
Impart of Nurse-Led Intervention on Knowledge and Lifestyle Modification Practice Towards Prevention of Hypertension Among Adult Residents of Ogbomoso, Oyo State

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Abstract: *This study adopted quasi-experimental design to examine impart of Nurse-led intervention on Knowledge and Lifestyle modification towards prevention of hypertension among adult residents in Ogbomoso, Oyo State. The sample of 288 was selected using two-stage sampling techniques. The study obtained data from participants during pre and post-intervention using structured questionnaire. Data were analyzed using, Statistical Package for Social Sciences (SPSS), version 27. Descriptive statistics of frequency and percentages as well as graph was employed to analyze data. Findings revealed that, 33.2% of the participants had good knowledge during pre-intervention, while 69.7% had good knowledge during post-intervention. Also, 32.4% of the participants had good lifestyle modification practices during pre-intervention, while majority (72.9%) had good lifestyle modification practices during post-intervention. The study concluded that, knowledge and practice of lifestyle modification among participants was better during post-intervention. The study concluded that, strategic designed health education is imperative to improve lifestyle modification towards controlling hypertension prevalence.*

Keywords: intervention, knowledge, lifestyle modification, prevention, hypertension

INTRODUCTION

In recent times, continuous increase in the prevalence of hypertension as a global health issue, have resulted to increase in the global disease burden (Fadi et al., 2024; Forouzanfar et al., 2017).

This is evidence in the increasing rate of complications of hypertension such as heart diseases, stroke, and kidney failure among others. Yet this is questioning the efficacy of existing global, continental and national preventive efforts. Although hypertension is preventable and has been referred to as old people's condition in this part of the world, yet, the continuous downwards review of age of people with hypertension in Nigeria is another reason to review the existing preventing programme (Geremew et al. 2023). This was borne out of the fact that, if the prevalence of hypertension continue to increase at this pace, it could result into global emergency (Mills et al., 2016). Therefore it is imperative that, proper measures are taken to improve preventive measures. This is in line with recent WHO Global Action Plan for Prevention and Control of non-communicable diseases (NCDs), which suggested prioritizing preventive measures to decreasing prevalence of conditions like hypertension (Dombrovskiy et al., 2019). Aside hereditary, Campbell et al., (2021) lifestyle modification have been said to be a major contributor to occurrence of hypertension. Individual ability to adapt to lifestyle modification such as, adopting recommended dietary regimen like food items with low sodium, engaging in regular exercise, restricting alcohol intake among others, are major preventive strategies of hypertension.

Globally, 1.13 billion peoples were living with hypertension, these means, 1 in 4 men and 1 in 5 women had hypertension (Kew, 2023 citing World Health Organization-WHO). Out of this two-thirds of people with hypertension lives in developing and under developed countries, where Nigeria is categorized (World Health Organization, 2019). According to a recent finding, there were over 75 million adults living with hypertension in sub-Saharan Africa. Another study estimated that, the figure will rise to 125.5 million in the coming 10–15 years (Tibebu et al 2017). Globally it is reported that, cardiovascular disease accounted for approximately 17 million deaths a year. Nearly one-third of the hypertension-related complications accounted for 9.4 million deaths worldwide every year (WHO, 2013). Also, Total number of deaths in people aged 70 years, 66.5% (males) and 63.2% (females) of deaths are accountable to non-communicable diseases. One of the most common non-communicable disease affecting a large number of people is hypertension (HTN) (Tibebu et al 2017). Also, hypertension accounts for about half of the deaths from heart disease and stroke, and 12.8% of total deaths globally (WHO, 2019). This is an indication that, hypertension is gradually becoming global health emergency. Therefore, it is imperative that, hypertension be prevented across communities using global best practices, such as educational intervention.

Previous studies have attested to the benefits of educational intervention on reduction in disease burden (DiMaria-Ghalili et al., 2014; Chaves et al., 2015). This based on the fact that, the level of literacy is still low, especially on preventive health challenges, which probably contribute towards increasing rate of hypertension among adults. Lifestyle modification prevent rise in blood pressure as well as improve overall cardiovascular health. However, the continual increase in the prevalence of hypertension year in year out as well as, rate of mortality recorded as a result of hypertension, has become a source of concern globally. Previous researches on hypertension in Nigeria and Ogbomoso Area of Osun State, especially in this part of the world are limited and inconclusive, in that, most of these research focused on general terms causing hypertension, with no adequate

consideration for main causes of hypertension like lifestyle modification (Ajayi, 2016; Abdulsalam *et al.*, 2014). While some others, restricted their studies to influence of diet (Lipilekha *et al.*, 2017), some examine physical activities or substance (Hika *et al.*, 2019), while other looked into adoption of traditional medicine as alternative to modern medicine for treatment of hypertension, or combine two among those mentioned above (Uwaegbulem, 2017). Nonetheless, while it is necessary to examine relative contributions of individual lifestyle components towards hypertension prevention, improving preventive strategies such as introduction of educational intervention could be a way to control the prevailing rate.

