

## **Research Article**

# **Pattern of Blood Pressure Distribution Among Members of Staff in Adekunle Ajasin University Akungba Akoko, Ondo State, Nigeria**

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**Abstract:** This study was designed to find out the pattern of blood pressure distribution among members of staff in Adekunle Ajasin University Akungba Akoko (AAUA), Ondo State, Nigeria. A cross sectional descriptive survey research design was adopted for the study and 500 respondents sampled using population proportional to size was used. Two instruments were used for data collection. A digital sphygmomanometer and a self constructed questionnaire designed and built around the research questions. It was validated by three experts in Health Education and it has a reliability coefficient of 0.85. Data was analyzed with SPSS version 20 using simple percentages, bar graph, mean of scores and hypotheses were tested with t-test at 0.05 level of significance. Findings revealed that: 5.8% of the study population have their blood pressure above 140/90mmhg; age has significant influence on pattern of blood pressure distribution; sex; religion; nature of work; family type and length of service have no significant influence on the pattern of blood pressure distribution among members of staff in AAUA. It was recommended that stress should be reduced in the work place to avoid raised blood pressure; the working environment should be made healthy so as to enhance the growth and sustenance of positive emotion and members of staff should be encouraged to visit the university health centre on routine basis for checkups.

**Keywords:** blood pressure distribution, members of staff

## **INTRODUCTION**

Blood pressure is the pressure that the blood exerts on the inner walls of the blood vessels which vary in different phases of contraction of the heart and under different conditions of health exertion. High blood pressure accounts for high mortality in the form of coronary heart disease and usually has no warning signs hence; it is referred to as 'silent killer'. Hypertension awareness and blood pressure monitoring is a good way of preventing and controlling this deadly disease which is the most common reason for adult clinic visit other than pregnancy and has the highest use of prescription drugs. Despite the number of resources used to treat this disease, only about 50% of hypertensives have their blood pressure under control. Good health is central to human happiness and well-being. It contributes greatly to economic progress of a nation as healthy population live longer, are more productive and efficient in their place of work.

Hypertension represents the most common chronic disease in the Western World with an estimated prevalence in the population of more than 25%, and a major risk factor for cardio vascular diseases including coronary artery diseases, heart failure and stroke, chronic kidney disease and death [1]. While hypertension related complications are preventable, lack

of public awareness and misconceptions about hypertension and hypertensive complications are common and may in part, be associated with ongoing inadequate awareness, treatment and control rate for hypertension. Bosu [2] reported that there is high prevalence of hypertension among West Africa's workforce of which a significant proportion is undiagnosed, severe or complicated. The increasing prevalence of hypertension is attributed to population growth, ageing and behavioural risk factors such as unhealthy diet, harmful use of alcohol, lack of physical activity, excess weight and exposure to persistent stress. The adverse health consequences of hypertension are compounded because many people affected also have other health risk factors that increase the odds of heart attack, stroke and kidney failure. These risk factors include tobacco use, obesity, high cholesterol and diabetes mellitus [3].

Wang [4] reported that prevalence of hypertension in China was 18.8%, despite that, the treatment rate among hypertensive patients was 82%, the control rate remained low in persons with hypertension (6 %) because of the low awareness in general (30 %) and the low control rate among treated hypertensive patients (25%).

The crude prevalence of hypertension increased progressively from 12.9% in studies published in the 1980s to 34.4% in those published in 2010-2014. The population of hypertensives who were previously aware of their diagnosis, were on treatment or had their blood pressure controlled was 19.6-84.0%, 0-79.2% and 0-12.7 % respectively. Hypertensive subject, including health workers, rarely checked their blood pressure except when they were ill [2]. Xu *et al.*, [5] in a study carried out in China, reported that 16% monitored their own blood pressure regularly. Female hypertensive subjects have more effectively controlled blood pressure than their male counterpart subjects with B.Sc. or higher had a lower awareness rate and treatment rate but a higher control rate.

Given the lack of routine blood pressure check in Nigeria, it is surprising that the country's statistics on hypertension are unreliable, most are outdated speculations based on mathematical models and surveys that are scanty and unrepresentative with low validity. The lack of reliable data has made it very difficult for policy makers to concentrate on efforts to control the emerging health burden of disease control. Bosu [2] reported that there is high prevalence of hypertension among West Africa's workforce of which a significant proportion is undiagnosed, severe or complicated.

In order to be able to plan for effective control of hypertension, there is need for adequate amount of reliable data on blood pressure pattern among the populace. The need to generate such data is the problem of this study.

#### **SIGNIFICANCE OF THE STUDY**

The findings of this study has provided information that will guide health workers to be able to plan for effective control of hypertension; it has created awareness among the University staff; it has increased the literature on blood pressure pattern and the need to monitor it; it has revealed the relationship between age, sex, religion, nature of work, family type and length of service and pattern of blood pressure distribution among staff of Adekunle Ajasin University, Akungba Akoko and it will stimulate future researchers to carry out further studies on blood pressure pattern and monitoring practices.

