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Prevalence, Perception and Awareness of Chronic Diseases (HIV, Diabetes, Hypertension and Typhoid Fever) Among Rural Dwellers in Nomeh-Unateze Community in Nkanu-East LGA of Enugu

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Abstract

Introduction: This study investigated the prevalence, perception, and awareness of chronic diseases—HIV, Diabetes, Hypertension, and Typhoid Fever—among rural dwellers in Nomeh-Unateze Community, located in Nkanu-East Local Government Area of Enugu. **Methodology**: A total of 200 participants were evaluated for this study. The mean age (standard deviation) of the participants was 48.9years (12.25) and 47% of the participants were within the age range of 55 and above. 83% of the participants were females while 17% were males. Utilizing a mixed-methods approach, data was collected through structured questionnaires, in-depth interviews and tests for these chronic diseases. **Results**: Out of the

study participants, only 4% had tertiary education, 17% started secondary school, 49% had basic education and 30% had no formal education. There was a high level of awareness of the chronic diseases, HIV, Diabetes Mellitus, Hypertension and Typhoid fever; however, the high rate of low level education had a huge impact on their perception about them. A significant gap in the sources of information about these chronic diseases was also found. Only 15% of participants reported receiving information from healthcare personnel, while 30% relied on media sources, predominantly radio. Misconceptions about disease causation and prevention were also prevalent, particularly regarding HIV as a high level of stigma surrounding HIV was also observed. The findings from this study revealed that the prevalence rates of these chronic diseases are notably low among the study participants, with HIV having a prevalence of 0.0% among the study participants. Diabetes had a1.15% prevalence among the study participants and the only identified incidences were recorded in females within the age range of 35-44. Typhoid had a prevalence of 1.05% among the participants, and the only incidences were recorded in males. However, Hypertension had the highest prevalence; 32.5% for hypertensive SBP (outside the safe range of 100-140mmHg) and 27.5% for hypertensive Diastolic Blood Pressure (DBP) (outside the safe range of 60-90mmHg). All cases of hypertension were recorded in participants above 45years of age. This study underscores the urgent need for targeted health education interventions and improved access to healthcare services to enhance disease management and reduce the burden of chronic diseases in rural communities. **Conclusion:** Therefore, the study recommend that more research-oriented medical outreaches should be organized to both evaluate the level of stigmatization and fear associated with these chronic diseases and aim at drastically reducing them. Future researches should involve longitudinal studies that will check for the changes in the trends of the prevalence rates of these diseases over time, as well as their mortality rates. The community.

Keywords: Diabetes mellitus; HIV; Hypertension; Typhoid fever; Rural dwellers.

1. Introduction

Non-communicable diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally. Each year, 17 million people die from a NCD before age 70; 86% of these premature deaths occur in low- and middle-income countries. Of all NCD deaths, 77% are in low- and middle-income countries [1]. Human Immuno-Deficiency Virus, afterwards called HIV, is an infection that attacks the body's immune system, specifically the white blood cells called CD4 cells. HIV destroys these CD4 cells, weakening a person's immunity against opportunistic infections, such as tuberculosis and fungal infections, severe bacterial infections and some cancers. Acquired immunodeficiency syndrome (AIDS) is the most advanced stage of the disease. HIV is spread from the body fluids of an infected person, including blood, breast milk, semen and vaginal fluids. It is not spread by kisses, hugs or sharing food. It can also spread from a mother to her baby. HIV can be treated and prevented with antiretroviral therapy (ART). Untreated HIV can progress to AIDS, often after many years [1]. Nigeria ranks third among countries with the highest burden of (HIV) infection in the world. The 2019 Nigeria National HIV/AIDS Indicator and Impact Survey found that 1.9 million people are living with HIV and AIDS in Nigeria as at 2018. Enugu state of southeastern Nigeria has 3,736 people living with HIV/AIDS (PLHIV), with a 1.9% HIV-positive prevalence rate among the age band of 15-49 years, higher than 1.3%, the national average for the same cohort [2]. Hypertension (also called high blood pressure) is when the pressure in your blood vessels is too high (140/90 mmHg or higher). It is common but can be serious if not treated. People with high blood pressure may not feel symptoms. The only way to know is to get your blood pressure checked [1]. The prevalence of hypertension varies across regions and countries in the low income groups. The WHO African Region has the highest prevalence of hypertension (27%). It seems to be a trend that developing or middle-income countries have increased cases of this disease. By contrast, the prevalence of hypertension has increased, especially in low and middle-income countries (LMICs). Estimates suggest that in 2010, 31.1% of adults (1.39 billion) worldwide had hypertension. The prevalence of hypertension among adults was higher in LMICs (31.5%, 1.04 billion people) than in high-income countries (HICs; 28.5%, 349 million people). Despite the increasing prevalence, the proportions of hypertension awareness, treatment and BP control are low, particularly in LMICs, and few comprehensive assessments of the economic impact of hypertension exist [3]. Hypertension has become a major health burden in sub-Saharan Africa, mainly due to urbanization and Western acculturation [4]. Improved understanding of the current burden of hypertension, including awareness, treatment, and control, is needed to guide relevant preventative measures in Nigeria [5].

