KNOWLEDGE AS A PREDICTOR OF HYPERTENSION PREVENTION PRACTICES AMONG SECONDARY SCHOOL TEACHERS IN A SELECTED LOCAL GOVERNMENT AREA IN OYO STATE, NIGERIA

Oyelade Blessing Olaoluwa[1] and Ademola Amosu[2]

[1]Department of Public Health, School of Public and Allied Health Babcock University, Ilishan-Remo Ogun State, Nigeria. Email: olablessing80@gmail.com

[2]Department of Public Health, School of Public and Allied Health Babcock University, Ilishan-Remo Ogun State, Nigeria.

ABSTRACT: *Globally, hypertension remains one of the most pressing public health challenges. Therefore, this study investigated knowledge as a predictor of hypertension prevention practices among secondary school teachers in Ogbomoso North Local Government in Nigeria. The research adopted a cross-sectional survey design. 418 public secondary school teachers in Ogbomoso North, Oyo State, were selected through a multistage sampling technique. A validated questionnaire was used for data collection. Statistical Package for Social Sciences (SPSS), version 23, was used at a 95% confidence interval. The results showed that almost half of the teachers, 184 (47.8%) were between the ages of 40 and 49 years with mean±SD of 42.64±7.779 years. Majority of the teachers (96.1%) knew that hypertension is caused by high blood pressure and early detection through regular monitoring is important. The risk factors were rightly identified by over half of the teachers. The level of knowledge was computed on a 21-point rating scale with mean±SD of 14.79±2.298. The level of preventive measures was moderate with a mean±SD of 15.34±4.983 on a 24-point rating scale. Knowledge had a significant but weak statistical relationship with practice of hypertension preventive measures ($R^2=0.040; p< 0.01$). The findings of the study suggest that there are gaps in knowledge regarding hypertension among teachers in Oyo State, which could influence their behaviours towards prevention. There is a need for comprehensive health education for this group of teachers.*

KEYWORDS: Hypertension, Knowledge, Predictor, Prevention Practices, Teachers.

INTRODUCTION

Hypertension is one of the most pressing public health challenges (Dzau & Balatbat, 2019). Hypertension is one of the risk factors for cardiovascular diseases, and it is indirectly the leading cause of death and the third cause of disability globally (Chruściel *et al*., 2019). According to the World Health Organization, an estimated 1.13 billion people have hypertension globally. Hypertension is referred to as a silent killer in which the person who has it may not be aware and would neither show symptoms of having it (WHO, 2019). Hypertension or high blood pressure leads to 7.5 million death cases, which shares about 12.8% of all death cases recorded globally (Eman, 2020). The prevalence of hypertension remains considerably high globally, particularly in low and middle-income countries, despite the fact that hypertension can be prevented and controlled (WHO, 2019).

The development of chronic illnesses such as hypertension among individuals in occupations such as teaching has been associated with high levels of stress and sedentary behaviours (Mohan *et al*., 2008). Teaching is a profession that requires long working hours and teachers represent one of the most important, largest and productive sectors as they deliver cognitive knowledge to students. In Nigeria, teachers constitute part of the productive and elite sector in many communities. The work of school teachers includes interaction with people whose safety and well-being they are responsible for, apart from their role of teaching (Singh & Singh, 2006). In addition to this, nowadays, teachers seem to be involved in other non-academic duties such as census enumeration and elections, and together, all these contribute to stress, which is a risk factor for hypertension (Monica *et al*., 2017).

An individual's practice of hypertension prevention is influenced by certain factors, which include psychological, cognitive, and social factors, among other factors which all together act to determine if the individual exhibits a preventive health behaviour or not. It is almost impossible to act on what you lack information about. When knowledge about a health condition is lacking, preventing the occurrence of such a condition would be difficult. This is consistent with what Adkins (2006) posited, that gaps in knowledge of cardiovascular conditions and their risk factors in the general population are important barriers in the effective prevention and treatment of cardiovascular diseases (Adkins, 2006). Gaps in knowledge of cardiovascular disease conditions and their risk factors serve as barriers in the effective prevention and treatment (Boateng *et al*., 2017). Changes in lifestyle variables, along with other non-pharmacological interventions, may play an important role in halting the increasing trend of the prevalence of hypertension in low and middle-income countries, where there is a scarcity of programmes for the prevention and control of high blood pressure (Lemogoum, 2014).

