



# Hypertension Prevention and Control: Effects of a Community Health Nurse-led Intervention

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## Abstract

Hypertension is a major risk factor for Cardiovascular Disease (CVD) with complications such as stroke and heart failure. Knowledge and attitude about hypertension have been indicated to influence practice of healthy lifestyle which has implications for hypertension prevention and control. There are anecdotal reports of sudden death and stroke in Isunjaba. However, there is no documentation about their lifestyle practices relating to hypertension. Health information given by nurses may positively influence healthy behaviours such as exercise, weight control, appropriate nutrition and regular Blood Pressure (BP) checks. This study was designed to assess the effects of a Community Health Nursing Intervention (CHNI) on knowledge, attitude and lifestyles relating to hypertension among residents of Isunjaba, Imo State, having the economic advantage of population-focus study in mind. There was significant difference in knowledge, attitude, and lifestyle of the two groups after intervention,  $P$  value < 0.05. Health Education about hypertension to improve knowledge, attitude as well as positive lifestyles among populations should be supported by nurses, agencies and the Government.

**Keywords:** Blood pressure-check; Health behaviours; Population-focus; Nurse-led intervention; Lifestyle-modification

## Introduction

The concern over cardiovascular disease is especially relevant in the healthcare of a developing nation like Nigeria. In Nigeria, 57 million people are estimated to be hypertensive with many still undiagnosed. Hypertension is a disease that is both common in urban and rural populace [1,2]. It has been linked to unhealthy lifestyles habits (lack of exercise and rest, consumption of alcohol, tobacco products, excess fatty foods and dietary sodium) which are common in our society today [3]. According to Das either due to poverty or affluence our lifestyle (nutrition pattern, social habits and working culture) has changed and thus increased the predisposition to hypertension [4]. Hypertension is identified as the leading cause of Target Organ Damage (TOD) like blindness, kidney failure and coronary artery diseases. Emerging data from hospital studies show that hypertension or its complication is the most common non-communicable disease in Nigeria [5].

By casual observation cases of stroke and sudden deaths have been noted in Isunjaba in Isu Local Government Area of Imo State by the researcher. These cases may be linked to cardiovascular diseases (CVD). The world being a global village, Isunjaba need to be protected from cardiovascular diseases (CVD). Hypertension if left unchecked especially in the rural area where the population is predominantly that of old people, would increase its incidence, cases of stroke, heart failure, glaucoma and renal failure. Even though many studies had been conducted on hypertension in various continents as Asia, America, and Africa by researchers [6-8]; only a few had been done in the rural area of Nigeria [9-13]. Isunjaba of Isu Local Government Area in Imo State being a rural community is not excluded.

Knowledge of risk factors, symptoms, prevention, management, and complications of hypertension may be lacking in rural dwellers in this community. The community blood pressure and attitude to hypertension prevention as well as lifestyle habits of the people is not known as few studies have been done on hypertension among rural dwellers in Nigeria. Since lifestyle influences High Blood Pressure (HBP), if nothing is done, problem of stroke and sudden deaths would continue. There is need for early diagnosis, prevention and control. Hypertension can be prevented as well as controlled through awareness,

modification or elimination of unhealthy lifestyle habits. This informed the decision of the researcher to investigate the knowledge, attitude, lifestyle habits and blood pressure of rural dwellers in Isunjaba of Imo State, through a community intervention programme. Findings would be useful to Community Health Nurses in planning health promotion strategies and policy makers in planning health care programmes in relation to hypertension prevention and control.

## Ethical Considerations

Approval to conduct the study was obtained from the ethical committee, Nnamdi Azikiwe University Teaching Hospital Nnewi (NAUTH/CS/66/VOL.3/009), Anambra State in line with its ethical protocol. Approval to conduct the study was also obtained from the Kings (Ezes) of respective communities and the Chairman of the Local Government Area. Participants were given essential information about the study procedure, duration, its purpose and benefits. Confidentiality of the respondents was assured by not writing names or addresses on the questionnaire and record cards. The right and integrity of the study participants was fully protected and written consent also obtained from each and every one of them. Only those who were willing to participate were included in the study.

## Methods and Materials

The study adopted a quasi-experimental design. Multistage cluster sampling technique was used to select two communities in Isunjaba, assigned into Experimental (EG) and Control groups (CG) by balloting.

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A total of 442 rural dwellers (199 from EG and 243 from CG), between ages 20 and 75 years that consented, were selected.