Diabetes Mellitus is a clinical condition in which the glucose level in the blood is high due to inability of the pancreas to create enough insulin, a hormone which should've aided in the transport of glucose out of the bloodstream and into the blood cells for energy. [6]. It could also result from the inability of the body to properly respond to the effects of insulin, thus retaining glucose in the bloodstream. The Diagnosis of Diabetes was made at a casual (Random) Blood glucose of ≥ 200 mg/dl (≥11.1mmol/l) while Pre-Diabetes was diagnosed at a casual (Random) Blood glucose of 140 mg/dl – 199 mg/dl (7.8-11.0 mmol/l) [7]. According to World Health Organization [1], the number of people with diabetes rose from 108 million in 1980 to 422 million in 2014. Prevalence has been rising more rapidly in low- and middle-income countries than in high-income countries. Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation. Between 2000 and 2019, there was a 3% increase in diabetes mortality rates by age. In 2019, diabetes and kidney disease due to diabetes caused an estimated 2 million deaths. There are different types of Diabetes; Type 1 Diabetes: Type 1 diabetes, formerly known as insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes, typically develops during childhood or adolescence, although it can occur at any age. This autoimmune disorder arises from the destruction of insulin-producing beta cells in the pancreas, leading to an absolute deficiency of insulin. The exact cause of this autoimmune destruction remains unclear, but genetic predisposition and environmental factors, such as viral infections, are believed to play significant roles [8]. Individuals with Type 1 diabetes require lifelong insulin therapy to manage their blood glucose

levels adequately. Without insulin replacement, they are at risk of developing life-threatening complications such as diabetic ketoacidosis (DKA). Continuous glucose monitoring and insulin pump therapy have revolutionized the management of Type 1 diabetes, offering patients greater flexibility and control over their blood sugar levels [9].

Type 2 Diabetes: Type 2 diabetes, formerly referred to as non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes, is the most common form of diabetes, accounting for approximately 90% of all cases worldwide. This metabolic disorder is characterized by insulin resistance, where the body's cells fail to respond effectively to insulin, combined with relative insulin deficiency. Risk factors for Type 2 diabetes include obesity, physical inactivity, unhealthy diet, family history, and ethnicity. Unlike Type 1 diabetes, Type 2 diabetes can often be managed through lifestyle modifications, including dietary changes, regular exercise, weight loss, and oral medications to improve insulin sensitivity and secretion. However, some individuals may require insulin therapy as the disease progresses. Early detection and intervention are crucial in preventing or delaying the onset of complications associated with Type 2 diabetes, such as cardiovascular disease, neuropathy, nephropathy, and retinopathy [8]. There are other forms of diabetes such as Prediabetes, Gestational diabetes which occurs in pregnancy but puts the sufferers at risk of having type 2 later in life, Type 3c diabetes in which the pancreas suffers damages which are not due to autoimmunity that causes it to produce less insulin than required. For the purpose of this study on chronic diseases, Diabetes Mellitus, type 2 is focused upon.

