



## ORIGINAL RESEARCH

## Knowledge, Attitude and Sociocultural Correlates to Diabetes and Hypertension among Adults Living in Enugu-South L.G.A of Enugu State

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### Abstract

**Introduction:** Non-communicable diseases are traced to be the leading cause of both mortality and morbidity worldwide and there are indications the numbers will continue to rise. Diabetes and Hypertension are both Non-communicable diseases. Hypertension is a condition in which the force of the blood against the arterial walls is too high. Diabetes is a group of diseases that results in too much sugar in the blood. It is a chronic, metabolic disease characterized by elevated levels of blood glucose in the body.

**Aim:** To ascertain socio-cultural factors which may influence the knowledge and attitude to Diabetes and Hypertension amongst adults residing in Enugu South L.G.A of Enugu state.

**Method:** A cross-sectional study design was adopted for this research and 332 respondents actively participated using a multistage sampling technique. The questionnaire was both self-administered and researcher administered. The data collected was analyzed using Statistical Packages for Social Sciences (SPSS) version 26. Descriptive data analysis was done to present the findings and tested at a significance level of 95%.

**Result:** Their understanding of the meaning of hypertension (80.5%) and Diabetes (81.3%) was good and the prevalences of diabetes (23.8%) and hypertension (30.1%) were high. They had a positive attitude towards Hypertension and Diabetes. Alcohol intake, Smoking status, Stress, family history of hypertension and diabetes etc had a significant relationship with the level of knowledge and attitude towards these diseases. Age, Marital status, Educational qualification etc were the socio-demographic factors relating to knowledge and attitude towards diabetes and hypertension. The effects of gender and residential area were not significant.

**Conclusion:** It can be concluded that the residents of Enugu South Local Government Area have good knowledge and positive attitude to hypertension and diabetes and socio-cultural factors indicated in this study are statistically related to the diseases studied.

### Keywords

Hypertension, Diabetes, Knowledge, Attitude, Enugu south

## Introduction

Non-communicable diseases are traced to be the leading cause of both mortality and morbidity worldwide and there are indications the numbers will continue to rise [1]. Diabetes and Hypertension are both non-communicable diseases. This becomes worrisome because low- and middle-income countries are responsible for over 80% of global Non-Communicable Diseases (NCD) [2].

Hypertension is a major public health problem and a leading cause alone, high blood pressure contributed 8.9% of global Disability Adjusted Life Years (DALYs) and accounted for over 10.5 million deaths [3]. Hypertension is a condition in which the force of the blood against the arterial walls is too high. It is seen as a blood pressure above 140/90 mmHg and is considered severe if the pressure is above 180/120 mmHg. The prevalence of Hypertension in low- and middle-income countries is 31.5% more than in high income countries, and it was estimated that 75% of hypertensive populations are in this climate [4]. In low and middle income countries, certain factors contribute to the high prevalence of Hypertension. Amongst them are rapid urbanization, unhealthy diet, lifestyle changes, poverty amongst others [5]. These factors greatly increase the chances of high blood pressure.

Diabetes is a group of diseases that results in too much sugar in the blood. It is a chronic, metabolic disease characterized by elevated levels of blood glucose in the body. In the past decade, the number of diabetic patients was 30 million. It is estimated that 1.7 million people more have been added to the population this decade and is projected to reach 366 million people in 2030 [6]. Research shows that Type 2 diabetes (T2DM) leads to decreased life expectancy, (projected as around 8 years reduction), increased risk of cardiovascular related issues, peripheral vascular disease, vision issues, 60% amputations amongst other complications. This thus reveals there is an increase in the financial burden on the society, due to cost of healthcare and increase in dependent population. This is seen as over half of diabetics over 65 years are hospitalized every year [7]. Worthy of note is that Diabetes is not curable but can be controlled.

Knowledge and attitudes of patients have a great role to play in the management of illnesses, as in this case they can influence compliance, morbidity and mortality of the patients. Thus, obtaining accurate patient information about the level of awareness from the general public and patients is the first step in formulating a preventive program for the disease.

Sociocultural beliefs and traditional practices affect diabetes prevention and care at all levels; for example, diagnosis and assessment, perception on diabetes, attitude and care seeking behavior, expectation from healthcare system amongst others [8]. This in extension

affects hypertension. Since most of these factors are influenced by social and cultural context, there is a need to get adequate background information for effective Diabetes and Hypertension care.