LITERATURE

In Southwestern Nigeria, prevalence of hypertension was estimated to be 55.5% among semi-urban residents (Olamoyegun *et al*., 2016). Babatunde *et al*. (2020) carried out a study on cardiovascular risk factors in the civil service of Oyo State, Southwestern Nigeria. The study, which made use of six selected local government areas of Oyo State, reported that the prevalence of cardiovascular risk factors was high, compared with other studies in Nigeria and Africa (Babatunde *et al*., 2020). In a study on the prevalence of obesity and hypertension among adults in Ogbomoso, Nigeria by Isaac *et al*., 2011, the findings revealed that the prevalence of

hypertension among the study population was 50.5%. Among the study population of this research were teachers, who were classified under the class 2 as intermediate (Isaac *et al.*, 2011). The above established the prevalence of hypertension in the study area.

A study conducted in Ekiti, Southwestern Nigeria, reported that 100% awareness of hypertension among teachers, did not automatically translate to adequate knowledge of hypertension (Fasoro, 2017). Although several studies have examined the relationship between knowledge and prevention practices relating to hypertension, the majority of these studies made use of populations that were hypertensive. This study was premised upon the practice of lifestyle/behavioural factors that are applicable to all levels of hypertension prevention, be it primordial, primary or secondary prevention, among both healthy and hypertensive teachers. Also, there is sparse literature on the relationship between knowledge and prevention practices relating to hypertension among teachers in Ogbomoso, Oyo State. Thus, this research examined how knowledge could be used to predict the practice of hypertension prevention among teachers in Ogbomoso North Local Government Area. The research hypothesis states that there is a significant relationship between knowledge of hypertension and hypertension prevention practices among secondary school teachers in Ogbomoso North Local Government Area.

Following certain theoretical premises from the Health Belief Model (HBM), this research was developed.

METHODOLOGY

The study was conducted at Ogbomoso where Ogbomoso North Local Government Area is situated in Oyo State, Nigeria. The estimated total population of the LGA is 259,662, going by the 2006 census figure. The population for the study consisted of all public secondary school teachers in Ogbomoso North Local Government area of Oyo state, Nigeria. Data were collected within a period of three weeks. The study adopted a cross-sectional design. A prevalence of hypertension of 55% (Olamoyegun *et al.*, 2016), standard normal deviation of 1.96 and degree of precision of 95% were used in the sample size formula for the cross‑sectional study. A sample size of 380 was calculated. However, 418 participants were recruited for the study so as to compensate for non-response by the participants. Ogbomoso North consists of 15 public secondary schools. The sampling technique used was the multistage sampling technique. The first stage made use of proportionate sampling to determine the numbers of teachers from each school who would participate in the study, while the second stage made use of purposive sampling method to select the calculated proportionate number of teachers from each school who would participate in the study. Participants eligible for the study were principals, vice principals, teachers in public secondary schools in Ogbomoso North Local Government Area. Participants excluded from the study were Corp members, teaching-practice students and non-teaching staff in public secondary schools in Ogbomoso North Local Government Area. Also, all private secondary schools were excluded from the study.

A self-administered questionnaire was used for data collection. In order to validate the questionnaire, a pilot study was carried out among 38 secondary school teachers in Ilishan-Remo, Ogun state, Nigeria, who had the same characteristics with our study population. The Cronbach's alpha reliability coefficient of the questionnaire was 0.711 for knowledge items

and 0.865 for items on preventive practices. Ethical approval for the study was granted by the Institution Review Board of Babcock University (NHREC/24/01/2020; BUHREC 183/21). All teachers, who gave their informed consent and agreed to sign their informed consent, participated in the study. Data collected were processed and analysed using Statistical Package for the Social Sciences (version 23). Descriptive and inferential statistics were used in the analysis of the data.