### Sample size determination

This was based on the formula for two proportions [14].

$$n = \frac{[Z\alpha\sqrt{2pc(1-pc)} - Z\beta\sqrt{pt(1-pt) + pc(1-pc)}]^2}{(pt - pc)^2}$$

### Sampling procedure

**Multistage cluster sampling:** Multistage sampling technique was adopted: Through purposive sampling, out of the 21 Local Government Areas (LGA) in Imo State, Isu LGA and Isunjaba, one of the five towns in Isu LGA were selected. Using simple random sampling method the required number of communities, clusters of villages, households and participants were selected.

**Selection of town:** Isu LGA comprises of five towns, Isunjaba (a rural community) one of the towns was chosen purposively for the study based on researcher's observation and familiarity with health issues in the community.

**Selection of communities:** From the four autonomous communities, using simple random (balloting) technique, two communities were selected. One of the communities was assigned head and the other tail by balloting. With tossing of the coin, the first appearance which was the coat of arms (head) was assigned the experimental group, and Isuobishi (subjects) from this process was assigned the Experimental group (Group A) while Isuokporo (control) was assigned the Control group (Group B). The subjects in Isuobishi were therefore assigned into Group A, and those in Isuokporo into Group B, as experimental and control respectively.

**Selection of villages:** The eight villages in groups A - Isuobishi were categorised chronologically into two clusters, senior and junior groups. Similarly, same was done for the eleven villages in Group B - Isuokporo. Two villages were then randomly selected from each cluster.

**Household selection:** In each of the two selected villages in the clusters for the study, households were selected, using odd numbers which was determined by tossing the coin. Head (side with coat of arms) was for even while tail (side with unit of amount) was for odd. Households identified as odd from this exercise were selected until required number was got.

**Selection of participants:** A total of 442 subjects were selected for the study as this figure is the highest calculated sample size figure and as such accommodates the other two values. Experimental group constituted a sample of 199 subjects (45%) while control constituted 243 (55%), respectively. This was based on proportion of 968:1,184 which makes a total for a study population of 2,152. In each village, the centre was identified. Tossing the coin, based on the side of the coin, (the head is right and the tail is left) the first house on the street was identified, followed by selection of men and women alternatively from the selected households until required number was got.

A validated structured questionnaire with Correlation coefficient value of 0.76 was used to assess level of knowledge of risk factors of hypertension, attitude to its avoidance and lifestyle in relation to regular BP check, exercise and healthy diet. Maximum scores obtainable for knowledge, attitude and lifestyle were 25, 80 and 50 while minimum scores were 0, 20 and 0 respectively. Data were collected at baseline, Post Intervention 1 (P1) and post intervention 2 (P2) at three monthly intervals. The Community Health Nursing Intervention (CHNI)

consisted of instruction on risk factors for BP, consumption of healthy diet, regular Blood Pressure check and exercise. The CHNI was administered to Experimental Group (EG) for two weeks and none for the Control Group (CG). Descriptive statistics, student t test and paired t test were used for data analysis with significant level set at  $p=0.05$ .

## Results

### Socio-demographic characteristics

Demographic variable showed that ages of respondents ranged from 20-75 with mean 49.49+14.45. The age of participants in EG was 49.3+14.5 years while CG was 50.5+14.4 years. Ages 50-59 were greatest in number 100 (22.6%) followed by ages 60-69 [94 (21.3%)] while <30 were the least with 42 (9.5%) in number. Participants with primary school education had the highest percentage of 38.5. Participants of low income class were 243 (57.6%) while upper class was 28 (6.6%). This is based on house hold income/ day of Lower class <N 500 (<\$3), Middle class N 500-2500 (\$3-15), and Upper class >N 2500 (>\$15) (United States Census Bureau household income [15] (Table 1). There were more women in the study than men which show cased a typical rural community in Nigeria.

### Objective 1

To assess participants' knowledge of risk factors, symptoms, management, prevention and complications of hypertension.

**Participants' knowledge of risk factors, symptoms, management, prevention and complications of hypertension:** Table 2 shows knowledge scores of respondents. At baseline in the experimental group, 74 (73.3%) knew that blood pressure of 140/90 mm Hg is termed Hypertension, while it was 144 (87.8%) at midterm and 137 (78.7%) at the end-line. For Control group it was 96 (64.4%), 25 (20.3%) and 24 (14.1%) respectively. Response on knowledge of alcohol as a risk factor was 80 (65.0%) and 199 (100%) at end-line in experimental while it was 107 (64.8%) and 85 (48.3%) in the control respectively. In the experimental group 108 (77.1%) responded that heat sensation in the head and severe headache is a symptom of hypertension and this improved to 199 (100%) at end-line. Response by experimental group that regular exercise will help to prevent hypertension was 146 (86.9%) and 199 (100.0%) at baseline and end-line respectively while in the control it was 154 (74.4%) and 159 (78.7%). More participants acknowledged stroke as a complication at end-line. Knowledge of stroke as a complication of hypertension rose from 149 (92.5%) at baseline to 196 (98.5%) at end-line in the experimental and from 154 (88.0%) to 124 (85.5%) in control group.