Typhoid fever, also known as enteric fever, is caused by the Gram-negative bacterium *Salmonella enterica* serovar Typhi. The disease is mainly associated with low socio-economic status and poor hygiene, with human beings the only known natural hosts and reservoir of infection [10]. According to the World Health Organization (WHO), approximately 11 to 20 million people across the world fall ill because of typhoid, with mortality of 128,000 to 161,000 individuals each year. The most common way of transmission is through the feco-oral route and so, it can also be spread through personal contact due to unsanitary practices and contamination of water supply [11]. Due to the ways in which the disease is transmitted, Low and middle-income countries with water sanitation problems, poor living conditions, and unhygienic practices, are more susceptible to typhoid fever disease outbreaks. In Nigeria, we can underline some factors, such as regional migration of workers, lack of proper sewage management system, inadequate supply of drinkable water, high rate of rural to urban area migration, and insufficient health facilities [12]. Due to the absence of a country-wide epidemiological surveillance system, inadequate data availability, and restricted laboratory capacity, it is difficult to assess the prevalence of typhoid fever in Nigeria. This underreporting is also caused by factors, such as the administration of antibiotics before confirmatory laboratory tests, and the fact patients do not always seek health care treatment at hospitals, or use the laboratory services, since they are not free. However, past study has documented a prevalence between 0.071%, in Oyo, and 47.1%, in Osun [12]. Typhoid fever remains a significant public health concern in Nigeria.

2. Research Methodology

2.1. Location of Study

This study was carried out in Nkanu-East. Nkanu East is a Local Government Area of Enugu State, Nigeria, bordering Ebonyi State to the east. Its headquarter is located in the town of Amagunze. It has an area of 795 km2 and had a population of 148,774 at the 2006 census. The postal code of the area is 042. The location of study was Nomeh Unateze. It is a town in Nkanu-East local government area of Enugu state. It has a population of about ten thousand citizens. The town is bordered on the North by Ugbawka, on the north east by Mburubu, Oduma on the south east and Nenwe on the south west. Their main language is the Ibo language but up to 70% of its populace are educated. Nomeh is known for its agricultural produce, especially rice, yam, cassava, palm oil and various types of vegetables. Nomeh Unateze has four major villages namely, Uhuafor,Amigbo,Imeama and Amukabi. The traditional ruler of Nomeh is Igwe Colonel I.O. Mbah (rtd.) A member of the Enugu state council of traditional rulers. A river, known as Nvuna snaked through all the villages of Nomeh, providing drinking water as well as an aquatic environment that supports an all year round farming through irrigation. There is also a railway network that passes through the south east part of Nigeria and Nomeh town is one of the towns where the trains stop. [13].Despite its picturesque landscape and traditional lifestyle, Nomeh-Unateze remains underserved in terms of healthcare infrastructure and access to medical services (WHO, 2020). Like many rural areas in Nigeria, Nomeh-Unateze grapples with limited healthcare facilities, inadequate healthcare professionals, and poor health literacy among its residents (Ogbonna et al. 2018). These factors often contribute to the underdiagnosis and undertreatment of chronic diseases within the community [14].

2.2. Study Design

The design of this study involved a sequential, complementary mixed-method. Both qualitative and quantitative data collection methods were used in this study. The medical outreach which was conducted began with dissipation of information regarding the outreach, so as to ensure maximum participation by the good people of the community. The study sequentially, began with filling of questionnaires and survey geared toward determining the possible levels of awareness and perception of the Chronic diseases, HIV, Diabetes Mellitus, Hypertension and Typhoid Fever among the rural dwellers of Nomeh-Unateze community in Nkanu-East LGA of Enugu state. Upon giving consent, participants underwent the tests for these diseases. The tests were run by a team of student physiologists, laboratory scientists and physiotherapists who were already trained and had knowledge on how to perform the test. The resultant data was collected and analyzed. The qualitative data collected were the positive or negative status result for HIV, and Typhoid Fever, the participants' answers to questionnaires that described their knowledge, awareness and perception of the diseases. Also the sex, occupation, marital status, level of education of participants

were taken. The quantitative data collected were the blood glucose level (in mg/dl) and blood pressure readings (in mmHg). Also the age ranges of the participants were collected.