#### **RESEARCH QUESTIONS**

The following research questions were formulated to guide the study:

1. What is the pattern of blood pressure distribution among members of staff of Adekunle Ajasin University Akungba Akoko (AAUA)?
2. What is the relationship between the following variables age, sex, religion, nature of work, family type and length of service and pattern of blood pressure distribution among staff of Adekunle Ajasin University Akungba Akoko?

#### **Research hypotheses**

The following hypotheses were tested:

1. There is no significant relationship between age and the pattern of blood pressure among members of staff of AAUA.
2. There is no significant relationship between sex and the pattern of blood pressure among members of staff of AAUA.
3. There is no significant relationship between religion and the pattern of blood pressure among members of staff of AAUA.
4. There is no significant relationship between nature of work and the pattern of blood pressure among members of staff of AAUA.
5. There is no significant relationship between length of service and the pattern of blood pressure among members of staff of AAUA.
6. There is no significant relationship between family type and the pattern of blood pressure among members of staff of AAUA.

#### **METHOD OF THE STUDY**

The cross sectional descriptive survey design was adopted for this study. The population for the study comprised of all members of staff of Adekunle Ajasin University Akungba Akoko as at April 2016. A total sample of 500 respondents participated in this study and they were sampled from all the faculties and units in the University using population proportional to size. Two instruments were used for data collection. A digital sphygmomanometer was used to take the (staffs') blood pressure readings in their different offices. The second instrument was a self constructed, structured, and closed ended questionnaire designed and built around the research questions. It was validated by three experts in Health Education and it has a reliability coefficient of 0.85 when subjected to test re-test method of reliability using Pearson Product Moment Correlation Coefficient. The instruments were administered on the respondent in their offices by the researcher and research assistants. The blood pressure was taken twice with at least one minute interval after getting the consent of the respondent and allowing him/her to rest for at least five minutes in the sitting position, and then the respondent was allowed to fill the questionnaire after which the third reading of the blood pressure was taken. The second and the third readings were then averaged and the average reading was used for computation of the respondent's blood pressure. Data was analyzed with simple percentages, bar graph, mean of scores and hypotheses were tested with t-test at 0.05 level of significance.

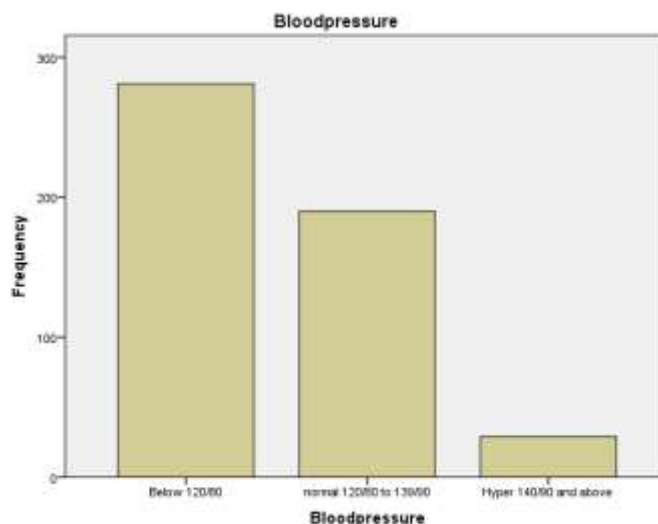
#### **RESULTS**

##### **Research question 1:**

What is the pattern of blood pressure distribution among members of AAUA staff?

**Table 1: Descriptive statistics on the pattern of blood pressure distribution**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 120/80	281	55.5	56.2	56.2
	normal 121/80 to 139/89	190	37.5	38.0	94.2
	Hyper 140/90 and above	29	5.7	5.8	100.0
	Total	500	98.8	100.0	
Missing	System	6	1.2		
Total		506	100.0		



**Fig1: Bar graph showing blood pressure distribution pattern**

Table one and Figure one revealed that 281(56.2%) of the respondents have their blood pressure below or equal to 120/80mmhg, 190 (38.0%) have normal blood pressure between 121/80mmhg to 139/89mmhg, while 29 (5.8%) have their blood pressure above 140/90mmhg.

**Research hypothesis one (1):** There is no significant relationship between age and the pattern of blood pressure among members of staff of AAUA.

**Table 2: t-test analysis on the influence of age on pattern of blood pressure distribution**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.292	.066		19.644	.000
	Respondent's age	.097	.029	.150	3.392	.001

a. Dependent Variable: Pattern of Blood pressure

Table 2 revealed a t value of 3.392 which is significant (0.001) at alpha level 0.05. Therefore, the hypothesis that stated that age has no significant influence on pattern of blood pressure distribution is rejected.

