Hu, G., Jousilahti, P., Antikainen, R., Katzmarzyk, P. and Toomilehto, J., (2010). Joint effects of physical activity, body mass index, waist circumference, and waist to hip ratio on the risk of heart failure. *Circulation*, 121, 237-244.
- International Society of Hypertension, (2015). Hypertension Guidelines Offer Practical, Clinical Information for Doctor and Patient Around the Globe, Pages: 36.
- James, P.A., Oparil, S & Carter, B.L, (2014). evidence-based guideline for the management of high blood pressure in adults: Report from the panel members appointed to the eighth joint national committee (jnc 8). *JAMA*; 311:507–520.
- Jugal, K., Neeru, G., Charu, K. and Neeta, K., (2016). Prevalence of Hypertension and Determination of Its Risk Factors in Rural Delhi. *International Journal Hypertension*. 7962595. Pages: 6
- Lawes, C.M., Vander Hoorn, S. and Rodgers, A., (2008). International Society of Hypertension. Global burden of blood-pressure-related disease, *Lancet*. 371(9623):1480-2
- Mendis, S., (2014). World Health Organisation. *Global status report on noncommunicable diseases*.
- Rodilla, E., Pascual, J.M, Costa, J.A., Martin, J., Gonzalez C & Redon, J., (2013). Regression of left ventricular hypertrophy and microalbuminuria changes during antihypertensive treatment: *J. Hypertens*; 31:1683–1691. [PubMed: 23835910]
- World Health Organisation, (2008). African Health Monitor: Fighting Noncommunicable Diseases, Africa's new silent killers. A magazine of World Health Organization for African, 8:(1). Pp.158.