2.3. Sampling Technique

Random sampling and the convenience sampling techniques were used to select the participants of this study. The random sampling was considered suitable for the study because, with the research involving an exercise where free testing and checks was done, it was best to make the exercise open to every person in the community so that all would have equal privilege to participate. This way it was easy to reduce, if not eliminate, bias. Also, convenience sampling was considered useful because, with this technique, people who participated were people who were interested, and available at the time of the survey.

2.4. Sample Size Determination

The sample size was determined using the Taro Yamane formula for sample calculation. The Taro Yamane formula is expressed as $\mathbf{n = N \div [1 + N(e^2)]}$ where;

n = sample size

N = population size (5,100)

e = margin of error (expressed as a decimal; 0.05)

With an estimated target population of 5,100, therefore the sample size will be calculated thus:

$n = N \div (1 + Ne^2)$

$n = 5100 \div [1 + 1000(0.05^2)]$

$n = 5100 \div (1 + 25)$

$n = 5100 = 26$

$n = 196\sim$

Rounding up to the nearest whole number, we used a sample size of 196 individuals to achieve a confidence level of 95% with a margin of error of 5%.

2.5. Study Instruments for Data Collection

Questionnaires: The questionnaires used in the course of the study is the original work of the researcher and it collected data such as age, weight, height, BMI, blood pressure, blood sugar level, HIV status, level of knowledge, perception, family history or close incidences of disease, and other data relevant to the study. A sample of the questionnaire was provided. To test for Diabetes Mellitus, 2 popular brands of glucometers (ACCU CHEK and ACCU ANSA) and their respective test strips were incorporated to determine blood glucose level of the participants. To test for Hypertension, sphygmomanometers and stethoscopes were used to determine systolic and diastolic blood pressures. To test for HIV, the HIV test kit was used to detect the presence of the HIV causative virus in the blood samples of the willing participants. To test for Typhoid fever, the typhoid rapid test was used in the detection of *Salmonella typhi* in the blood of the participants.

2.6. Data Collection Procedure

The procedures involved in this research was briefly discussed in the following subheadings;

Publicity and recruitment of study participants: Prior to the kick-off date of the outreach, information was circulated around the community through different means like word of mouth and public announcements. The aim was to raise awareness about the exercise in order to increase willingness and participation. Upon commencement, the participants were duly informed about the purpose and nature of the study, the voluntary nature of the study as well as given the opportunity to decide whether or not their data was to be used.

2.7. Collection of Data / Filling of Questionnaires

After consent was obtained, questionnaires were first given to the participants to fill and instructions were communicated too. Participants who were too old or couldn't fill them out themselves were aided by members of the medical team.

2.8. Running of tests

Two members of the medical team were positioned per test stand, to test participants for the diseases. The status of the participants was communicated to them privately and the data collected was used to check the prevalence rates of these diseases in the community.

2.9. Selection Criteria

(a) Inclusion Criteria

Rural dwellers who had lived in the Nomeh-Unateze community for up to and above 5 years, and from the ages of 18 and above were allowed to participate in the study. Also, the participants were people who demonstrated willingness to participate in the study.

(b) Exclusion Criteria

People who were visiting the community on a short trip or who came in for a trade were excluded from the study. Members of the research team who were not residents of the Nomeh-Unateze community were also excluded

from the study. People younger than the age of 18 were also not allowed to participate in the study. Pregnant women were excluded from the study because their reading could have interfered with gestation, for instance, gestational diabetes and gestational hypertension. People who were not willing to be part of the study, as well as people who didn't want their data to be included in the data analysis, were kindly excused from participation.