Hence there is need to ascertain the level of knowledge of individuals on these diseases and their attitude towards them. There is also need to know if there are factors influencing their predisposition.

## Method

### Study area

Enugu State is one of the South-Eastern states bordering Ebonyi, Anambra, Abia and Benue states. It has 3 senatorial districts of which Enugu South is in Enugu-East senatorial district. Enugu South Local Government Area is one of the 17 L.G.A of Enugu state and in Enugu-East senatorial district. The population of Enugu South L.G.A is around 137,050 according to the last population census.

### Study design

A descriptive cross-sectional study design was adopted in this study. We also adopted this study design to explore the various socio-cultural factors inherent to the population that may affect the prevalence, knowledge and attitude of adults residing in this area.

### Study population

The study population consists of adults residing in Enugu-South L.G.A of Enugu state. The Inclusion Criteria were Adults who were up to 18 years and permanent residents of Enugu-south, L.G.A. The Exclusion Criteria were adults resident in Enugu-South L.G.A who could not give responses due to health challenges or mental defects. Individuals who did not consent to the study were also excluded.

### Sample size determination

The sample size for this study was determined using a single population proportion formula. Sample size determination was based on 28.9% prevalence rate from previous study Adeloje, et al. (2015) using a marginal error of 5% critical value, a confidence interval of 95% and a non-completion rate of 10%.

To determine the sample size,  $n = Z^2 pq/d^2$

Z = standard normal deviation corresponding to 95% level of significance (1.96)

n = Sample size.

P = (28.9%)

q = 1-p

d = degree of precision set at 5% (0.05)

$$n = \frac{(1.96)^2 \times 0.289 \times 0.711}{(0.05)^2}$$

$$= 315.76$$

Allowance of about 10% is made for non-completion rate =  $10/100 \times 314.75$

$$= 0.1 \times 315.76$$

$$= 31.576 \text{ approx. } 31.6$$

Therefore, the sample size (n) =  $315.76 + 31.6 = 347.36$  approx. 350 participants.

### Data collection method

Questionnaire was the tool for data collection. The consent form was first obtained in each case prior to the research. Those who consented signed on the forms which were then administered.

### Statistical analysis

The data was first coded and all responses entered. Descriptive statistics was also used to summarize the data on demographic characteristics. Frequency distribution tables were constructed for all class variables and were all expressed in percentages and chi-squared tests performed for statistical associations. The mean and standard deviation were specifically used for the 4-point

scale with item cut-off point of 2.5 (for attitude: mean > 2.5 = positive and mean < 2.5 = negative). The summated scores were hence categorized (for knowledge: score > 50% = good and score < 50% = poor).

Probability value less than 0.5 (p-value  $\leq 0.05$ ) was used to determine the level of significance. These analyses were done with the aid of the Statistical Package for the Social Sciences (SPSS) version 26.

### Results

Out of 350 questionnaires that were administered, 332 were duly completed, representing a return rate of 94.9%.

Table 1 presents the respondents demographic characteristics. Their age ranged from 19-90 years with mean and standard deviation of  $47.32 \pm 16.59$  and modal age group of 30-40 years (28.6%) followed by 61 and above years (28.1%). Males (50.9%) were more than females (47.9%). They mainly resided in the urban area (53.3%) and were married (58.7%) with secondary educational qualification (39.8%). Their occupation was mainly distributed as; skilled (24.4%) and unskilled labor (31.9%) with majority being Christians (84.0%).

Table 2 presents knowledge of hypertension and diabetes amongst adults residing in Enugu South. Their knowledge of the meaning of hypertension was

**Table 1:** Demographic characteristics of the respondents.

	Frequency	Percent	M $\pm$ SD
Age (years)			47.32 $\pm$ 16.59
- Less than 29	49	14.8	
- 30-40	95	28.6	
- 41-50	57	17.2	
- 51-60	50	15.1	
- 61 and above	81	24.4	
Gender			
- Male	169	50.9	
- Female	159	47.9	
- No response	4	1.2	
Marital status			
- Single	127	38.3	
- Married	195	58.7	
- Widowed	8	2.4	
- No response	2	0.6	
Educational qualification			
- No formal	53	16.0	
- Primary	63	19.0	
- Secondary	132	39.8	
- Tertiary	83	25.0	
- No response	1	0.3	
Occupation			
- Unemployed	53	16.0	