LITERATURE/THEORETICAL UNDERPINNING

Hypertension or high blood pressure is resulted from sustained increase in arterial systolic (≥ 140 mmHg) or diastolic (≥ 90 mmHg) pressure; i.e $\geq 140/\geq 90$. For “normal” blood pressure, systolic pressure is ≤ 120 mm Hg and diastolic ≤ 80 mm Hg (Abu & Carson, 2018). Individuals with values between normal and hypertensive blood pressures are considered to have a prehypertensive condition (American Heart Association, 2017). One of the key factors to reckon with is the asymptomatic nature of hypertension, which most often leave people unaware of status of their blood pressure. Atkilt *et al.*, (2018) held that, hypertension occurs when a blood pressure value reads 140/90 mmHg or higher, after two separate measurement. This implies that, two separate reading have to be repeatedly taken before anyone could be diagnosed as been hypertensive. Therefore for those who are not use to routine medical testing, hypertension is likely to remain untreated since most those people would be unaware of the warning signs and symptoms. This is why it is essential that blood pressure is checked routinely, so as to aid early detection of high blood pressure as it is only through testing that hypertension testing can be detected. Nonetheless, Joseph-Shehu *et al.*, (2018) held that, although, majority of patients with hypertension remain asymptomatic, experience have shown some symptoms attributed include, constant headaches, lightheadedness, vertigo, altered vision, or fainting episode among others

Knowledge of blood pressure status and risk factors for hypertension is essential in its prevention, management, and control (Lugo-Mata *et al.*, 2017). Helen *et al.*, (2018) opines that, many Nigerians are not aware of their blood pressure status, therefore, some living with hypertension are not aware and many are likely to be practicing risk behaviors. The burden of hypertension is accentuated due to the silent nature of the disease; this affects the level of awareness thereby causing awareness to be low among individuals. Shikha-Singh *et al.*, (2017) noted that, studies from many countries worldwide reported that, public awareness about their blood pressure status are low. Sodium intake is positively associated with increased Blood Pressure (BP) and cardiovascular disease and is difficult to measure accurately in adulthood (Xiaohua Liang *et al* 2020). Use of raw table salt was associated with more than twice increased odds of being hypertensive. High-salt diet leads to the increase in plasma volume and consequently an increase in blood pressure. Although there is still debate regarding the exact mechanism through which salt intake leads to hypertension.

Hypertension was more among physically active subjects as compared to inactive subjects but no statistically significant difference was found. The exact reason behind this is unknown and yet to be explored (Shikha-Singh et al., 2017). Physical inactivity has been a significant risk factor (Angaw, et al., 2015). This is due to the fact that, the measurement of physical activity relied on participants reported estimation of time spends on various activities and hence subjective measures of intensity by different participants. This may have resulted in misclassification of intensity and duration of physical activities (Kalssa et al., 2016). Stress level is one of the most important psycho-social predictor of hypertension. Stress increases heart rate and blood requirement and can raise blood pressure over a period of time, and precipitate heart attack and stroke (Kalssa, et al., 2016). An individual with psycho-social stress were 12.3 times high risk of developing hypertension than counterpart.

The study was anchored on theory of reasoned action (TRA) which was propounded by Keke Ajzen and Martin Fishbein in 1967. The theory emphasized how behavior impact good health. Nisbet and Gick (2018), summarised that, in order for behavior to be acceptable, individual must feel personally vulnerable to threats of conditions, such as hypertension, view the possible consequences as severe, and see that taking action is likely to either prevent or reduce the risk at an acceptable cost with few barriers. This model was applied to this study, in that, it explains the relationship between lifestyle modification and control practice of hypertension, especially if it has to do with lifestyle adjustment. The model noted that, individual intention to perform a specific behaviour is a function of two factors which are attitude (positive or negative), which most times is framed by knowledge and the influence of the social environment (general subjective norms) such as effectiveness of educational intervention.

