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Prevalence And Determinants Of High Blood Pressure Among University Staff Attending Ignatius Ajuru Medical Centre, Port Harcourt

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ABSTRACT
This study investigated the prevalence and determinants of high blood pressure among university staff attending Ignatius Ajuru medical centre, Port Harcourt. The study adopted the descriptive cross sectional survey design. The sample size for this study was 401 using descriptive studies formula. The instrument for data collection was a proforma on cases of academic staff taken from the health facility for the period of January – August, 2023. The data collected from this study were collated and analyzed using the Statistical Products for Service Solution (SPSS). The result showed that the prevalence of high blood pressure was 24.9% and 34.9% for systolic and diastolic blood pressure respectively. The result indicated that there was a significant relationship between (r=0.80), BMI (r = 0.74), marital status (r = 0.54), and medical history (r = 0.83) and high blood pressure among university staff attending Ignatius Ajuru medical centre, Port Harcourt. It was concluded that the prevalence of high blood pressure was significantly high and this was associated with age, gender, body mass index, medical history and marital status. In regards to this study, the following recommendations were made among others that the University Medical Centre should ensure out-of-clinic BP measurement in the diagnosis and management of patients with hypertension in the University community irrespective of the unit the staff is deployed to work.
Keywords: high blood pressure, University community, medical history

INTRODUCTION

High blood pressure is one of the most common disease on Earth. Overall, 26.4 % of the world's adult population in 2000 had high blood pressure and it is expected that by the year 2025, approximately 1 in 3 adults aged over 20 years will have the disease. It represents the single greatest preventable cause of death in humans and one of the most important modifiable risk factors for cardiovascular diseases. The direct positive relationship between blood pressure (BP) and cardiovascular risk was found to be strong, continuous, consistent, predictive, and etiologically significant for those with and without coronary heart disease (Hernandorena, et al., 2017).

A study that estimated relative risk of arterial high blood pressure for female teachers was 1.5 compared with other female employees (designers, researchers) served as controls. This finding can classify teaching occupation as high risk for arterial hypertension. Recently 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 139 mm Hg and diastolic BP levels of 80 to 89 mm Hg (Delfino, et al., 2020).

Evidence supporting a pre-hypertensive state has been demonstrated in several studies, leading among them is the longitudinal Framingham Heart Study, which showed that BP in the pre-hypertensive range preceded the diagnosis of high blood pressure 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 (Hernandorena et

al., 2017). 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. The substantial burden of suffering associated with high blood pressure, combined with the availability of feasible and accurate means of detection and a clear benefit from treatment have led to worldwide recommendation for high blood pressure screening and management. Available information on the prevalence of high blood pressure and prehypertension is low and probably does not reflect the current status of the major risk factors for high blood pressure (Delfino et al., 2020).

High Blood Pressure (HBP) is a long-term medical condition in which the blood pressure in the arteries is persistently elevated. High blood pressure usually does not cause symptoms. High blood pressure, however, is a major risk factor for stroke, coronary artery disease, heart failure, atrial fibrillation, peripheral arterial disease, vision loss, chronic kidney disease, and dementia. Hypertension is a major cause of premature death worldwide (Mendis et al., 2011). Hernandorena et al. (2017) stated that high blood pressure is classified as primary (essential) hypertension or secondary hypertension. About 90–95% of cases are primary, defined as high blood pressure due to nonspecific lifestyle and genetic factors. Lifestyle factors that increase the risk include excess salt in the diet, excess body weight, smoking, physical inactivity and alcohol use. The remaining 5–10% of cases are categorized as secondary high blood pressure, defined as high blood pressure due to an identifiable cause, such as chronic kidney disease, narrowing of the kidney arteries, an endocrine disorder, or the use of birth control pills.

Blood pressure is classified by two measurements, the systolic and diastolic pressures, which are the maximum and minimum pressures, respectively. For most adults, normal blood pressure at rest is within the range of 100–130 millimeters mercury (mmHg) systolic and 60–80 mmHg diastolic. For most adults, high blood pressure is present if the resting blood pressure is persistently at or above 130/80 or 140/90 mmHg. Different numbers apply to children. Ambulatory blood pressure monitoring over a 24-hour period appears more accurate than office-based blood pressure measurement (Prabhakaran et al., 2017).