RESULTS

The results for the study are shown in Table I to IV. The tables reflect the descriptive statistics on socio-demographic data, knowledge on hypertension and hypertension prevention practices among teachers. Descriptive statistics for the socio-demographic variables are shown in Table I.

Sociodemographic Characteristics of Respondents

The distribution of the teachers according to age showed that only 23 (6%) were within the age group, 20–29 years, while almost half of the teachers (184; 47.8%) were between the ages of 40 and 49 years. The mean age of the teachers was 42.64±7.779 years (see Table I). The gender distribution of the teachers showed that 155 (40.3%) were males while 230 (59.7%) were females. The academic qualifications of the teachers were the National Certificate in Education (54; 14%), Bachelor's degree (289; 75.1%) and Postgraduate degree (42; 10.9%). The teachers' work experience distribution showed that only 46 teachers (11.9%) had experience of 1 to 5 years, 93 teachers (24.2%) had experience of 16–20 years, while 62 (16.1%) teachers had worked for over 20 years as teachers. Majority of the teachers (347; 90.1%) were married, 6 (1.6%) were widowed and 28 (7.3%) were single. The religious distribution within the sample showed that about three-quarter of the teachers (288; 74.8%) were Christians, 86 (22.3%) were Muslims and 11 teachers (2.9%) indicated other religions.

Table I: Sociodemographic Characteristics of Respondents

S/N	Variables	Frequency (N)	Percentage (%)
1	**Age**		
	20 – 29 years	23	6.0
	30 – 39 years	95	24.7
	40 – 49 years	184	47.8
	50 – 59 years	83	21.5
	Total	**385**	**100**
	Mean±SD	**42.64±7.779 years**	
2	**Gender**		
	Male	155	40.3
	Female	230	59.7
	Total	**385**	**100**
3	**Academic Qualification**		
	NCE	54	14.0
	Bachelor's Degree	289	75.1
	Postgraduate	42	10.9
	Total	**385**	**100**

4	Work Experience		
	1 – 5 years	46	11.9
	6 – 10 years	99	25.7
	11 – 15 years	85	22.1
	16 – 20 years	93	24.2
	>20 years	62	16.1
	Total	**385**	**100**
5	**Marital Status**		
	Single	28	7.3
	Married	347	90.1
	Widowed	6	1.6
	Divorced	4	1.0
	Total	**385**	**100**
6	**Religion**		
	Christianity	288	74.8
	Islam	86	22.3
	Others	11	2.9
	Total	**385**	**100**

Knowledge of Teachers Regarding Hypertension

Tables II and III present the descriptive statistics for the variables of participants' knowledge on hypertension. Majority of the teachers (370; 96.1%) knew that hypertension is caused by high blood pressure and 326 (84.7%) teachers stated that hypertension can be detected when the systolic blood pressure is greater than or equal to 140 mmHg. Regarding the knowledge of the teachers on the causes, 304 (79%) rightly identified that having too many things on one's mind is a risk factor for hypertension, while 81 (21%) had no knowledge of that. Majority of the teachers (321; 83.4%) had knowledge regarding early detection through regular monitoring of blood pressure. One of the symptoms of hypertension—irregular heart rhythms—was rightly identified by 318 (62.6%) teachers, while 372 (96.6%) teachers knew that an uncontrolled hypertension can lead to stroke. About two-thirds of the teachers (266; 69.1%) in this study asserted that the vision of people who have hypertension is usually poor. Measuring blood pressure was indicated by 322 (75.8%) teachers as a detection method and 292 (75.8%) stated that noticing strange feelings in the body can be a symptom of hypertension (see Table II). The distribution of the teachers' responses to the risk factors showed that 252 (65.5%) knew that foods high in fats can cause hypertension. Also identified as risk factors are excessive salt consumption (312; 81%), lack of exercise or physical activities (292; 75.8%), taking too much alcohol (284; 73.8%) and family history (312; 81%) (see Table III).