2.10. Ethical Considerations

For the course of these study, the following ethical considerations were be undertaken;

1. The ethical clearance for this work was obtained from the Research and Ethics Committee of the Faculty of Basic Medical Science, University of Nigeria, Enugu campus.
2. Permission was sought for and obtained from the leader and chiefs of the community before the commencement of this study.
3. Each participant gave a verbal or written informed consent prior to participation in the study.
4. Records made containing all measurements obtained from the participating rural dwellers during data collection were solely used for research purposes.
5. Only data collected from this study were analyzed and presented.
6. Attention was paid to ensure that results of each participant were disclosed confidentially to them.

2.11. Methods of Data Analysis

Prevalence Rate was calculated by dividing the number of existing cases of each of the conditions by the total population during the time of the study. This gave us the proportion or percentage of individuals in the population who have either of the conditions. Descriptive Analysis was used in the display of the demographics of the study participants. Comparative Analysis was used to compare the prevalence rates of the chronic diseases in the community. For this, the Chi square was employed to determine if there were significant differences in their prevalence and which is more prevalent. Microsoft Excel was used in the data analytical process of this research project.

3. Results and Data Analysis

3.1. Demographic Features

Fig 4.1a shows the individual percentage of the participant according to sex. Out of the 200 participants, 17% of the entire study participants were males, while 83% were females.