However, lifestyle changes and medications can lower blood pressure and decrease the risk of health complications. Lifestyle changes include weight loss, physical exercise, decreased salt intake, reducing alcohol intake, and a healthy diet. If lifestyle changes are not sufficient, then blood pressure medications are used. Up to three medications taken concurrently can control blood pressure in 90% of people. The treatment of moderately high arterial blood pressure (defined as >160/100 mmHg) with medications is associated with an improved life expectancy. The effect of treatment of blood pressure between 130/80 mmHg and 160/100 mmHg is less clear, with some reviews finding benefit and others finding unclear benefit. High blood pressure affects between 16 and 37% of the population globally. In 2010 hypertension was believed to have been a factor in 18% of all deaths (9.4 million globally) (Prabhakaran et al., 2017).

Therefore, there have been increasing rate of morbidity and mortality caused high blood pressure among academic staff with various determinants. Studies from the World Health Organisation show that an estimated 1.28 billion adults aged 30–79 years worldwide have hypertension, most (two-thirds) living in low- and middle-income countries, an estimated 46% of adults with hypertension are unaware that they have the condition, less than half of adults (42%) with hypertension are diagnosed and treated, approximately 1 in 5 adults (21%) with hypertension have it under control. Other studies added that hypertension is a major cause of premature death worldwide and that one of the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 33% between 2010 and 2030 which will result to more unknown death. Despite the level of awareness and knowledge about the menace of high blood pressure, evidence buttressed that academic staff of universities suffer from high blood pressure. Hence, high blood pressure is observed to be associated with age, type of staff, gender, BMI, marital status and medical history. The prevalence of high blood pressure among academic staff in the Ignatius Ajuru University is also not well defined and scanty number of studies have been conducted among lecturers in universities in Rivers State. Hence, there was a need for conduction of population-based study among academic staff to address these two important entities for proper control and

interventions. Therefore, this study aims to investigate the prevalence and determinants of high blood pressure among university staff attending Ignatius Ajuru medical centre, Port Harcourt.

METHODOLOGY

The study adopted the descriptive cross sectional survey design. The area of this study was carried out in the Medical Centre of Ignatius Ajuru University of Education, Rummuolumeni Port Harcourt, Rivers State. The population of the study comprised of academic staff of Ignatius Ajuru University of Education Rumuolumeni Port Harcourt, Rivers State attending the medical centre of the school. The sample size of 401 was calculated using the formula for Descriptive studies. A random sampling technique was used to get participants from the records on cases of high blood pressure taken from the health facility visits for the period of January – August, 2023**.** The instrument for data collection was a proforma on cases of academic staff taken from the health facility for the period of January – August, 2023 in the Medical Centre of Ignatius Ajuru University of Education, Port Harcourt. A letter of introduction was given to the chief medical director of the Ignatius Ajuru University of Education, Port Harcourt to solicit cooperation to access patient's folders. The Proforma was used by the researcher and two research assistants to gather data from folders. The data collected from this study were collated and analyzed using the Statistical Products for Service Solution (SPSS). Research questions were answered using graphs, frequency, percentages, while the hypotheses were tested at 0.05 level of significance using Regression analysis.