**Respondents' level of knowledge in experimental and Control groups, pre-and post-intervention:** In the experimental group 55 (27.6%) and 94 (47.2%) had high and low knowledge at baseline respectively, while it was 131 (65.8%) and none at end-line. In control 61 (25.1%) and 125 (51.4%) had high and low knowledge at baseline respectively while it was 215 (88.8%) at end-line (Table 3). There was increase in level of knowledge in the experimental group at midterm and end-line. High knowledge rose from 55 (27.6%) to 169 (84.9%) and dropped to 131 (65.8%) respectively. In the control, high knowledge decreased from 61 (25.1%) to 1 (0.4%) and zero respectively (Figure 1). There was significant difference in knowledge of the two groups after intervention, P value 0.000 but not at baseline P value 0.68.

### Objective 2

To assess the attitude of the participants to hypertension and its preventive measures.

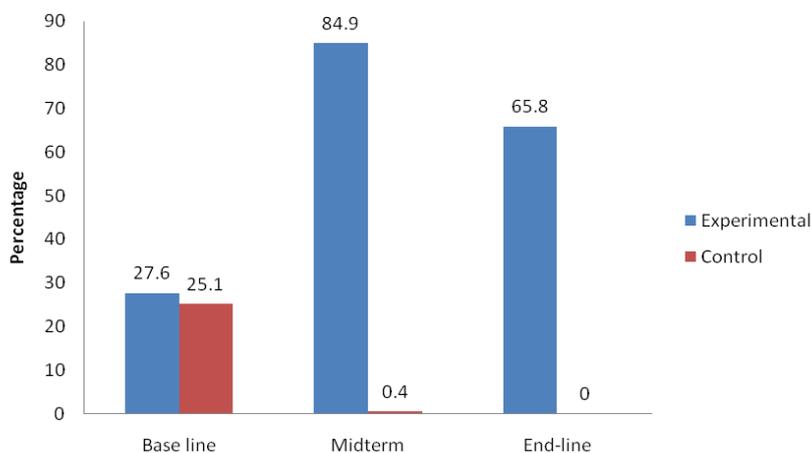


Figure 1: Respondents level of high knowledge, pre and post intervention.

Variables	Experimental N=199	Control N=243	Total N=442	X <sup>2</sup>	P value
<b>Sex</b>					
Male	74 (37.2)	108(44.4)	182 (41.2)	0.123	2.380
Female	125 (62.8)	135 (55.6)	260 (58.8)		
<b>Marital Status</b>					
Married	166 (83.4)	198 (81.5)	364 (82.4)	0.365	0.947
Single	22 (11.1)	31 (12.8)	53 (12.0)		
Separated	2 (1.0)	3 (1.2)	5 (1.1)		
Widowed	9 (4.5)	11 (4.5)	20 (4.5)		
<b>Age (Yrs)</b>					
<30	21 (10.6)	21 (8.6)	42 (9.5)	1.280	0.937
30-39	30 (15.1)	37 (15.2)	67 (15.2)		
40-49	43 (21.6)	47 (19.3)	90 (20.4)		
50-59	45 (22.6)	55 (22.6)	100 (22.6)		
60-69	40 (20.1)	54 (22.2)	94 (21.3)		
>70	20 (10.1)	29 (11.9)	49 (11.1)		
<b>Occupation</b>					
Jobless	21 (10.6)	28 (11.5)	49 (11.1)	9.197	0.056
Civil Servant	45 (22.6)	39 (16.0)	84 (19.0)		
Farming	68 (34.2)	114 (46.9)	182 (41.2)		
Petty trading	37 (18.6)	32 (13.2)	69 (15.6)		
Artisan	28 (14.1)	30 (12.3)	58 (13.1)		
<b>Income</b>					
Upper class	14 (7.0)	14 (6.3)	28 (6.6)	13.988	0.003
Middle class	31 (15.6)	11 (26.2)	42 (10.0)		
Lower middle class	50 (25.1)	59 (26.5)	109 (25.8)		
Lower class	104 (52.3)	139 (62.3)	243 (57.6)		
<b>Religion</b>					
Anglican	11 (5.5)	9 (3.7)	20 (4.5)	7.077	0.132
Catholic	147 (73.9)	200 (82.6)	347 (78.7)		
Pentecostal	33 (16.6)	26 (10.7)	59 (13.4)		
Moslem	2 (1.0)	0 (0.0)	2 (0.5)		
African Traditional	6 (3.0)	7(2.9)	13 (2.9)		
<b>Level of education</b>					
Non formal	29 (14.6)	42 (17.3)	71(16.1)	1.655	0.647
Primary	73 (36.7)	97 (39.9)	170 (38.5)		
Secondary	47 (23.6)	51 (21.0)	98 (22.2)		
Tertiary	50 (25.1)	53 (21.8)	103(23.3)		