METHODOLOGY

This study adopted quasi-experimental design and sample was determined using Leslie Kish, which gave 288 respondents, who were selected using two sampling techniques method. The study obtained data from respondents using structured questionnaire. Data collection procedure was divided into two phases: pre-intervention phase and post intervention phase, with a middle phase for intervention. Retrieved Questionnaire or both pre and post intervention were analyzed using the Statistical Package for Social Sciences (SPSS), version 27. Descriptive statistics of frequency counts and percentages was employed to analyze data. Overall categorization of variables was presented in the charts.

RESULT/FINDINGS**Table 1: Socio-demographic characteristics**

Variable	Frequency (n=288)	Percentage (%)
Age		
21-40 years	15	5.2
41-60 years	115	39.9
60 years and above	158	54.9
Gender		
Male	138	47.9
Female	150	52.1
Marital Status		
Single	29	10.1
Married	149	51.7
Divorced	60	20.8
Widow	50	17.4
Religion		
Christianity	158	54.9
Muslim	115	39.9
Traditional	15	5.2
Ethnicity		
Yoruba	210	72.9
Igbo	53	18.4
Hausa	25	8.7
Education Status		
Formal	135	46.9
Non Formal	153	53.1
Employment Status		
Self-employed	103	35.8
Salary earners	132	45.8
Unemployed	53	18.4

Table 1 above presents socio-demographic characteristics of respondents. On age, 5.2% were 20-39 years, 39.9% were 40-59 years while, 54.9% were age 60 years and above. On gender, almost half (47.9%) were male, while 52.1% are females. On marital status, 10.1% were single, 51.7% were married, 20.8% were divorced and 17.4% were widow/widower. More so, on religion, 54.9% of respondents practiced Christianity, 39.9% practiced Islam, while just 5.2% practiced traditional religion. On Ethnicity, more than two third (72.9%) were from Yoruba, 18.4% were from Igbo

and 8.7% were from Hausa. Furthermore, it can be deduced that slightly above the half of the respondents (53.1%) have non-formal education, while almost half (46.9%) had formal education. More so, a higher percent (45.8%) were salary earners, below half (35.8%) were self-employed while, 18.4% were unemployed.

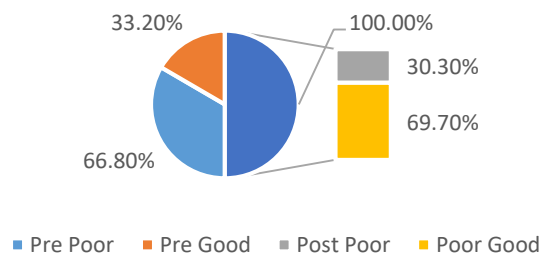
Table 2: Frequency distribution of respondents be knowledge on Lifestyle Modification Practices

Dietary Pattern		Pre		Post	
		T	F	T	F
Taking Fruits always help control hypertension	F	137	151	206	82
	%	47.6	52.4	71.5	28.5
Taking vegetables always help control hypertension	F	177	111	261	27
	%	61.5	38.5	90.6	9.4
Avoiding snacks and others processed food could help control hypertension	F	86	202	157	131
	%	28.9	71.1	54.5	55.5
Reducing fats or cholesterol could help control hypertension	F	69	119	184	104
	%	24.0	76.0	63.9	36.1
Avoid well seasoned food could help control hypertension	F	122	166	199	89
	%	42.4	57.6	69.1	30.9
Too much carbonated drink could lead to uncontrolled hypertensive	F	45	243	154	134
	%	15.6	84.4	53.5	46.5
Increasing intake of fried rice could help uncontrolled hypertensive	F	51	237	122	166
	%	17.7	82.3	42.4	57.6
Physical Activities					
Excessive stress could increase chances of uncontrolled hypertensive	F	178	110	235	53
	%	61.8	38.2	81.6	18.4
Regular mild exercise could decrease chances of uncontrolled hypertensive	F	112	176	165	123
	%	38.9	61.1	57.3	42.7
Heavy weight lifting could increase chances of uncontrolled hypertensive	F	138	150	184	104
	%	47.9	52.1	63.9	36.1
Substance Abuse					
Smoking substances could increase chances of uncontrolled hypertensive	F	79	209	197	91
	%	27.4	72.6	68.4	31.6
Intake of alcoholic drink could increase chances of uncontrolled hypertensive	F	66	122	143	145
	%	22.9	77.1	49.7	50.3
Self-medicine could increase chances of uncontrolled hypertensive	F	86	202	164	124
	%	29.9	70.1	56.9	43.1
Intake of branded and unbranded local mix substances could increase chances of uncontrolled hypertensive	F	42	246	178	110
	%	14.6	85.4	61.8	38.2