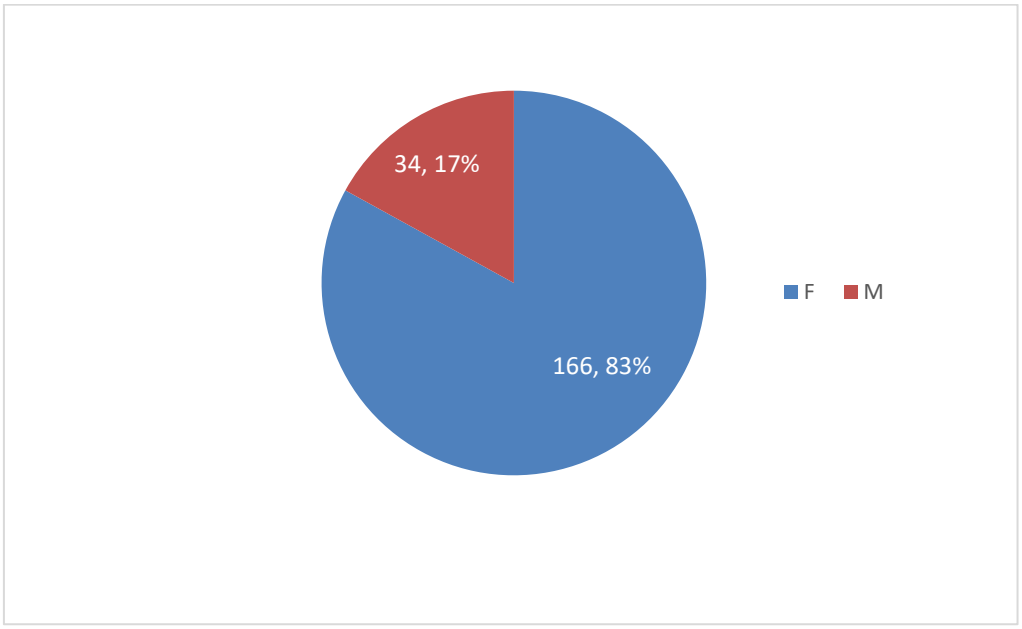

Fig-4.1a. Percentage Distribution by Sex

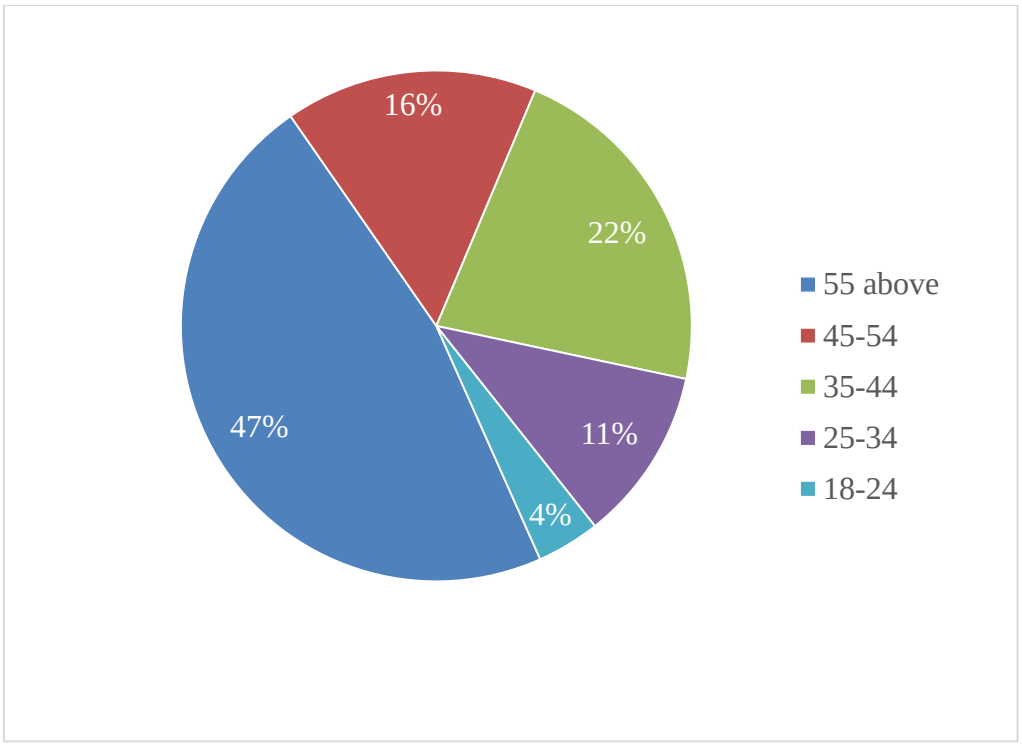

Fig-4.1b. Percentage distribution according to Age

Fig 4.1b: Percentage distribution of the study participants according to age. There was a greater participation of people within the age range of 55 above (47%) than in any other age group.