Table II: Distribution of the Knowledge of Teachers Regarding Hypertension

S/N	ITEMS	YES N (%)	NO N (%)
1	Hypertension is caused by too high blood pressure in the blood vessels of the body	370 (96.1)	15 (3.9)
2	Hypertension is systolic blood pressure greater than or equal to 140 mmHg, or diastolic blood pressure greater than or equal to 90 mmHg	326 (84.7)	59 (15.3)
3	Hypertension is caused by having many things on your mind	304 (79.0)	81 (21.0)
4	Regular monitoring of blood pressure can make one diagnose hypertension early	321 (83.4)	64 (16.6)
	The nature of hypertension	**YES N (%)**	**NO N (%)**
5	Hypertension produces irregular heart rhythms as an important symptom	318 (82.6)	67 (17.4)
6	Uncontrolled hypertension can lead to stroke	372 (96.6)	13 (3.4)
7	Vision of someone with hypertension is usually poor	266 (69.1)	119 (30.9)
8	Poor management of hypertension can lead to heart attack	336 (87.3)	49 (12.7)
	How to detect hypertension	**YES N (%)**	**NO N (%)**
9	Having a health professional measure blood pressure	322 (75.8)	93 (24.2)
10.	When you start noticing strange feelings in your body	292 (75.8)	93 (24.2)

Table III: Teachers Distribution of Knowledge Regarding Risk Factors

S/N	Risk Factors	YES N (%)	NO N (%)
1	Foods high in fats	252 (65.5)	133 (34.5)
2	Excessive salt consumption	312 (81.0)	73 (19.0)
3	Eating too much	95 (24.7)	290 (75.3)
4	Low intake of fruits and vegetables	245 (63.6)	140 (36.4)
5	Lack of exercises or physical activity	292 (75.8)	93 (24.2)
6	Not drinking adequate water	229 (59.5)	156 (40.5)
7	Being overweight or obese	256 (66.5)	129 (33.5)
8	Having a short stature	62 (16.1)	323 (83.9)
9	Having a family history of hypertension	312 (81.0)	73 (19.0)
10	Having underlying diseases like diabetes	272 (70.6)	113 (29.4)
11	Taking too much alcohol	284 (73.8)	101 (26.2)

Distribution of the Level of Knowledge of Teachers Regarding Hypertension

Knowledge was computed on a 21-point rating scale with a mean±SD of 14.79±2.298. The distribution showed that no teacher had poor knowledge regarding hypertension, while 35 (9.1%) teachers had scores below average and 244 (63.4%) teachers had scores above average. 106 teachers (27.5%) had good knowledge scores.

Teachers' Hypertension Prevention Practices

The distribution of the teachers' prevention practices showed that only 59 (15.3%) of the teachers did not perform routine blood pressure checks, while 77 (20%) teachers confirmed that they did this very often. Regarding physical activities like walking, swimming and cycling, 159 (41.3%) teachers stated that they practiced this very often and only 28 (7.3%) teachers did not. The distribution of the teachers on the consumption of animal fats showed that only 83 (21.6%) teachers never ate such, while 112 (28.8%) teachers occasionally ate them and 79 (20.5%) very often did. About half of the teachers (192; 49.4%) stated that they very often avoid tobacco smoking, while only 93 (24.2) stated otherwise. Likewise, 179 (46.5%) teachers very often limited alcohol consumption, 125 (27.3%) never did and 43 (11.2%) rarely did. About the consumption of salt, 245 (63.6%) teachers did not practice this prevention behaviour, while only 20 (5.2%) very often did. About a third of the teachers (136; 35.3%) occasionally consume diets that contain adequate fruits and vegetables. 175 teachers very often maintained a diet low in fat and salt (see Table IV).