**Research hypothesis two (2):** There is no significant relationship between sex and the pattern of blood pressure among members of staff of AAUA.

**Table 3: t-test analysis on the influence of sex on pattern of blood pressure distribution**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.491	.084		17.716	.000
	Gender	.003	.054	.003	.064	.949

a. Dependent Variable: Pattern of Blood pressure

Table 3 revealed a t value of 0.064 which is not significant (0.949) at alpha level 0.05. Therefore, the hypothesis that stated that gender has no significant influence on pattern of blood pressure distribution is accepted.

**Research hypothesis three (3):** There is no significant relationship between religion and the pattern of blood pressure among members of staff of AAUA.

**Table 4: t-test analysis on the influence of religion on pattern of blood pressure distribution**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.475	.074		20.028	.000
	Respondent's religion	.014	.047	.014		

a. Dependent Variable: Pattern of Blood pressure

Table 4 revealed a t value of 0.309 which is not significant (0.757) at alpha level 0.05. Therefore, the hypothesis that stated that religion has no significant influence on pattern of blood pressure distribution is accepted.

**Research hypothesis four (4):** There is no significant relationship between nature of work and the pattern of blood pressure among members of staff of AAUA.

**Table 5: t-test analysis on the influence of nature of work on pattern of blood pressure distribution**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.562	.086		18.123	.000
	Respondent's work	-.044	.054	-.036		

a. Dependent Variable: Pattern of Blood pressure

Table 5 revealed a t value of -0.809 which is not significant (0.419) at alpha level 0.05. Therefore, the hypothesis that stated that nature of work has no significant influence on pattern of blood pressure distribution is retained.

**Research hypothesis five (5):** There is no significant relationship between length of service and the pattern of blood pressure among members of staff of AAUA.

**Table 6: t-test analysis on the influence of length of service on pattern of blood pressure distribution**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.435	.068		21.237	.000
	Years of service	.039	.039	.044		

a. Dependent Variable: Pattern of Blood pressure

Table 6 revealed a t value of 0.982 which is not significant (0.327) at alpha level 0.05. Therefore, the hypothesis that stated that length of service has no significant influence on pattern of blood pressure distribution is retained.

**Research hypothesis six (6):** There is no significant relationship between family type and the pattern of blood pressure among members of staff of AAUA.

**Table 7: t-test analysis on the influence of family type on pattern of blood pressure distribution**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.444	.055		26.045	.000
	Family Background	.028	.026	.048		

a. Dependent Variable: Pattern of Blood pressure

Table 7 revealed a t value of 1.081 which is not significant (0.280) at alpha level 0.05. Therefore,

the hypothesis that stated that family type has no significant influence on pattern of blood pressure distribution is accepted.

## DISCUSSION

Table one and Figure one revealed that 281(56.2%) of the respondents have their blood pressure below or equal to 120/80mmhg, 190 (38.0%) have normal blood pressure between 121/80mmhg to 139/89mmhg, while 29 (5.8%) have their blood pressure above 140/90mmhg. This is slightly lower than and therefore disagrees with Ogar, et al. [6] who reported that the overall prevalence of hypertension in Nigeria ranges from 8%-46.4% depending on the study target population, type of measurement and cut-off value used for defining hypertension. They went further to report that the prevalence is similar in men and women (7.9%-50.2% vs 3.5%-68.8%, respectively) and in the urban (8.1%-42.0%) and rural setting (13.5%-46.4%). Similarly, it disagrees with WHO [7] which reported that in 2008, worldwide, approximately 40% of adults aged 25 and above had been diagnosed with hypertension, they went further to say that the number of people with the condition rose from 600 million in 1980 to 1 billion in 2008. They further reported that the prevalence of hypertension is highest in African region at 46% of adults aged 25 and above, while the lowest prevalence at 35% was found in the America, overall, high –income countries have a lower prevalence of hypertension 35% than other groups at 40% [7, 8]. Similarly it disagrees with Bosu [2] who reported that there is high prevalence of hypertension among West Africa's workforce of which a significant proportion is undiagnosed, severe or complicated. However, since this study was carried out in a university environment where the average level of education is high, the low prevalence discovered can be explained by the position of Tedesco [9] who reported that education is associated with greater health care and awareness that may overcome the risk related to low physical activity.