Table 1: Socio demographic characteristics of respondents in Experimental and Control at baseline.

Statement	Baseline			Midterm			End-line		
	Exp Freq (%)	Control Freq (%)	Total	Exp Freq (%)	Control Freq (%)	Total	Exp Freq (%)	Control Freq (%)	Total
<b>Definition</b> Blood pressure of 140/90mmHg is termed hypertension	74 (73.3)	96 (64.4)	170 (68.0)	144 (87.8)	25 (20.3)	169 (58.9)	137 (78.7)	24 (14.1)	161 (46.8)
<b>Risk factors</b> Obesity can bring about hypertension	91 (70.0)	106 (70.0)	197 (70.4)	196 (98.5)	112 (67.1)	308 (84.2)	199 (100.0)	103 (53.6)	302 (77.2)
Tobacco products/snuff can bring about hypertension	72 (62.1)	75 (51.4)	147 (56.1)	197 (99.0)	29 (22.1)	226 (68.5)	199 (100.0)	16 (7.2)	215 (50.9)
Alcohol can bring about hypertension	80 (65.0)	107 (64.8)	187 (64.9)	199 (100.0)	87 (59.6)	286 (82.9)	199 (100.0)	85 (48.3)	284 (75.7)
Use of table salt can bring about hypertension	87 (65.9)	89 (57.1)	176 (61.1)	195 (98.0)	45 (22.8)	240 (60.6)	199 (100.0)	38 (16.1)	237 (54.5)
Hypertension is hereditary	64 (50.0)	85 (55.2)	149 (52.8)	165 (87.3)	50 (32.9)	215 (63.0)	196 (99.5)	43 (27.4)	239 (67.5)
<b>Signs and symptoms</b> Heat sensation in the head with severe headache is a symptom of hypertension	108 (77.1)	156 (85.7)	264 (82.0)	198 (64.1)	111 (72.5)	309 (88.0)	199 (100.0)	107 (54.6)	306 (77.5)
Hypertension may come with pain side of neck	73 (64.0)	102 (70.8)	175 (67.8)	192 (98.0)	28 (23.3)	220 (69.6)	199 (100.0)	21 (10.5)	220 (55.1)
<b>Prevention</b> Regular exercise prevents Hypertension	146 (86.9)	154 (74.4)	300 (80.0)	196 (98.5)	168 (82.4)	364 (90.3)	199 (100.0)	159 (78.7)	358 (89.3)
<b>Management</b> Hypertension is best managed in hospital	168 (88.9)	207 (89.2)	375 (89.1)	194 (97.5)	214 (91.1)	408 (94.0)	197 (99.5)	209 (88.9)	406 (93.8)
<b>Complications</b> Hypertension can cause eye damage	121 (81.2)	146 (80.2)	267 (80.7)	197 (72.4)	75 (51.7)	272 (79.1)	198 (99.5)	51 (23.5)	249 (59.9)
Stroke is complication of hypertension	149 (92.5)	154 (88.0)	303 (90.2)	197 (99.5)	124 (85.5)	321 (93.6)	196 (98.5)	126 (74.1)	322 (87.3)

Table 2: Participants' knowledge of risk factors, symptoms, management, prevention and complications of hypertension.