Table IV: Distribution of Teachers' Prevention Practices

N=Not at all, R=Rarely, O= Occasionally, VO=Very Often

S/N	Statements for Consideration	NA	R	O	VO
1	I perform routine blood pressure check-up	59 (15.3)	84 (21.8)	165 (42.9)	77 (20)
2	I perform 30-60 minutes of physical activity most days of the week (For example, walking, running, swimming, housework, yard work, weight training, dancing, cycling, etc.)	28 (7.3)	81 (21)	117 (30.4)	159 (41.3)
3	I do not eat fats of chicken, beef, pork or fats from any other meat	83 (21.6)	111 (28.8)	112 (29.1)	79 (20.5)
4	I avoid or reduce tobacco smoking to prevent hypertension	93 (24.2)	53 (13.8)	47 (12.2)	192 (49.9)
5	I limit alcohol consumption to 1 drink per day (for women) or 2 drinks per day (for men)	125 (27.3)	43 (11.2)	58 (15.1)	179 (46.5)
6	I add salt to my food once it is in my plate	245 (63.6)	67 (17.4)	53 (13.8)	20 (5.2)

| 7 | On a daily basis, I consume a diet that contains adequate fruits and vegetables | 40 (10.4) | 69 (17.9) | 136 (35.3) | 140 (36.4) |
| 8 | I maintain a diet that is low in fat, low in cholesterol and low in salt | 44 (11.4) | 64 (16.6) | 102 (26.5) | 175 (45.5 |

Level of Prevention Practices of Teachers to Hypertension

The prevention practices of the teachers were assessed on a 24-point rating scale with a mean±SD of 15.34±4.983. The distribution showed that only 39 (10.1%) of the teachers had a low level of practice, 172 (44.7%) had a medium level and 174 (45.2%) had a high level.

Test of Hypothesis

The Pearson Product Correlation analysis was used to test the relationship between the knowledge of teachers regarding hypertension and the prevention practices. There was a statistically significant relationship between knowledge of teachers and the prevention practices (r = 0.199; p = 0.000). The researcher accepts the alternate hypothesis. Regression analysis revealed that the perception was responsible for only 4% (r^2 = 0.040) of the variation observed in the practices and measures towards hypertension prevention among the public secondary school teachers.

DISCUSSION

This study assessed knowledge as a predictor of hypertension prevention among public secondary school teachers in Ogbomoso, Oyo State. The age distribution of the teachers showed that almost half of them were between the ages of 40–49 years and the mean age was 42.64±7.779 years. This distribution is similar to the population in a study conducted by Obembe, Osungbade & Ademokun (2016) and Annadurai (2018). In accordance with the civil service retirement age, none of the teachers was above 60 years of age. The gender distribution showed that there were more females than males across public secondary schools in Ogbomoso. The distribution of the academic qualifications of the teachers indicated that three-quarters of the teachers were degree holders and only a small proportion had the National Certificate in Education (NCE). This indicates that there has been a rapid shift from the NCE certification of teachers, at the basic level, to Bachelor's degree.

Majority of the teachers knew that hypertension is caused by a high blood pressure and they were able to affirm the readings on the monitor to diagnose an individual of hypertension. Likewise, the teachers knew that an uncontrolled high blood pressure can lead to stroke/heart attack. Regarding early detection, a high proportion of the teachers confirmed that frequent monitoring of the blood pressure can help in early discovery of hypertension. The teachers were asked about their knowledge of risk factors and the overall response showed that they had moderate knowledge of the factors that can predispose to high blood pressure and eventually hypertension. Consumption of foods high in salts and fats has been identified by the majority of the teachers. The knowledge of these risk factors is one of the most important identified risk factors of hypertension (Martinez-Gomez, Guallar-Castillon, Higueras-Fresnillo, Banegas, Sadarangani & Rodriguez-Artalejo, 2018; Neelakantan, Koh, Yuan & van Dam, 2018). One of

the biological risk factors of hypertension—family history—was correctly identified by over eighty percent of the teachers. This is an important preventive information that influences the behavioural practices towards high blood pressure and hypertension. The study shows that on the grand scale, 41% of the teachers had a moderate level of knowledge, while only 59% showed evidence of a high level of knowledge.