RESULTS

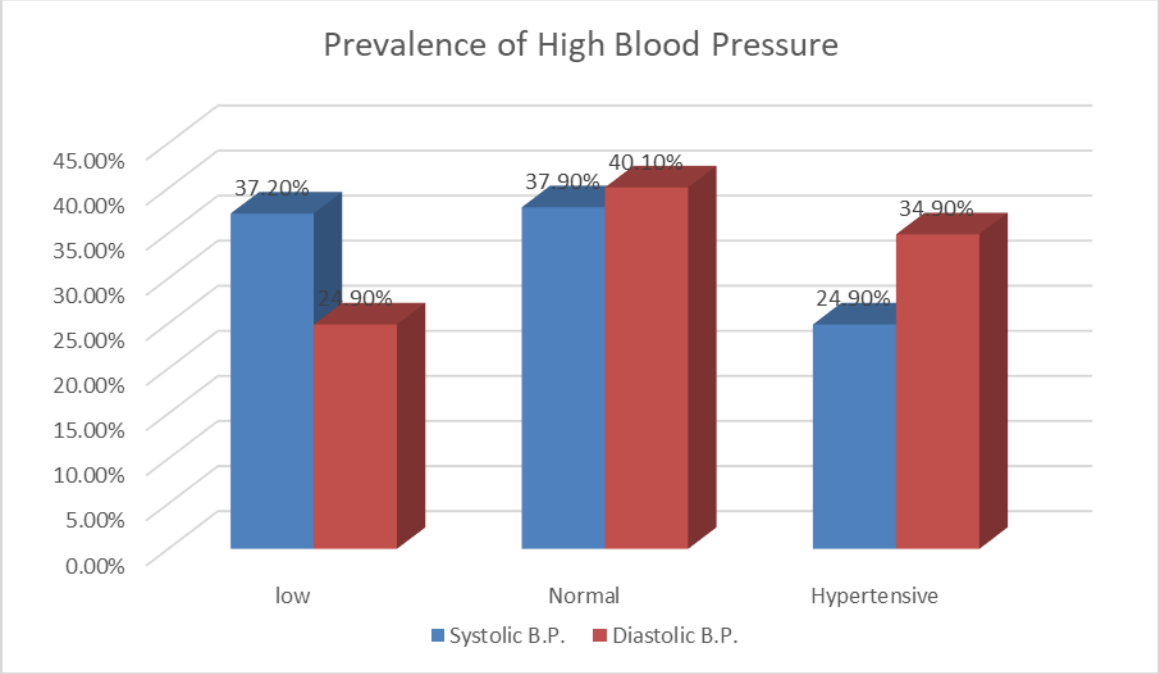

Fig 1: Bar chart showing the prevalence of high blood pressure among university staff attending Ignatius Ajuru Medical Centre

The result showed that the prevalence of high blood pressure was 24.9% and 34.9% for systolic and diastolic blood pressure respectively. Thus, the prevalence of high blood pressure among university staff attending Ignatius Ajuru Medical Centre was moderate.

Table 1: Pearson Correlation showing significant relationship between age and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt

Variables		High BP	Age	Decision
High BP	Correlation	1	0.67 0.03*	H_o rejected
	N	401	401	
Age	Correlation	0.67 0.03*	1	
	N	401	401	

*Significant; p<0.05

Table 1. The result indicated that there is a significant relationship (N = 401; r = 0.67; p<0.05).

Table 2: Point Biserial Correlation showing significant relationship between gender and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt

Variables		High BP	Gender	Remark
High BP	Correlation	1	0.80 0.30*	H_o rejected
	N	401	401	
Gender	Correlation	0.80 0.30*	1	
	N	401	401	

*Significant; p<0.05

Table 2 result indicated that there is a significant relationship (N = 401; r = 0.80; p<0.05).

Table 3: Pearson Correlation showing relationship between BMI and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt

Variables		High BP	BMI	Decision
High BP	Correlation	1	0.74	H_o rejected
	Sig.		0.02*	
	N	401	401	
BMI	Correlation	0.74	1	
	Sig.	0.02*		
	N	401	401	

*Significant; p<0.05

Table 3, result indicated that there is a significant relationship (N = 401; r = 0.74; p<0.05).

Table 4: Point Biserial Correlation showing relationship between marital status and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt

Variables		High BP	Marital status	Decision
High BP	Correlation	1	0.54	H_o rejected
	Sig.		0.03*	
	N	401	401	
Marital status	Correlation	0.54	1	
	Sig.	0.03*		
	N	401	401	

*Significant; p<0.05

Table 4, The result indicated that there is a significant relationship between marital status and high blood pressure (N = 401; r = 0.54; p<0.05).

Table 5: Point Biserial Correlation showing significant relationship between medical history and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt

Variables		High BP	Medical history	Remark
High BP	Correlation	1	0.83	High positive
	Sig.		0.03*	relationship
	N	401	401	
Medical	Correlation	0.83	1	
history	Sig.	0.03*		
	N	401	401	

*Significant; p<0.05

Table 5 the result indicated that there is a significant relationship between medical history and high blood pressure (N = 401; r = 0.83; p<0.05).