Statement		Experimental					Control				
		SA	A	D	SD	Total	SA	A	D	SD	Total
HBP is a serious ailment	1 <sup>st</sup>	144 72.4%	45 22.6%	9 4.5%	1 0.5%	199 100.0	172 70.8%	55 22.6%	12 4.9%	4 1.6%	243 100.0
	2 <sup>nd</sup>	195 98.0	4 2.0	0 0.0	0.0 0.0	199 100.0	196 81.0	38 15.7	2 0.8	6 2.5	242 100.0
	3 <sup>rd</sup>	196 99.0	2 1.0	0 0.0	0.0 0.0	198 100.0	195 80.6	39 16.1	2 0.8	6 2.5	242 100.0
You will readily give up a habit that can lead to HBP	1 <sup>st</sup>	99 49.7	78 39.2	13 6.5	9 4.5	199 100.0	104 42.8	110 45.3	19 7.8	10 4.1	243 100.0
	2 <sup>nd</sup>	131 65.8	65 32.7	1 0.5	2 1.0	199 100.0	135 55.8	77 31.8	16 6.6	14 5.8	242
	3 <sup>rd</sup>	179 89.9	18 9.0	0 0.0	2 1.0	199 100.0	137 56.8	75 31.1	15 6.2	14 5.8	241
Regular BP check, even when well if tool is available	1 <sup>st</sup>	91 45.7	73 36.7	15 7.5	20 10.1	199 100.0	91 37.4	89 36.6	15 6.2	48 19.8	243 100.0
	2 <sup>nd</sup>	89 44.7	104 52.3	3 1.5	3 1.5	199 100.0	49 20.2	29 12.0	91 37.6	73 30.2	242 100.0
	3 <sup>rd</sup>	176 88.4	15 7.5	2 1.0	6 3.0	199 100.0	20 8.3	50 20.7	87 36.0	85 35.1	242 100.0
Use of table salt is good if food is tasteless	1 <sup>st</sup>	41 20.6	57 28.6	75 37.7	26 13.1	199 100.0	87 35.8	77 31.7	53 21.8	26 10.7	243 100.0
	2 <sup>nd</sup>	22 11.1	32 16.2	93 47.0	51 25.8	198 100.0	175 72.3	38 15.7	10 4.1	19 7.9	242 100.0
	3 <sup>rd</sup>	36 18.2	14 7.1	12 6.1	136 68.7	198 100.0	193 79.8	19 7.9	22 9.1	8 3.3	242 100.0

HBP affects women most	1 <sup>st</sup>	33 16.6	45 22.6	93 46.7	28 14.1	199 100.0	71 29.3	42 17.4	86 35.5	43 17.8	242 100.0
	2 <sup>nd</sup>	63 31.7	23 11.6	66 33.2	47 23.6	199 100.0	130 53.7	20 8.3	32 13.2	60 24.8	242 100.0
	3 <sup>rd</sup>	83 41.9	6 3.020	18 9.1	91 46.0	198 100.0	146 60.3	8 3.3	63 26.0	25 10.3	242 100.0
HBP does not affect youth	1 <sup>st</sup>	32 16.1	56 28.1	87 43.7	24 12.1	199 100.0	58 24.0	52 21.5	96 39.7	36 14.9	242 100.0
	2 <sup>nd</sup>	42 21.2	12 6.1	85 42.9	59 29.8	198 100.0	160 66.1	31 12.8	14 5.8	37 15.3	242 100.0
	3 <sup>rd</sup>	56 28.3	5 2.5	13 6.6	124 62.6	198 100.0	183 75.6	17 7.0	35 14.5	7 2.9	242 100.0
HBP will develop whether one adopts a positive health action or not	1 <sup>st</sup>	40 20.1	59 29.6	67 33.7	33 16.6	199 100.0	91 37.4	64 26.3	47 19.3	41 16.9	243 100.0
	2 <sup>nd</sup>	31 15.6	9 4.5	92 46.2	67 33.7	199 100.0	168 69.4	43 17.8	9 3.7	22 9.1	242 100.0
	3 <sup>rd</sup>	42 21.3	3 1.5	10 5.1	142 72.1	197 100.0	209 86.4	11 4.5	16 6.6	6 2.5	242 100.0

Key: 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>=baseline, midterm and end-term respectively. HBP=Hypertension, SA=strongly agreed, A=agreed, D=disagree and SD= strongly disagree

Table 3: Attitude of the participants to hypertension and its preventive measures.