- Skilled labor	81	24.4	
- Unskilled labor	106	31.9	
- Government worker	27	8.1	
- Private service	33	9.9	
- Retired	28	8.4	
- No response	4	1.2	
Religion			
- Christianity	279	84.0	
- Islam	19	5.7	
- African Traditional	33	9.9	
- No response	1	0.3	

**Table 2:** Knowledge on Hypertension and diabetes. n = 332

	Correct response	Frequency	Percent
Meaning of hypertension			
- High blood pressure		215	64.8
How dangerous is hypertension to your health?			
- Extremely		212	63.9
Low blood pressure is better than high blood pressure			
- No		211	63.6
Normal blood pressure			
- 120/80 mmHg		225	67.8
Hypertension can be cured			
- No		196	59.0
Hypertension is genetic			
- Yes		154	46.4
Hypertension is spiritual			
- No		222	66.9
Hypertension can be prevented by exercise/nutrition			
- Yes		239	72.0
Hypertension can be gotten by eating too much			
- No		209	63.0
Hypertension is hereditary			
- Yes		188	56.6
Understanding of diabetes			
- High glucose level		217	65.4
Diabetes happens only to the elderly			
- False		231	69.6
Eating too much sugar/sweet food is the cause of diabetes			
- Yes		178	53.6
Diabetes can be cured			
- No		143	43.1
Diabetes is genetic			
- Yes		177	53.3
Frequent urination and thirst are signs of low blood sugar			
- No		204	61.4
Diabetes is spiritual and can be sent by village people			
- False		193	58.1
Diabetes affects the rich only and affects little or none of the poor			
- False		205	61.7
Diabetes if not managed can affect vital organs			
- Yes		230	69.3
Diabetes treatment can be by herbs alone and thus no modern medicine is needed			
- False		239	72.0

high blood pressure (64.8%). They knew hypertension was extremely dangerous to their health (63.9%) and did not agree that low blood pressure was better than high blood pressure (63.6%) and that the normal blood pressure is 120/80 mmHg (67.8%). They did not agree that hypertension can be cured (59.0%) and is spiritual (66.9%) but few agreed it was genetic (46.4%). Majority knew hypertension can be prevented by exercise/nutrition (72.0%). Most knew hypertension cannot be gotten by eating much (63.0%) but was hereditary (56.6%).

Their knowledge of the meaning of diabetes was high (65.4%), they knew diabetes does not only happen to the elderly (69.6%), but eating too much sugar or food is the cause (53.6%). Few knew diabetes cannot be cured (43.1%), but was genetic (53.3%) also most of them did not agree that frequent urination and thirst

are signs of low blood sugar (61.4%). Most of them did not agree that diabetes is spiritual and can be sent by village people (58.1%) and only affected the rich (61.7%). Majority of the adults knew if diabetes was not managed could affect vital organs (69.3%) but did not agree that diabetes treatment can be only done by herbs (72.0%).

From Table 3, the overall attitude was positive ( $2.87 \pm 0.48$ ); specifically, 75.9% had a positive attitude towards diabetes and hypertension in Enugu South. Most perceived indices to their positive attitude included: Blood pressure should be measured often ( $3.53 \pm 0.83$ ), A person who has hypertension should avoid much fat and salt ( $3.31 \pm 0.94$ ), and Anti-hypertensive should be taken by patients even when the blood pressure reduces ( $3.17 \pm 1.07$ ).

From Table 4, few were known diabetic (23.8%) and

**Table 3:** Attitude towards diabetes and hypertension.

	SD	D	A	SA	M $\pm$ SD
Blood pressure should be measured often	19	15	67	226	3.53 $\pm$ 0.83
Anti-hypertensive should be taken by patients even when the blood pressure reduces	37	45	60	171	3.17 $\pm$ 1.07
Smoking a pack of cigarette each day will not increase the chances of Hypertension	82	97	87	37	2.46 $\pm$ 0.99
A person who has hypertension should avoid much fat and salt	25	28	84	176	3.31 $\pm$ 0.94
Diabetes is a chronic disease	61	68	116	58	2.56 $\pm$ 1.02
Diabetes can be cured completely with drugs	35	80	119	54	2.67 $\pm$ 0.92
Optimal glucose level prevents complications	40	48	121	84	2.85 $\pm$ 0.99
Patients have the right to choose suitable treatment for diabetes	63	97	82	51	2.41 $\pm$ 1.01
Diabetes affects a person's life physically, mentally and socially	47	65	105	90	2.78 $\pm$ 1.03
<b>Overall Attitude</b>					<b>2.87 <math>\pm</math> 0.48</b>
Attitude classification					
Positive <i>f</i> (%)	252 (75.9%)				
Negative <i>f</i> (%)	80 (24.1%)				