DISCUSSIONS

Prevalence of High Blood Pressure

The result showed that the prevalence of high blood pressure was 24.9% and 34.9% for systolic and diastolic blood pressure respectively. The result of this study is in line with findings of Ali et al. (2023) which indicated that the prevalence of hypertension was high (33.7%) among male and female staff respectively. Chen et al. (2023) buttressed that the prevalence of elevated blood pressure was found higher 25.1%. Wamala et al. (2023) gave an indication that the prevalence of hypertension was 84.4% high among staff in an organized setting. Agbaje (2023) affirmed that there was elevated blood pressure resulting into hypertension of 6.4%-12.2% of the participants of the study. Huguet et al. (2023) added that the 50.5% of the staff had reported hypertension of 9.9% had never control the elevated blood pressure. Agyemang-Pambour et al, (2023) buttressed that overall prevalence of hypertension was 29.3% and only 8.6% of the participants were aware of their hypertensive status. Previously, Hernandorena et al. (2017) reported that the prevalence of hypertension was high among workers' academic profession. Oladimeji et al. (2014) indicated that the prevalence of hypertension, 27% among workers. It is plausible because academic environment tends to inflict stress and other condition that affect the health status of workers or staff. As at the time of this study, there were no prior findings contradicting with outcome of this present one. Hence, the prevalence of hypertension was high among academic staff.

Age and High Blood Pressure

The result indicated that there was a significant relationship (p<0.05) hence, hypothesis which stated that there is no significant relationship between age and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt was rejected. The outcome of this study is in keeping with studies of Ali et al. (2023) which illustrated that the prevalence of hypertension was found higher among these age ground 30-40 years, >50 years and 41-50 years respectively. Wamala et al. (2023) which revealed that the prevalence of hyperetension was among older staff accounting for 79.6% reported cases. Agyemang-Pambour et al. (2023) illustrated that the overall prevalence of hypertension was 29.3% and respondents who were > 40 years were twice as likely to develop hypertension compared to those who were ≤ 40 years Reges et al. (2023) asserted that the risk factors were associated with greater age-related yearly increases in systolic BP among 1 or 2. However, the study of Gedamu and Sisay (2021) indicated that the prevalence of hypertension was increasing as one advances in age (65.5%).

Gender and High Blood Pressure

The result indicated that there is a significant relationship (p<0.05), hence, hypothesis which stated that there is no significant relationship between gender and high blood pressure among university staff

attending Ignatius Ajuru Medical Centre, Port Harcourt was rejected. The result of this study is in consonance with findings of Ali et al. (2023) which indicated that the prevalence of hypertension among male staff was high (36.9%) as compared with female staff of 25.6% ($p<0.001$). Chen et al. (2023) buttressed that there is an increase rate of hypertension in female (53.6%) more than male participants (46.4%) and was statistically significant to it. Wamala et al. (2023) which revealed that the prevalence of hypertension was among female staff accounting for 79.6% reported cases. Gedamu, and Sisay (2021) indicated that the prevalence of hypertension was higher in males (32.5%) than in females (19.1%). Bappah et al. (2022) in their studies revealed that male gender was significantly associated with hypertension ($p= 0.018$), Previously in Nigeria, Oladimeji et al. (2014) revealed that 62% of male civil servants reported more hypertensive case and males were 3.7 times more likely to significantly predict hypertension as compared with female. Gender-specific public health strategies to promote healthy- living in the workplace are being advocated for with concerned authorities. It is pertinent to note that the physiological differences in male and female staff vary which determine the body reaction.