Statement	Phase	Experimental				Control			
		Always	Occasionally	Never	Total	Always	Occasionally	Never	Total
You do regular exercise	1 <sup>st</sup>	89 44.7	90 45.2	20 10.1	199 100.0	106 43.6	80 32.9	57 23.5	243 100.0
	2 <sup>nd</sup>	185 93.0	12 29.3	2 1.0	199 100.0	4 1.7	29 12.0	209 86.4	242 100.0
	3 <sup>rd</sup>	193 99.0	2 1.0	0 0.0	195 100.0	0 0.0	19 90.5	223 92.1	242 100.0
In the last 3 months you have checked your BP	1 <sup>st</sup>	27 13.6	67 33.7	105 52.8	199 100.0	37 15.2	62 25.5	144 59.3	243 100.0
	2 <sup>nd</sup>	192 96.5	6 3.0	1 0.5	199 100.0	72 29.8	4 1.7	166 68.6	242 100.0
	3 <sup>rd</sup>	115 59.0	78 40.0	2 1.0	195 100.0	1 0.4	17 7.0	224 92.6	242 100.0
You have time for rest during the day	1 <sup>st</sup>	23 11.6	126 63.3	50 25.1	199 100.0	31 12.8	148 60.9	64 26.3	243 100.0
	2 <sup>nd</sup>	39 19.6	150 75.4	10 5.0	199 100.0	7 2.9	81 33.5	154 63.6	242 100.0
	3 <sup>rd</sup>	115 59.0	78 40.0	2 1.0	195 100.0	1 0.4	17 7.0	224 92.6	242 100.0
You take fruits every day	1 <sup>st</sup>	65 32.7	130 65.3	4 2.0	199 100.0	63 25.9	175 72.0	5 2.1	243 100.0
	2 <sup>nd</sup>	184 92.5	13 6.5	2 1.0	199 100.0	2 0.8	234 96.7	6 2.5	8 1.8
	3 <sup>rd</sup>	193 99.0	0 0.0	2 1.0	195 100.0	0 0.0	232 95.9	10 4.1	242 100.0
You add salt at table	1 <sup>st</sup>	24 12.1	74 37.2	101 50.0	199 100.0	33 13.6	118 48.6	92 37.9	243 100.0
	2 <sup>nd</sup>	2 1.0	7 3.5	190 95.5	199 100.0	32 13.3	154 63.9	55 22.8	241 100.0
	3 <sup>rd</sup>	2 1.0	0 0.0	192 99.0	194 100.0	32 13.2	171 70.7	39 16.1	242 100.0
You consider your work stressful	1 <sup>st</sup>	24 12.1	84 42.2	91 45.7	199 100.0	63 25.9	101 41.6	79 32.5	243 100.0
	2 <sup>nd</sup>	6 3.0	93 46.7	100 50.3	199 100.0	51 21.1	106 43.8	85 35.1	242 100.0
	3 <sup>rd</sup>	73 37.4	61 31.3	61 31.3	195 100.0	87 36.0	92 38.0	63 26.0	242 100.0

Table 4: Participants' lifestyle habits in relation to hypertension.

**Attitude of the participants to hypertension and its preventive measures:** At baseline 206 (46.6%) of the respondents had positive attitude score while 236 (53.4%) had negative. Out of the 442 participants, 316 (71.5%) agreed that hypertension is a serious ailment. Two hundred and three (45.9%) will give up habit if related to hypertension. 182 (41.2%) will have regular blood pressure checks

even when well if measuring tool is available while for 90 (20.4%) stated that hypertension is not for young people. One hundred and twenty-eight (29.0%) stated that table salt should be used if food is tasteless. 131 (29.6%) also strongly believed that one will develop hypertension, adoption of healthy lifestyle or not. Attitude improved in the experimental group as positive attitude score rose from 119

(59.8%) at baseline to 185 (90.3%) and 173 (86.9%) at midterm and end-line respectively while in the control the score decreased from 117 (48.1%) at baseline to 40 (16.5%) and 49 (20.2%) at midterm and end-line respectively (Table 3).

**Respondents' attitude scores to hypertension in experimental and control, pre and post intervention:** In the experimental group, 119 (59.8%), 185 (93.0%) and 173 (86.9%) and of the respondents had positive attitude score while in the control it was 117 (48.1%), 40 (16.5%) and 49 (20.2%) at baseline, midterm and end-line respectively (Table 4) 80 (40.2%), 14 (7.0%) and 26 (13.1%) of the respondents had negative attitude score in experimental group while in the control it was 126 (51.9%), 202 (83.5%) and 193 (79.8%) at baseline, midterm and end-line respectively.

### Objective 3

To identify participants' lifestyles habits in relation to hypertension.

**Participants' lifestyles habits in relation to hypertension:** Identified lifestyle habits among respondents include use of table salt, alcohol, kola, and cigarette and snuff consumption. Among the experimental group, regular exercise was done by 89 (44.7%) at baseline and 193 (99.0%) at end-line while in control it was 106 (43.6%) and 0 (0%) at baseline and end-line respectively. Within three months' participants in the experimental group that checked their blood pressure were 27 (13.6%) and 195 (100.0%) at baseline and end-line respectively while among control it was 37 (15.2%) and 23 (9.5%) respectively. At baseline fruit was never taken by 4 (2.0%) and 5 (2.1%) in the experimental and control respectively and even after the intervention. Few of the respondents in both experimental 24 (12.1%) and control 33 (13.6%) groups use salt at table. The number dropped in the experimental to 2 (1.0%) at end-line of intervention (Table 4).