**Table 4:** Sociocultural lifestyle of the respondents.

	Frequency	Percent
Are you a known diabetic patient		
- Yes	79	23.8
- No	252	75.9
- No response	1	0.3
Are you a hypertensive patient		
- Yes	100	30.1
- No	230	69.3
- No response	2	0.6
Do you take alcohol		
	217	65.4
- No	112	33.7
- No response	3	0.9
How often do you take alcohol		
- None	112	33.7

- Moderate	170	51.2
- Heavy	47	14.2
- No response	3	0.9
Smoking status		
- Never	187	56.3
- Former	80	24.1
- Currently	63	19.0
- No response	2	0.6
On a scale of 1-5, what is the perceived stress		
- 1	73	22.0
- 2	35	10.5
- 3	82	24.7
- 4	88	26.5
- 5	47	14.2
- No response	7	2.3
What is your level of physical activity		
- Low	55	16.6
- Moderate	169	50.9
- High	106	31.9
- No response		
How many hours do you sleep at night		
- Less than 3 hours	36	10.8
- 3-6 hours	172	51.8
- More than 6 hours	123	37.0
- No response	1	0.3
Do you have a family history of hypertension		
- No	219	66.0
- First degree	72	21.7
- Second degree	38	11.4
- No response	3	0.9

hypertensive (30.1%) patients. Most of the adults take alcohol (65.4%) with frequency of intake as moderate (51.2%). Most of them had never smoked (56.3%) and rated their perceived stress as 4(26.5%) followed by 3(24.7%) with a moderate level of physical activity (50.9%). They mainly slept between 3-6 hours (51.8%) at night and had no family history of hypertension (66.0%).

**Table 5** presents the relationship between demographic characteristics of adults and their knowledge of diabetes and hypertension. Age ( $p < 0.001$ ), marital status ( $p < 0.001$ ), educational qualification ( $p < 0.001$ ), occupation ( $p < 0.001$ ) and religion ( $p < 0.001$ ) were associated with their knowledge of diabetes and hypertension. There was no significant association between gender ( $p = 0.252$ ) and residential area ( $p = 0.291$ ) with their knowledge.

**Table 6** presents results on the relationship between adults' sociocultural factors and their knowledge of diabetes and hypertension. All the sociocultural factors were statistically significant, hence there is a significant relationship between sociocultural factors and their

knowledge of diabetes and hypertension.

**Table 7** presents the relationship between demographic characteristics of adults and their attitude to diabetes and hypertension. Age ( $p < 0.001$ ), marital status ( $p < 0.001$ ), educational qualification ( $p < 0.001$ ), occupation ( $p < 0.001$ ) and religion ( $p < 0.001$ ) were associated with their attitude to diabetes and hypertension. There was however no significant association between gender ( $p = 0.856$ ) and residential area ( $p = 0.729$ ).

**Table 8** presents the association between knowledge and attitude towards diabetes and hypertension amongst adults residing in Enugu south. There was a significant association between knowledge and attitude towards diabetes and hypertension. For attitude, prevalence was higher among those with positive attitude (96.8%) than those with negative attitude (16.3%).

## Discussion

Hypertension and Diabetes are Non-Communicable diseases affecting the populace especially in Africa.

**Table 5:** Association between knowledge and demographic characteristics.

Demographic Characteristics		Knowledge			Statistic	p-value
		Good	Poor	Total		
Gender	Male	126(74.6)	43(25.4)	169	1.314	0.252
	Female	127(79.9)	32(20.1)	159		
Age	Less than 29	39(79.6)	10(20.4)	49	22.773	< 0.001
	30-40	65(68.4)	30(31.6)	95		
	41-50	36(63.2)	21(36.8)	57		
	51-60	47(94.0)	3(6.0)	50		
	61 and above	70(86.4)	11(13.6)	81		
Residential area	Urban	133(75.1)	44(24.9)	177	1.116	0.291
	Rural	124(80.0)	31(20.0)	155		
Marital status	Single	71(55.9)	56(44.1)	127	54.087	< 0.001
	Married	176(90.3)	19(9.7)	195		
	Widowed	8(100.0)	0(0.0)	8		
Educational qualification	No formal	45(84.9)	8(15.1)	53	20.004	< 0.001
	Primary	51(81.0)	12(19.0)	63		
	Secondary	86(65.2)	46(34.8)	132		
	Tertiary	74(89.2)	9(10.8)	83		
Occupation	Unemployed	30(56.6)	23(43.4)	53	27.659	< 0.001
	Skilled labor	76(93.8)	5(6.2)	81		
	Unskilled labor	77(72.6)	29(27.4)	106		
	Government worker	22(81.5)	5(18.5)	27		
	Private service	26(78.8)	7(21.2)	33		
	Retired	23(82.3)	5(17.9)	28		
Religion	Christianity	245(87.8)	34(12.4)	279	134.200	< 0.001
	Islam	11(57.9)	8(42.3)	19		
	African Tradition	0(0.0)	33(100.0)	33		