Another important risk factor is the lack of physical activities which was confirmed by three-quarter of the teachers to be responsible for hypertension. Consistently, studies have suggested a relationship between physical activity and the incidence of hypertension (Brook, Appel, Rubenfire, Ogedegbe, Bisognano & Elliott, 2013; Chobanian, Bakris, Black, Cushman, Green & Izzo Jr, 2003). The benefits of physical exercise in reducing blood pressure levels and the risk of cardiovascular conditions have been documented as well as in increasing fitness level, improving body composition and quality of life, and decreasing mortality risk (Williams, B; Mancia, G & Spiering, 2018; Whelton, PK; Carey, RM & Aronow, 2018).

There are reportedly strong relationships between behavioural lifestyle factors such as unhealthy diets, physical inactivity, excessive weight gain and the risk of developing hypertension. There was a significant but weak relationship between the knowledge of the teachers and their preventive practices. Knowledge accounted for only 4% of the variation observed in the preventive practices. This result showed that knowledge was only a minor determinant of the preventive practices that the teachers adopted in their lifestyles.

A large proportion of risk factors associated with hypertension are preventable. As far as the preventive practices are concerned, about two-thirds of the teachers in this study reported that they perform routine blood pressure check-ups. This rate was higher than the rate reported by Oladapo, Salako, Sadiq, Soyinka and Falase (2013). Only a few of the teachers reported about adding salt to their meals after cooking has been done. Regarding the consumption of foods low in fats, vegetables and fruits, the proportion was high but can be improved. This indicates that more education regarding the impact of nutrition needs to be conducted especially among the at-risk groups such as teachers. Poor prevention practices may lead to high risks of hypertension as well as higher chances of other terminal health conditions among teachers. This may adversely affect their productivity and impair their ability to live a normal life as well as deliver a proper education in school. Only 45.2% of the teachers had a high level of prevention practices.

Implication to Research and Practice

The findings of this study revealed the teachers present certain risks to psycho-cognitive conditions which can predispose them to hypertension, and thereby suggest an urgent need for a comprehensive health education for teachers. In Nigeria, teachers constitute part of the labour force and it has become a necessity to establish strategies which will improve their health choices. General awareness should be created about the harmful effects of unhealthy diets, lack of physical exercises and extra salt consumption among adults in Nigeria. Therefore, establishing a screening system for early detection of hypertension becomes a prime necessity, along with promoting lifestyle intervention programs focusing on healthy diet and regular physical activity that helps in reducing the overall blood pressure related complications.

CONCLUSION

This study highlights knowledge as a predictor of preventive practices relating to hypertension prevention among public secondary school teachers in Ogbomoso North Local Government area. The findings of this study indicate that the level of knowledge and preventive measures of teachers regarding hypertension was moderate. The findings revealed that knowledge has a weak predicting power on preventive measures towards hypertension. This implies that there are other salient factors which may contribute to the practice of hypertension prevention practices among teachers. There is a need to carry out an extensive study to explore these factors. Although the knowledge of the teachers regarding hypertension is moderate, the findings of the study suggest that there are gaps in the knowledge regarding hypertension among teachers in Oyo State, which could influence their behaviours towards prevention. The teachers have an idea of the condition but that is not enough to translate into practice. This study points to a crucial need for comprehensive health education for this group as teachers represent a large and growing segment of the workforce in many countries.

Future Research

Routine screening for early diagnosis should be conducted for teachers. This will ensure that hypertension is detected early and appropriate management is implemented for affected individuals. A comprehensive awareness of high blood pressure and hypertension should be considered to promote health education especially regarding preventive and risk factors of hypertension. This will have a great impact on the primordial and primary prevention of hypertension in Oyo State. Other longitudinal studies should be conducted to examine the prevalence of high blood pressure among teachers in Ogbomoso and Oyo State at large. Hypertension is a preventable disease and the majority of its risk factors among school teachers are modifiable and preventable. Early diagnosis, preventive behaviour and taking policies can reduce the burden of the disease. Promoting healthy lifestyles and interventions tailored to behavioural modifications related to the risk factors of hypertension is suggested in reducing and controlling the prevalence of hypertension.

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