Indication: True (T) & False (F)

Table 2 presents frequency distribution of respondents on Knowledge of Lifestyle Modification. The result reveals that, during pre, almost half (47.6%) affirmed that taking Fruits always help control hypertension, while majority (64.9%) during post affirmed. Result also shows that, majority (61.5%) during pre said they Taking vegetables always help control hypertension, while during post, a higher percent (90.6%) agreed. More result shows that, during pre a few (28.9%) affirmed that, Avoiding snacks and others processed food could help control hypertension, while a higher percent (54.5%) affirmed. Further result during pre-revealed that, almost a quarter (24.0%) of the respondent agreed that Reducing fats or cholesterol could help control hypertension, while a higher percent (63.9%) affirmed. Result also revealed that, most about a half (42.4%) of the respondents affirmed that, Avoid well-seasoned food could help control hypertension, while a higher percent (69.1%) affirmed. A few (15.6%) of the respondents during pre-affirmed that, Too much carbonated drink could lead to uncontrolled hypertensive, while higher percent (53.5%) affirmed. About a fifth (17.7%) of the respondents opined that, increasing intake of fried rice could help uncontrolled hypertensive, while a higher percent (42.4%) affirmed. Majority (61.8%) said of the respondents agreed that, Excessive stress could increase chances of uncontrolled hypertension, while a higher percent (81.6%) agreed during post. Further result revealed that, over a third (38.9%) of the respondent affirmed that, Regular mild exercise could increase chances of controlling hypertension, while a higher percent (57.3%) agreed during post. More result shows that, below half (47.9%) of the respondents agreed that, Heavyweight lifting could increase chances of uncontrolled hypertension, while a higher percent (63.9%) affirmed. Below a third (27.6%) of the respondents during pre-noted that, smoking substances could increase chances of uncontrolled hypertension, while a higher percent (68.4%) during post affirmed. More so, a few (22.9%) affirmed that, Intake of alcoholic drink could increase chances of uncontrolled hypertension, while a higher percent (68.4%) agree. Also 29.9% during pre-affirmed that, Self-medicating could increase chances of uncontrolled hypertension, while majority (56.9%) during post affirmed. A few (14.6%) of the respondents affirmed that, Intake of branded and unbranded local mix substances could increase chances of uncontrolled hypertension, while majority (61.8%) agreed.

Figure 1: Overall Knowledge of Lifestyle Modification Practices



Results revealed, during pre-intervention, about a third (33.2%) of the respondents had good knowledge of life modification, while majority (69.7%) during post had good knowledge of lifestyle modification.

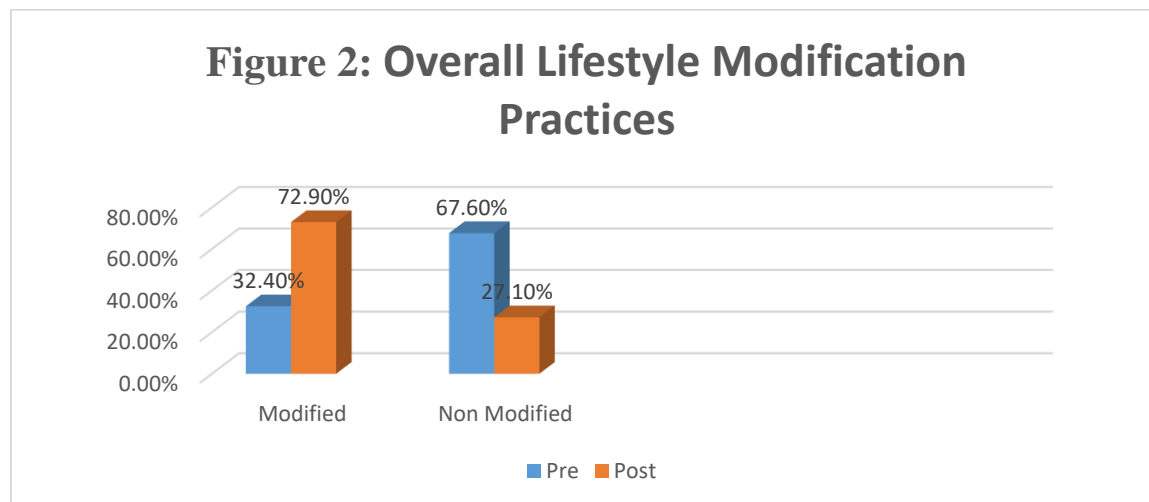
Table 3: Frequency distribution of respondents by lifestyle modification practices