**Table 6:** Relationship between knowledge and sociocultural factors.

Sociocultural factors		Knowledge			Statistic	p-value
		Good	Poor	Total		
Do you take Alcohol?	Yes	158(72.8)	59(27.2)	217	6.988	0.008
	No	96(85.7)	16(14.3)	112		
How often do you take alcohol?	None	98(87.5)	14(12.5)	112	10.864	0.004
	Moderate	127(74.7)	43(25.3)	170		
	Heavy	31(66.0)	16(34.0)	47		
Smoking Status	Never	133(71.1)	54(28.9)	187	10.513	0.005
	Former	71(88.8)	9(11.3)	80		
	Currently	51(81.0)	12(19.0)	63		
On the Scale of 5, what is the Perceived stress	1	68(93.2)	5(6.8)	73	100.539	< 0.001
	2	33(94.3)	2(5.7)	35		
	3	82(100.0)	0(0.0)	82		
	4	51(58.9)	37(42.0)	88		
	5	18(38.3)	29(61.7)	47		
What is your level of physical activity?	Low	53(96.4)	2(3.6)	55	40.795	< 0.001
	Moderate	143(84.6)	26(15.4)	169		
	High	61(57.5)	45(42.5)	106		

How many hours do you sleep at night?	Less than 3 hours	5(13.9)	31(86.1)	36	101.835	< 0.001
	3-6 hours	157(91.3)	15(8.7)	172		
	More than 6 hours	94(76.4)	29(23.6)	123		
Do you have a family history of Hypertension?	No	210(95.9)	9(4.1)	219	126.250	< 0.001
	First degree	27(37.5)	45(62.5)	72		
	Second degree	19(50.0)	19(50.0)	38		

**Table 7:** Association between Attitude and demographic characteristics.

Demographic Characteristics		Attitude			Statistic	p-value
		Positive	Negative	Total		
Gender	Male	129(76.3)	40(23.7)	169	0.033	0.856
	Female	120(75.5)	39(24.5)	159		
Age	Less than 29	40(81.6)	9(18.4)	49	30.065	< 0.001
	30-40	62(65.3)	33(34.7)	95		
	41-50	33(57.9)	24(42.3)	57		
	51-60	46(92.0)	4(8.0)	50		
	61 and above	71(87.7)	10(12.3)	81		
Residential area	Urban	133(75.1)	44(24.9)	177	0.120	0.729
	Rural	119(76.8)	36(23.2)	155		
Marital status	Single	70(55.1)	57(44.9)	127	48.469	< 0.001
	Married	172(88.2)	23(11.8)	195		
	Widowed	8(100.0)	0(0.0)	8		
Educational qualification	No formal	41(77.4)	12(22.6)	53	18.432	< 0.001
	Primary	51(81.0)	12(19.0)	63		
	Secondary	85(64.4)	47(35.6)	132		
	Tertiary	74(89.2)	9(10.8)	83		
Occupation	Unemployed	29(54.7)	24(45.3)	53	30.640	< 0.001
	Skilled labor	76(93.8)	5(6.2)	81		
	Unskilled labor	74(69.8)	32(30.2)	106		
	Government worker	20(74.1)	7(25.9)	27		
	Private service	25(75.8)	8(24.2)	33		
	Retired	24(85.7)	4(14.3)	28		
Religion	Christianity	241(86.4)	38(13.6)	279	126.058	< 0.001
	Islam	10(52.6)	9(47.4)	19		
	African Tradition	0(0.0)	33(100.0)	33		

**Table 8:** Association between Knowledge and attitude towards diabetes and hypertension.

		Knowledge			Statistic	p-value
		Good	Poor	Total		
Attitude	Positive	244(96.8)	67(83.8)	252	225.444	< 0.001
	Negative	13(16.3)	8(3.2)	80		

There is need to ascertain the level of knowledge adults have about this diseases, their attitudes towards them and to know the sociocultural factors affecting their choices.