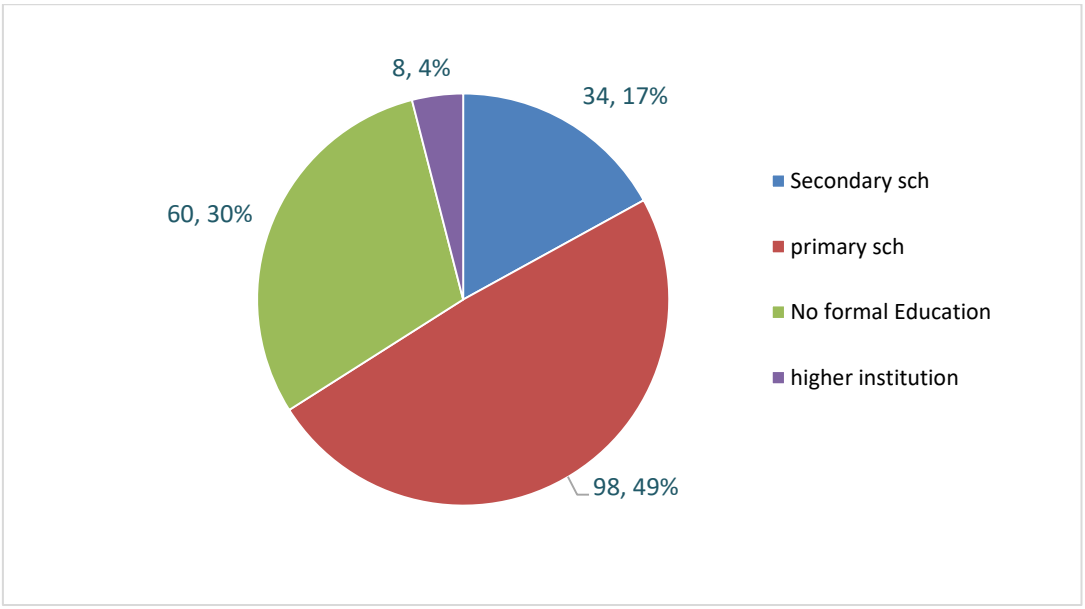

Fig-4.1c. Percentage Distribution of Level of Educaton

Fig 4.1c shows the percentage of the participant according to level of education
The prevalence rates of these chronic diseases as obtained from this study are given below

3.2. Hypertension

(i) Systolic Blood Pressure of people who participated in the research

SBP	Male n(%)	Female n(%)	Total sum	
Normal range (90-140)	28(82.4%)	107 (64.5%)	135 (67.5%)	< 0.05
Hypertensive range (> 140)	6(17.6%)	59(35.5%)	65(32.5%)	

17.6% (6 males) of the males who checked their blood pressures (total of 34) and 35.5% (59) of the females who were checked (total of 166) had systolic blood pressures above the safe range for SBP.

(ii) Diastolic Blood Pressure of people who participated in the research

DBP	Male (%)	Female (%)	Total sum	
Hypertensive (> 90mmHg)	6(17.6%)	49(29.5%)	55(27.5%)	< 0.05
Normal Range (60-90mmHg)	28(82.4%)	116 (69.9%)	144 (72.0%)	
Hypotensive range (< 60)	0(0)	1(0.6%)	1(0.6%)	
Total	34(100%)	166(100)	200 00.1%)	

17.6% of the males who got checked and 29.5% of the females who got checked for Hypertension had a hypertensive DBP(>90mmHg).

3.3. Diabetes Mellitus

STATUS	BGL	Number of Female(s)	Number of Male(s)	P_value < 0.05
NORMAL	60- 139	142 (94.7%)	22 (91.7%)	
PRE-DAIBETES	140-199	6(4%)	2 (8.3%)	
DIABETES	200 above	2(1.3%)	0	
HYPOGLYCEMIA	< 60	0	2(8.3%)	
Grand Total		150 (100%)	24 (100.8%)	

Note that, out of the 200 participants, 24 participants did not undergo the diabetes test making the total number of participants for the diabetes test to be 176. Females are 16 in numbers; those that do not participate in the diabetes test while the males are 8 in number. The prevalence of DM, given by random BGL of 200 mg/dl and above, was 1.15%. This was recorded in 2 females within the age range of 35-44.

3.4. Typhoid Fever

Typhoid status	Females n(%)	Males n(%)
Positive	0	2(5.9%)
Negative	156(94%)	32(94.1%)
Not tested	10(6%)	0
Grand Total	166(100%)	34(100%)

From figure 4c above, there is a 5.9% prevalence of typhoid fever among the male participants of this study, and zero prevalence among the females. This yields a prevalence rate of typhoid fever as **1.05%** among the study participants.

Human Immuno-Deficiency Virus (HIV)

HIV status	Female	Male	Total
Negative	70	16	86
Positive	0	0	0
Not Tested	96	18	114
Grand Total	**166**	**34**	**200**

From the table above, there was no positive test for HIV among the participants who opted to check their status. These statistics therefore showed a **0.0%** prevalence of HIV.