BMI and High Blood Pressure

The result indicated that there is a significant relationship ($p<0.05$) hence the hypothesis which stated that there is no significant relationship between BMI and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt was rejected. The result of this study is in consonance with findings Ali et al (2023) which indicated that the prevalence of hypertension was found high among staff with increase body mass index. Wamala et al. (2023) revealed that the prevalence of hypertension was 84.4% and significantly associated with overweight ($p < 0.001$) and obesity ($p < 0.001$). Gedamu and Sisay (2021) affirmed that body mass index above 25/kg was 3.4 times more likely to significantly predict hypertension among adults. Mekonene et al. (2023) illustrated that pooled prevalence of hypertension in Ethiopia was 20.63%. Bappah et al. (2022) showed that higher BMI score was significantly associated with the existing cases of hypertension ($p= 0.000$) among workers. Ajayi et al. (2016) revealed that the increase in body mass index was 2.2 times more likely to be significantly associated with hypertension. Studies of Egbe et al. (2018) reported that those with over $31kg/m^2$ are over 6 times more likely to develop chronic diseases as compared with those with less than 25kg. Overweight are mostly caused by nutritional lifestyle due to excessive uptake of calories. Studies of Munang et al. (2017) agreed that 34.5% of persons overtly obese with BMI greater than $30kg/m^2$ confirmed that increased BMI is a risk factor for chronic diseases. It is plausible because body mass index determines the weight of the body which affects the rate of the heart. Hence, increase in the weight of the body affects the weight of the heart. As at the times of this study, there were no contrary findings against the outcome of this study.

Marital Status and High Blood Pressure

The result indicated that there is a significant relationship between marital status and high blood pressure ($p<0.05$) hence the hypothesis which stated that there is no significant relationship between marital status and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt was rejected. The result of this study is expected because academic staffs that are married are likely to have several demands from the family that would increase blood pressure rate. The result of this study is in keeping with the findings of Jackson et al. (2018) which illustrated that the prevalence of hypertension was high among staff or workers who are single parent and have large family size. Noubiap et al. (2018) buttressed that socioeconomic status such divorce parent or single parents are 2 times more likely to predict either form cardiovascular diseases including hypertension. It is plausible because staffs with large family size, divorce or single parent are likely to have large family load which increase health outcome. In recent, there are dearths of literatures addressing the marital status as risk factors of hypertension.

Medical History and High Blood Pressure

The result indicated that there is a significant relationship between medical history and high blood pressure ($p<0.05$) hence the hypothesis which stated that there is no significant relationship between medical history and high blood pressure among university staff attending Ignatius Ajuru Medical Centre, Port Harcourt was rejected. The result of this study is expected because those who had prior cases of medical cardiovascular and metabolic disorders may report higher blood pressure in recent times. The result of this study is in credence with findings of Mekonene et al. (2023) which indicated that staff with

prior cases of hypertension and other cardiovascular diseases are 4.3 times more likely to report recurrent cases of hypertension while medical history of metabolic disorders are 5 times more likely to significantly predict high prevalence of hypertension. Chanda et al. (2020) illustrated that family history is a strong predictor of high blood pressure; hence, persons with family history (FH) of high blood pressure are 2 times more likely to come down with HBP as compared with those that have no family linkage. Khan et al. (2013) buttressed that previous history and family history of HPB were significantly higher at $P<0.001$ and likely to predict hypertension among workers. Egbe et al. (2018) affirmed that the prevalence of high blood pressure was more among those with underlining family history or medical history. Hence, family history of high blood pressure could be a major correlates of high blood pressure among academic staff. As at the time of this study, there was contrary studies found against the outcome of the current findings. Hence, medical history is a risk factor of high blood pressure.

CONCLUSION

Based on the findings of this study, it was concluded that the prevalence of high blood pressure was significantly high and this was associated with age, gender, body mass index, medical history and marital status.

RECOMMENDATIONS

In regards to this study, the following recommendations were made:

1. University health service should create awareness and implement interventions for prevention and early detection of hypertension, especially among those aged ≥30 years and the overweight or obese among staff.
2. Management of the university medical centre should change in public health policies anchored on a primary health care system to address the emerging disease burden occasioned by hypertension.
3. University medical centre should ensure out-of-clinic BP measurement in the diagnosis and management of patients with hypertension in University community settings, including general public.
4. Staff especially academic workers should go for a periodic blood pressure check-up and other related diagnosis to be aware of health status to ensure early treatment and management which in turn reduce the risk of developing hypertension.
5. Staff should ensure modify lifestyles changes such as quitting negative or risk habit like smoking tobacco, drinking alcohol as these may serve as potential risk factors of hypertension and other cardiovascular disorders.

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