From the study conducted, the prevalence of hypertension in the respondents was found to be 30.1%, this is in agreement with the finding of Babangida, et al. (2022) where he and his team reported the prevalence of hypertension in Nigeria to lie between the range of

between 12% and 36.8% which was considered high [9]. These findings are also similar to those of Adelaye, et al. (2015), who estimated an overall hypertension prevalence of 28.9%, with a prevalence of 29.5% among men and 25.0% among women [10]. The prevalence of Diabetes in the study population was found to be 23.8%, this is in line with the projections of the prevalence of diabetes in the region [10], this value is considered high and the authors have expressed their concerns as the



data suggests that the level of diabetes in the country has been and is still increasing. This projected increase in the number of diabetic patients may be what was seen in this study, because when compared to the results from Adajat, et al. (2021) who estimated the prevalence of diabetes may range from 2% to 12% [11]. There are also concerns that the occurrence of diabetes is largely under-reported in the country and that the actual prevalence of diabetes may range from 2% to 12% or even higher. This highlights the importance of assessing the attitude of the public to diabetes and providing targeted interventions to combat the rising level of diabetes in Nigeria.

On the subject of knowledge of Hypertension and Diabetes amongst the respondents, it was observed from the results of the study that the respondents had good knowledge of both Diabetes and Hypertension. On knowledge of Hypertension, although they represent the minority a good number answered that hypertension can be cured and the number of persons that agreed that hypertension can't be cured was only marginally higher than the rest (59.0%). It was also noted that more than half of the respondents do not believe that hypertension is genetic. These are the predominant areas where the respondents had issues on knowledge based questions. However, majority understood the meaning of hypertension, knew the normal range of blood pressure which is 120/80 mmHg. Hence suffice to say that the respondents in Enugu South L.G.A can interpret their blood pressure values at least as high or low giving that they know the normal range.

They showed a good understanding of the danger these hypertension pose to their sustained life, and do not possess some of the common misconceptions towards hypertension and diabetes, such as the contribution of spirituality to the pathogenesis of the diseases and the belief that hypotension is better than hypertension. The response from the respondents showed that 59% of them understand the chronic nature of hypertension, and how it cannot be cured and can only be managed long term. This is very important, as the lack of understanding of the chronic nature of the disease results in some patients stopping their medications without consulting their health-care provider and such practices have been shown to contribute to the high mortality and emergence of complications due to hypertension in the country, despite the relatively low occurrence of these disease in the population [12]. Despite the high knowledge of the chronic nature of hypertension, there are knowledge gaps amongst the respondents in Enugu-South with regards to diabetes, however, majority know the meaning of diabetes, know it happens to all age groups and not just the elderly, knows it is not spiritual, and also know that diabetes if not managed can affect vital organs. A similar study in Ethiopia revealed fair knowledge on Diabetes (51.4%) with similar gray areas with this study identified [13].

Majority of the respondents in the present study did not agree that diabetes is spiritual (58.1%) and only affects the rich (61.7%). Most of the respondents knew that if diabetes was not managed can affect vital organs (69.3%), most did not agree that frequent urination and thirst are signs of low blood sugar (61.4%) and most did not agree that diabetes treatment can be only done by herbs (72%) further stressing the impact that the knowledge that it is a chronic disease would have on the prevalence of complications to diabetes.

It is prudent to note that only a few knew that diabetes is just as chronic of a disease as hypertension and cannot be cured (43.1%), a good number of the respondents agreed that diabetes can be hereditary (53.3%) but this number can still be improved upon. This needs to be given heavy attention as it can lead to a decrease in the health seeking activities of the members of the population because relatives of known diabetics who know that the disease has a genetic component would be more vigilant with their diet and engage in regular monitoring of blood glucose level, which can lead to a reduction in the mortality and morbidity of diabetes, and if they are not aware of this, they would not pay such a good attention to the early indicators of the disease and would only report to the hospitals in search of care when the disease has already progressed significantly to such a stage that it would have caused significant damage to other organs and as such, worsening the general prognosis of such individuals [8]. Due to the high mortality and morbidity rates of these diseases in Nigeria [14], extra care needs to be taken with regards to the perception of the general population in respect to hypertension and diabetes. To this effect, while a 59% understanding of the chronic nature of hypertension is good, there is still plenty of room for improvement in an attempt to increase the adherence of the population to their medications and improve the low health indices of the state and the country at large, with respect to hypertension and diabetes.