Dietary Pattern		Pre		Post	
		T	F	T	F
I Take fruits everyday	F	72	216	187	111
	%	25.0	75.0	64.9	35.1
I Take vegetables always	F	131	157	164	124
	%	45.5	54.5	56.9	43.1
I avoiding snacks and other processed food	F	56	232	135	154
	%	19.4	80.6	46.9	53.1
I reduce fats or cholesterol intake	F	147	141	165	123
	%	51.0	49.0	57.3	42.7
I avoid well-seasoned food	F	98	190	137	151
	%	34.0	66.0	47.6	52.4
I avoid too much carbonated drink	F	44	244	161	127
	%	15.3	84.7	55.9	44.1
I reduce intake of fried food	F	75	213	131	157
	%	26.0	74.0	45.5	54.5
Physical Activities		T	F	T	F
I ensure to walk for considerable number of time per day	F	62	226	155	133
	%	21.5	78.5	53.8	46.2
I engaged in regular mild exercise	F	81	207	124	164
	%	28.1	71.9	43.1	56.9
I engaged in heavyweight lifting	F	49	239	118	170
	%	17.0	83.0	40.9	59.1
Substance Abuse		T	F	T	F
Smoking substances could increase chances of uncontrolled hypertension	F	94	194	114	174
	%	32.6	67.4	39.6	60.4
Intake of alcoholic drink could increase chances of uncontrolled hypertension	F	82	206	116	172
	%	28.5	71.5	40.3	59.7
Self-medicating could increase chances of uncontrolled hypertension	F	39	249	153	135
	%	13.5	86.5	53.1	46.9
Intake of branded and unbranded local mix substances could increase chances of uncontrolled hypertension	F	55	223	202	86
	%	19.1	77.4	70.1	29.9

Indication: True (T) & False (F)

Table 3 presents frequency distribution of respondents on lifestyle modification practices. The result reveals that, during pre, while a quarter (25.0%) affirmed that they take fruits everyday,

while majority (64.9%) during post affirmed. Result also shows that, below half (45.5%) during pre said they Take vegetables always, while during post, majority (56.9%) agreed. More result shows that, during pre below a fifth (19.4%) affirmed that, they avoid snacks and other processed food, while a higher percent (46.9%) affirmed. Further result during pre-revealed that, a high percentage 51.0% of the respondent agreed that they reduce fats or cholesterol intake, while a higher percent (57.3%) affirmed. Result also revealed that, most about a third (34.0%) of the respondents affirmed that, they avoid well-seasoned food could help control hypertension, while a higher percent (47.6%) affirmed. A few (15.3%) of the respondents during pre-affirmed that, they avoid too much cabonated drink, while majority (55.9%) affirmed. About a quarter (26.0%) of the respondents opined that, they reduce intake of fried food, while a higher percent (45.5%) affirmed. About a fifth (21.5%) said of the respondents agreed that, Excessive stress could increase chances of uncontrolled hypertension, while majority (53.8%) agreed during post. Further result revealed that, over a quarter (28.5%) of the respondent affirmed that, Regular mild exercise could increase chances of controlling hypertension, while a higher percent (43.1%) agreed during post. More result shows that, a few (17.0%) of the respondents agreed that, Heavyweight lifting could increase chances of uncontrolled hypertension, while a higher (40.9%) affirmed. Below a third (32.6%) of the respondents during pre noted that, smoking substances could increase chances of uncontrolled hypertension, while a higher percent (39.6%) during post affirmed. More so, a few (28.5%) affirmed that, Intake of alcoholic drink could increase chances of uncontrolled hypertension, while a higher percent (40.3%) agree. Also 13.5% during pre-affirmed that, Self-medicating could increase chances of uncontrolled hypertension, while majority (86.5%) during post affirmed. A few (19.1%) of the respondents affirmed that, Intake of branded and unbranded local mix substances could increase chances of uncontrolled hypertension, while majority (70.1%) agreed.



Results revealed, during pre-intervention, about a third (32.4%) of the respondents ensure life modification practices, while majority (72.9%) during post ensure lifestyle modification practices.