Age has significant influence on pattern of blood pressure. This agrees with Tesfaye, Byass, & Wall [10] who found out that age and BMI were significantly associated ( $P < 0.001$ ) with mean SBP and DBP in both males and females. Similarly, Mufunda, *et al.* [11] reported that linear association between blood pressure and age has been widely reported. In their study population, significant linear association was demonstrated between age and SBP as well as DBP, which was stronger with SBP;  $\beta = 0.59$ , 95% CI (0.50, 0.68) in males and  $\beta = 0.56$ ; 95% CI (0.45, 0.66) in females, than with DBP;  $\beta = 0.20$ , 95% CI (0.14, 0.26) in males and  $\beta = 0.08$ , 95% CI (0.02, 0.14) in females. SBP decreased by about 0.45 mmHg in males and 0.48 mmHg in females for every additional year of schooling completed in that study population. In the same vein, Verma *et al.* [12] reported that Age is significantly

related to hypertension especially people above 60 years.

Sex has no significant influence on pattern of blood pressure. This agrees with Tesfaye [10] who reveal that mean SBP and DBP levels in both sexes were sub-optimal (greater than 120 and/80 mmHg, respectively).

Table 4 revealed a t value of 0.309 which is not significant (0.757) at alpha level 0.05. Therefore, the hypothesis that stated that religion has no significant influence on pattern of blood pressure distribution is accepted. This disagrees with Levin, and Vanderpool [13] who reported that the effect of religion on blood pressure suggest that religion commitment is inversely associated with blood pressure and that several religious denominations or groups have relatively low rate of hypertension-related morbidity and mortality. Similarly, it disagrees with Kretchy *et al.*[14] who reported that spirituality and not religiosity related directly with medication non adherence in hypertensives. They went ahead to say that the spiritual attachment of patients with a supreme being potentially increase their trust in the expectation of divine healing instead of adhering adequately with their drugs.

Table 5 revealed a t value of -0.809 which is not significant (0.419) at alpha level 0.05. Therefore, the hypothesis that stated that nature of work has no significant influence on pattern of blood pressure distribution is retained. This disagrees with Tedesco, Disavo *et al.* [9] who reported that, it is somewhat surprising that most hypertensive patients reached high standards of education and worked at sedentary jobs (group A: 736 patients, 91%;  $P < 0.0001$ ). Multivariate analysis showed that only diastolic blood pressure ( $P = 0.03$ ) was independently associated with low educational level. Compared to diabetes, hypertension and its risk factors are relatively unknown to people with little education. Education is associated with greater health care and awareness that may overcome the risk related to low physical activity. Thus, we stress the importance of a sound health policy able to reach out to the uneducated and make them aware of hypertension and the health care services available to them. Similarly, Verma, *et al.* [12] reported that occupation, educational status and socio-economic status is significantly related to hypertension. It equally disagrees with Dua *et al.* [15] Who reported in their study, that The higher prevalence of prehypertension and hypertension among Punjabis may be attributable to differences in dietary habits, socio-economic status, sedentary life style, intake of alcohol, and rates of obesity. They did jobs that involved more of mental strain in spite of the fact that they were more or less sedentary (they have drivers and helpers to carry out the various jobs), than the other categories of occupation such as professionals and those doing office work.

Table 6 revealed a t value of 0.982 which is not significant (0.327) at alpha level 0.05. Therefore, the hypothesis that stated that length of service has no significant influence on pattern of blood pressure distribution is retained. This disagrees with Ibrahim & Damasceno [16] who listed sedentary occupation, reduced physical activity, psychological stress, urban living, as one of the underlying factors that increase or are associated with high blood pressure. These factors are often related to longer length of service.

Table 7 revealed a t value of 1.081 which is not significant (0.280) at alpha level 0.05. Therefore, the hypothesis that stated that family type has no significant influence on pattern of blood pressure distribution is accepted. This disagrees with Ibrahim & Damasceno, [16] who listed family history as one of the underlying factors that increase or are associated with high blood pressure.

#### LIMITATIONS OF THE STUDY

The major limitation of this study is the fact that it is a cross sectional study and the blood pressure captured at the time of the study may vary a little from the normal due to environmental conditions beyond the control of the researcher.

#### CONCLUSIONS

It was concluded that:

- 5.8% of the study population have their blood pressure above 140/90mmhg.
- Age has significant influence on pattern of blood pressure distribution.
- Sex; religion; nature of work; family type and length of service have no significant influence on the pattern of blood pressure distribution among members of staff in AAUA.

#### IMPLICATION FOR HEALTH EDUCATION

The findings of this study have the following implications for health education:

- Public health education lectures should be organized from time to time for all staff to sensitize them on the need to check their blood pressure regularly.
- Health educators should have a routine visit to members of staff who are above 40 years for health education on lifestyle diseases and the need for regular medical checkups.

#### RECOMMENDATIONS

After a critical look at the blood pressure pattern among AAUA staffs, the researcher came out with the following recommendations:

- Stress should be reduced in the work place to avoid raised blood pressure.

- The working environment should be made healthy so as to enhance the growth and sustenance of positive emotion.
- Members of staff should be encouraged to visit the university health centre on routine basis for checkup.

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