A good number of respondents agreed that hypertension was genetic (46.4%), on the other hand, the fact that the majority of the respondents agreed that hypertension is not genetic points to another knowledge gap, as it has been shown that the risk of developing hypertension is significantly higher for any individual with a first degree relative that has hypertension [8]. Knowledge of this can improve the health seeking behavior of these types of at-risk individuals, prompting them to avoid further risk factors to hypertension which can help reduce the prevalence of the disease, and in this same vein, there is a tendency to have them reporting for regular blood pressure checks in the hospitals. This in turn affords them early detection of abnormalities in the blood pressure, which can enable prompt early management that reduces the onset of complications to their condition.

It can be concluded from the results of this study that the residents of Enugu south LGA have good knowledge with regards to the diseases under study in this research (hypertension and diabetes) even though there is still room for improvement in their knowledge. It is however important to mention that they had more knowledge on hypertension than diabetes. This was in contrast with similar work done in the USA where the respondents had poor knowledge at about 22% [15]. A similar work done in Iraq revealed about 60% knowledge which is a bit above fair [13].

Just like in this work, males showed better knowledge than their female counterparts, a similar work agrees to this fact and reveals that the reason for this may be that because they can (from norms point of view) communicate more easily with the health workers, and enquire about their disease to gain more information, however, their attitude and practice scores were almost similar to those of the females [13].

This study also looked at the various attitudes of the respondents to Diabetes and Hypertension. On a general note, the respondents have good attitudes towards both hypertension and Diabetes 76% of the respondents were graded as having a positive attitude towards these diseases. There is still ample room for improvement as the remaining 24% of the population that was recorded to have poor attitude towards hypertension and diabetes when multiplied by the current population density of the state would still represent a very large number of people.

The respondents agree that blood pressure should be measured often, antihypertensives should be taken by patients even when the blood pressure reduces, a hypertensive patient should avoid much fat and salt, they also agree that diabetes is a chronic disease and it affects a person's life physically, mentally and socially. These are the right attitudes towards hypertension expected from the public. It is however important to note that while the residents have a good attitude towards hypertension, there are still a few unresolved misconceptions that are negatively affecting their attitude towards hypertension. A few individuals believed that smoking a pack of cigarettes a day would not increase their risk of developing hypertension and while the general response for that question is good, the number of individuals with lingering misconceptions about the link between hypertension and smoking is an issue that needs to be tackled and nipped in the bud.

Other studies also reveal the right attitude to hypertension at about 78% and 98.1% respectively [16,17]. A work in Iraq revealed a high attitude to diabetes and hypertension at about 81.9% [13]. The overall attitude towards diabetes is somewhat worse than that of hypertension. While the respondents agree that diabetes is a chronic disease the number of people who don't agree is slightly higher than in the case of

hypertension, they also are of the notion that it can be cured with drugs. This is a misconception that if left to spread unchecked could result in an increase in the number of patients stopping their medication on their own without consulting their health-care provider first. It is however encouraging that the respondents believe that diabetes affects a person's life physically, mentally and socially, showing that they understand the damage that can be done by diabetes. A work in Iraq revealed a high attitude to diabetes and hypertension at about 81.9% [13].

The various sociocultural factors responsible for the rise in the diseases and their relationship(s) with the knowledge and attitude of the adults. Majority of the respondents also do take alcohol however, on a moderate level. Around half of the respondents have never smoked however, the other half are either current smokers or were smokers in the past. And although the number of active smokers is relatively small this is still a significantly large part of the population engaged in the vice of smoking, and this needs to be handled properly. Efforts aimed at teaching the members of the public on the full dangers of smoking should be redoubled in an attempt to reduce the number of active smokers. Fagard, et al. (2009) noted smoking too as a very important risk factor for arterial hypertension and diabetes especially in Europe [18]. Stress level was another sociocultural factor studied. Majority of the respondents admitted that they were moderately stressed and had moderate physical activity. It would be prudent to mention that how people view physical activity varies widely in a population and the definition of what it means to be physically active may be more lax in some than others, this serves as a fertile opportunity for the influence of personal bias to affect the total answer of the population. Majority also noted they sleep on an average of 3-6 hours every day. This study also identified that all the sociocultural factors had statistically significant relationships with the level of knowledge about hypertension and diabetes.