**Respondents' lifestyle scores to hypertension in experimental and control, pre and post intervention:** Respondents with positive lifestyle habits score, rose from 119 (59.8%) at baseline 195 (98.0%) to 195 (100%) at end-line in the experimental group. It was 112 (50.2%), 30 (12.4%) and 35 (14.5%) in the control group respectively. There was steady improvement in lifestyle score in the experimental group after intervention.

**Ho:** There is no significant difference between pre, post-test 1 and post-test 2 in the two groups.

**Comparison of mean score of knowledge, attitude and lifestyle variables in groups:** This table shows the mean scores of knowledge, attitude and lifestyle variables in experimental and control groups pre and post intervention. At baseline, mean scores of respondents on knowledge in Experimental and Control were 8.7 and 8.3 respectively (SD 8.49 ± 4.03). For attitude it was 46.3 and 51.3 respectively, (SD 45.10 ± 6.51) while for lifestyles it was 21.9 and 20.7 respectively, (SD 21.21 ± 4.92). At end-line, mean scores of respondents on knowledge in Experimental and Control were 15.6 and 5.7 respectively, (SD 5.22 ± 5.22). For attitude it was 44.2 and 41.2 respectively, (SD 45.75 ± 7.35), while for lifestyles it was 21.9 and 20.7 respectively (SD 20.63 ± 5.60). The mean scores of respondents on knowledge, attitude and lifestyle of Experimental and Control groups at the three phases with P value <0.05 in Experimental group and >0.05 in the Control. There was significant difference between the knowledge, attitude and lifestyle scores of experimental and control, P value 0.000 (Table 5).

### Discussion

Comparison of findings at the three phases showed significant

difference between the scores of participants in the Experimental and Control group after intervention on knowledge, attitude, lifestyle (p<0.05). Improvement was also noted in the attitude and lifestyle of the control though not significant (P>0.05). This may be attributed to the method of data collection which in its self is a form of intervention or hawthorn effect as observed in studies of this nature. It could also be due to other sources of information which is beyond the control of the researcher. Non responses, even though it did not affect the findings was observed more in the control which may be as a result of apathy observed among members. It was perceived that their expectation was that drugs would be dispensed even though they were informed there will be no payment. Prevalence of hypertension was on the increase. Only very few were obese. This may be because majority are farmers thus physically active. Fifty percent (50.0%) of all the respondents had correct knowledge of hypertension at baseline. This was lower than the findings by Familoni and Olunuga in Benin City where 59.3% of the non-clinical workers and 63.2% of the factory workers in the study had correct knowledge of hypertension [16]. This difference may be attributed to the rural setting in this study. However there was improved knowledge in the experimental group in subsequent assessments. This change may be the influence of the health education received by the Experimental group. Respondents with tertiary education had the highest score in knowledge of hypertension (44%). This is in line with the study by Samal et al. in which knowledge of risk factors was related to level of knowledge. Ninety percent knew that stroke is a complication of hypertension, 61.1% knew of negative impact of table salt on blood pressure as against 77% and 54% respectively [17]. Unlike the study by Familoni and Olunuga in which 50% knew treatment is for life, in this study it was lower [16]. There is need for dissemination of accurate information to the controls that hypertension can only be controlled and not cured.

Variable	Group	Period	Mean ± SD	P-Value
Knowledge	Experimental	Baseline	8.67 ± 3.92	0.000
		Midterm	15.30 ± 0.99	
		End-line	15.64 ± 0.52	
	Control	Baseline	8.35 ± 4.13	0.421
		Midterm	6.09 ± 2.62	
		End-line	5.69 ± 2.15	
Attitude	Experimental	Baseline	46.25 ± 4.75	0.000
		Midterm	62.67 ± 5.88	
		End-line	51.28 ± 6.22	
	Control	Baseline	44.40 ± 7.55	0.826
		Midterm	43.36 ± 9.32	
		End-line	41.21 ± 4.57	
Lifestyle	Experimental	Baseline	21.89 ± 4.53	0.000
		Midterm	17.00 ± 2.19	
		End-line	26.17 ± 1.89	
	Control	Baseline	20.65 ± 5.17	0.666
		Midterm	8.85 ± 2.40	
		End-line	16.17 ± 3.02	

**Table 5:** Mean scores of respondents on knowledge, attitude and lifestyle within groups.

Majority of the respondents with negative attitude to hypertension were of middle age. This age group should be targeted in programmes for behavior change. Many respondents strongly disagreed to having hypertension in their lifetime, whereas only 30% considered themselves at increased risk of stroke [17]. In this study fifty percent believed that the ailment is not for young people despite the fact that hypertension in younger people, especially before the age of 30 is usually more fatal than in the late fifties [18]. Same belief was similar to the participants in the Ibadan study in which 93% had difficulties to accept having new/additional Non Communicable Disease (among which hypertension is one) [19]. Apparently these participants may not go for routine blood pressure check based on their belief. However the negative attitude in this study was lower than that of the Ibadan study.