DISCUSSION

Finding revealed that, majority were aged 40 years and above. This is an indication that majority were older enough to consider for this study. Hypertension is common among elderly, therefore having majority of the respondent to be 40 years and above, implies the study considered majorly age group needed. In a similar study, Bogale et al., (2020) reported that, age range of 46–64 years were one of the factors significantly associated with good knowledge of lifestyle modification. More so, both male and female were well represented, however female were more than male, which corroborate the fact that female population is more than male in Nigeria (National population Census, 2006). More so, the fact majority were married was an indication that, most may not have excused with food preparation. More findings revealed that, the three most dominating religion in Nigeria were represented. However, Yoruba dominated among the respondents. This implies that, the study was conducted in an environment where Yoruba are majority. However, majority had non-formal indicating that the level of education is very low.

Findings further revealed that, majority of the respondents had poor Knowledge of Lifestyle Modification during pre-intervention. Findings agrees with Tabrizi, et al (2016) who found that, 26.5% were had adequate knowledge of hypertension. However, there was a significant improvement in the Knowledge of Lifestyle Modification during the post intervention. Bogale et al., (2020) found high level of knowledge on practice of lifestyle modification among respondents with high level of literacy. This is evidence in the result presented in table 4.3 above where majority affirmed that, Taking Fruits, vegetable, avoiding snacks, reducing fats or cholesterol help control hypertension. More so, findings shows a significant improvement in the post-intervention score of majority of the respondents on physical exercise as well as substances use, where majority understand that, Intake of alcoholic drink could increase chances of uncontrolled hypertensive and Regular mild exercise could decrease chances of uncontrolled hypertensive. The plausible reason to this is that, the educational intervention was effective. Findings is in line with Fauzi et al., (2019) who found that, risk factors that increase the probability of developing high blood pressure includes but are not limited to Smoking, being obese or overweight, high cholesterol, unhealthy diet (excessive salt consumption, a diet high in saturated fat and trans fat, low fruit and vegetable intake) and physical inactivity which are all modifiable and can be controlled.

More findings revealed that, majority of the respondents do not practice lifestyle modification during pre-intervention. This finding agrees with Helen et al., (2018) who found that, many Nigerians are not aware of their blood pressure status, as many are living with hypertension without the knowledge of it and many more are likely to be practicing risk behaviors. However, there was a significant improvement during the post intervention. This is evidence in the result presented in table 4.2 above where majority affirmed they take fruits and vegetable always as well as other food items that could reduces the chances of becoming hypertensive. More so, findings shows a significant improvement in the post-intervention score of majority of the respondent's physical exercise as well as substances use. The plausible reason to this is that, the educational intervention

was effective. Durai and Muthuthandavan (2015) found that, after education, 89% of their respondent were physically active for more than 30 minutes/day, 72% did not consume alcohol, 89% were nonsmokers but 25% were adding extra salt in their diet and none of them increased fibre intake.

Implication to Research and Practice

Hypertension is a major public health problem, with cases seen in the hospitals as just a tip of the iceberg. It is one of the most common causes of disability and death amongst adults. This study have shown that unhealthy lifestyles such as physical activity, smoking, heavy alcohol use, and high salt diet as well as others have been identified with difficult blood pressure control. Therefore, lifestyle modifications are indispensable and as such should be made known to the public, especially to people in the rural settings and developing nations, irrespective of their blood pressure readings. The need to uptake campaign on hypertension to religious gathering and markets is reflected in the findings of this study, therefore public health nurses should take note. More so, evidence from this study have shown that, age limit to hypertension is not relevant, therefore public health nurses in Nigeria should facilitate policy that would require periodic hypertension test as well as good lifestyle adjustment to forestall any future increase in hypertension prevalence.

CONCLUSION

The need for health care providers to increase their commitment towards promoting lifestyle change to help reduce prevailing hypertensive measures as part of the intervention for prevention is important. There is need to design strategies to help the adults understand their dietary and lifestyle regimens in order to improve their compliance towards good practice. The study findings provide valuable information that suggest need for routinely observing the reasons for diet and lifestyle change. This study concluded that, participants have better knowledge of lifestyle modification and good lifestyle modification practice after educational intervention.

Based on the findings from this study, it is suggested that, strategic designed health education is needed to enlighten adults among the public on need for good lifestyle modification such as mild exercise, to curtail increasing hypertension prevalence.

Future Research

It is important that, future studies on hypertension focus on developing a guidelines for educational intervention on lifestyle modification to check prevalence of hypertension across the country. This would help understand the importance of lifestyle modification practices and as well help boost the chances of reducing hypertension prevalence.

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