On association between attitude and demographic characteristics, all the demographics except gender and resident was seen to have a significant impact on the level of knowledge of hypertension and diabetes. The marital status was seen to affect the level of knowledge of hypertension and diabetes, with the married couples showing a higher knowledge of the diseases, the reason for this was however not described by the study. Occupation was seen to have a significant relationship with the level of knowledge of the respondents to the diseases in question. It was noted that the respondents with occupations that have a higher educational requirement such as government workers and skilled laborer were shown to have a better knowledge of the diseases under study, and as such, the level of education may be responsible for the significant difference in the level of knowledge of the diseases in the study

populations. Also the religion was seen to have a significant relationship with the level of knowledge in regards to the diseases. The most noteworthy detail about the religion is that all the respondents who responded to practicing African traditional religion were seen to have poor knowledge of the diseases. This points to the possible presence of deeply entrenched misinformation about these diseases in this religion and warrants an increase in sensitization attempts geared towards this group of people.

The results of this study are in agreement with a similar work that showed educational status as statistically relevant [19] while a closely similar work did not draw any statistical significance between the factors [20]. A work on diabetes agreed to smoking status as a significant factor, but in contrast to this work also agreed that being female and age were statistically relevant [21]. In tandem to this work, similar research carried out in Ghana agreed to this as there was no statistical significance between the factors [22].

Occupation was also seen to have a significant relationship with the attitude of the patients towards the diseases under the scope of the present study. Unskilled labor and unemployed respondents had the highest percentage of bad attitudes (30.2% and 45.3% respectively), while the respondents working as skilled labor and government workers had the best attitudes with 93.8% and 74.1% respectively of the respondents in this group having positive attitudes. This may be explained by the level of education needed to secure these occupations, and a higher educational requirement stipulated for the skilled labor may be responsible for the better attitudes seen in this group. This further highlights the effect of proper education in the attainment of good national health.

Also worthy of note is that all the respondents practicing African traditional religion have a bad attitude towards the diseases. This may point to the presence of heavily convoluted beliefs that may originate from the teachings of this religion. From the Islam respondents, there was a higher percentage of bad attitude towards these diseases, but due to the fact that there were only 19 Islam respondents in this study, this statistic cannot be said to represent the entire of the Islam community and as such should be disregarded. It should also be noted that all the demographics that showed good knowledge about the diseases also showed positive attitudes toward these diseases. This highlights the importance of adequate education about these diseases in improving the general patient attitudes towards the very same disease conditions.

## Conclusion

It can be concluded that the residents of Enugu South Local Government Area have sound knowledge on hypertension and diabetes. It can also be concluded that

they have positive attitude to hypertension and diabetes. It was also concluded that majority of the respondents were not known hypertensives and diabetics, but the prevalence of hypertension and diabetes is equally high in the state as with other parts of the country and West Africa. It can also be concluded that all the demographic factors other than gender have significant relationships with the level of knowledge and ultimately the attitude of the patients towards hypertension and diabetes.

In as much as the respondents showed high knowledge and attitude to Hypertension and diabetes, some knowledge gaps were identified and needs to be addressed. It is recommend that the respondents be educated that Diabetes and Hypertension cannot be cured completely but managed, hence even if their blood glucose level and/or blood pressure is controlled, they should still continue taking their medications. They also need to be taught the various signs and symptoms of hypertension and diabetes as they have little knowledge of it. Furthermore, Anti-smoking campaigns are recommended for the respondents, owing to the fact that the majority who were positive to hypertension had a former or current smoking behavior. Excessive drinking and smoking should be strongly discouraged amongst the residents of the Local Government Area.

## Declarations

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### Conflict of interest

The authors have declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

### Ethical approval

Ethical permit was obtained from the ethical committee of University of Nigeria Teaching Hospital (UNTH) for the study. High level of confidentiality of the participants was ensured and maintained. This was in turn communicated to the respondents so they have an assurance. They were also told they had the voluntary right to withdraw at any point. The ethical clearance certificate number is: UNTH/HREC/2023/07/636.

### Authors contribution

Uchechukwu Ezue: Conceptualization, data collection, review and editing; King-David Ahuchaogu: Methodology, data collection, review and editing; Chidinma J. Nmamani: Formal analysis; Maureen Nwokorie: Data collection, writing original draft; Ifeanyi Ofonere: Data collection, writing original draft. Unoma Ogwezi: writing original draft. Chidinma A. Omeke: Editing the final draft and supervision.

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