Twenty four percent strongly agreed that hypertension affects women more. Thirty percent of the participants believe that irrespective of adoption of a healthy lifestyle hypertension will still occur. This implies that some participants will readily adopt prescribed healthy lifestyle while some would not. The percentage of respondents' with positive attitude improved from 60% to 88% after intervention in the experimental group. The positive change in attitude may be attributed to the perception of hypertension as a serious ailment or peer influence during 'walking exercise' as observed by researcher. In this study, 55% have similar believe as participants in the study by Busari et al., in which 53.8% believed that the goal of treatment was to cure the disease [20]. The fact that hypertension can only be controlled need to be emphasized by Community Health practitioners to limit incidence of stroke. Even though statistically there was no association between age, sex and level of knowledge, it was observed from the findings that positive attitude was more marked in female (58%) than in males (42%). This may be due to a culture where men have all the authority as head of the family. Women are house bound in the evenings, with men gathering in their social circles, encouraging unhealthy lifestyle habits as goat head, and cow tail and alcohol consumption amongst cohorts. Negative attitude was also least marked among the respondents with no formal education, which may be due to lack of influence of Western culture which makes one more assertive. Women must be empowered so that they can influence their men's attitude. The unhealthy lifestyles in relation to nutrition include chewing of kolanut, use of table salt, alcohol and cigarette. These risk factors were also identified by Aghaji and Omorogiwa, et al., in their studies [21,22]. Consumption of snuff by some respondents was identified in this study. This may be because rural dwellers are mainly old people who prefer snuff to cigarette. A minor percentage of participants were obese. This may be because majority are peasant farmers. Majority of the respondents in this study have witnessed stroke victims in their community and therefore perceived hypertension as a serious ailment. This experience may have also contributed to eagerness in the experimental group to know remedies for prevention and control of ailment which led to compliance to prescribed regimes that resulted in the improvement in lifestyle habits after intervention. Sixty (60%) include vegetable in their meal always in experimental group and 54.1% in control. The liberal use of vegetable may be rooted in the Ibo culture of adding vegetable to all soup. This may have also contributed to the non significant difference in nutrition score of experimental and control after intervention. Food choices did not constitute a problem to the participants as was the study in China, in which lack of healthy food choices were their major barriers to lifestyle modification [23]. Lifestyle habits improved positively from 60% at baseline to 98% midterm and 100% at end-line in the Experimental group. The relapse which occurs at the maintenance stage of the trans-theoretical model of behavior change was slightly noted. This may likely be due to the flier on healthy lifestyles, the role play which must

have served as 'reminders' and support from significant others since the ailment was perceived as serious. This emphasizes on the importance of follow up and reinforcement in behavior modification or change. Regular follow up, even after this study should be maintained in the experimental community for the behavior change to be sustained and same intervention should also be replicated in the control community.

## Conclusion

There was marked improvement in knowledge, attitude and lifestyle relating to hypertension control after community health nursing intervention in Isunjaba. This led to improved regular blood pressure checks by community members, donation of blood pressure measuring tools by philanthropists for distribution in all wards. Regular health promotion information by nurses is recommended for sustainability of knowledge, attitude, health promoting activities and lifestyle. Study need to be replicated in other rural communities in Nigeria to arrest the upward trend in hypertension prevalence in the country and Africa sub-region.

Greater percentage of the respondents had low knowledge at baseline but knowledge improved greatly in the experimental group after intervention. More than half of the participants with high blood pressure were only revealed during screening. Knowledge and awareness of risk factors is a component of behavior change as shown by finding in this study, Self-measurement blood pressure devices should be possessed by each household. Mobile clinics involving collaborative approach should be adopted. Policy on attitudinal and lifestyle changes in relation to hypertension prevention and control amongst the youth and middle aged should be put in place. Even though 70% agreed that hypertension is a serious ailment, only half of the participants have positive attitude and were willing to take up recommended lifestyle habits. Programme for attitudinal change need to be intensified for the youth and middle aged amongst whom the negative attitude and poor lifestyle were most marked. Continuity of the programme is important for sustainability. The intervention programme should also be carried out in the Control community as well.

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