4. Discussion and Conclusion

This study investigated the prevalence, perception and awareness of chronic diseases (HIV, Diabetes and HPT, Typhoid Fever) among rural dwellers in Nomeh-Unateze Community in Nkanu-East LGA of Enugu. The foremost objective of this study was to determine the prevalence of the chronic diseases, Hypertension, HIV, Diabetes Mellitus and Typhoid Fever, and the prevalence of each disease. The mean age (standard deviation, SD) of the respondents was 48.9years (12.25) and 47% of the study participants were within the age range of 55 above. The age distribution is given in Table 1.1 above. Majority of the participants (83%) were females and the remaining 17% were males. Only 4% of the participants had tertiary education, 49% had basic education, 17% started secondary school and 30% had no formal education. Most of the respondents were farmers, both males and females. It was inferred that the education level of the study participants had a huge impact on their knowledge about the chronic diseases Hypertension, HIV, Diabetes Mellitus and Typhoid Fever. Although there was awareness about the diseases, they seemed to have just the very basic knowledge about them and this can be attributed to their sources of information. Only 15% of the study participants got their information about these diseases from Healthcare personnel. 30% identified the media, mostly radio, as their own source of information, while 11% were not sure how they learnt about the diseases. This statistic highlights a substantial gap in healthcare literacy, which can lead to misconceptions and limited awareness about disease prevention, symptoms, and treatment options. For instance, without guidance from healthcare personnel, individuals may not fully grasp the importance of regular blood pressure monitoring for Hypertension or the significance of glycemic control in Diabetes management [15]. Consequently, the reliance on media (30% of the participants) rather than healthcare professionals may contribute to inadequate understanding and hinder effective disease prevention and control efforts.

In regards to the health seeking behaviors of the rural dwellers, 97% of the study participants were willing to know their blood pressure, 85% were willing to know their blood sugar level, 95% wanted to know if they were positive of Typhoid fever, but just 46% wanted to test for HIV. This decline is attributed to the reluctance born out of lack of information, misinformation about the modes of transmission of the HIV virus and for some, out of faith that it was impossible for them to have it.

4.1. HIV

From this study, 80% of the participants had already heard about HIV from a source. But only 46% percent of the entire participants were willing and agreed to test for HIV. And out of this 46%, no participant tested positive for HIV, indicating a **0.0%** prevalence rate. This rate cannot be compared to the 1.8% found in rural areas in Anambra state, Nigeria, by Ononogbu et al (2015), neither can it be compared to the the 2.8% indicated in rural areas of Ekiti state, Nigeria by Adeleke, *et al.* [16], nor the 4.9% deduced by Ezekiel, *et al.* [17], in a Rural area of Benue State.

The most recent national population-based study in South Africa, the total non-participation rate for HIV testing among adults was found to be 32%. Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) had an overall non-participation or response rate of up to 11%. Individuals who are HIV-positive (from previous testing) may be afraid of stigma, marginalization, or mistreatment if others learn of their HIV status. Individuals who suspect they may be HIV-positive (based on past sexual behavior, for example) may be afraid of having their concerns confirmed.20 A longitudinal study in Malawi found that people who had previously tested HIV-positive were 4.6 times less likely than those who had previously tested HIV-negative to consent to a fresh HIV test [18]. This explains the 54% non-participation of the correspondents.

Only 22% of the study participants stated they can have physical contact with a person(s) suffering from HIV, this further highlights the stigma and misinformation surrounding this disease. It also brings to light a knowledge gap that needs to be addressed. Some people still dreaded physical contact with HIV sufferers in order to prevent being infected. One of the participants stated that;

"*I cannot have any business with a HIV sufferer. I did not send them to where they went to get the disease from. I will not even be able to take care of a HIV patient when they are sick so they don't spread it to me."*

Another participant, on why she did not want to get tested for HIV, said;

"At my age, there is no business between me and HIV. It is just not a disease for somebody my age".

This last response came from a place of her understanding that the only mode of transmission of HIV is through sexual activity. In response to whether or not she could share her status if found positive, a female participant said,

"I can tell my family members about my conditions but it's not everybody that should know about my status. It is not their business".

This response is similar to many other responses. Some villagers believe that their health statuses, decisions and conditions were their problems and not to be shared (when it came to dreaded diseases).

4.2. Diabetes

Of all the study participants, 97% were already aware of DM. This percentage is greater than the 66.7% awareness rate reported by Agbana, *et al.* [19] in a rural community of Ekiti state in Southwestern Nigeria. 14% knew DM can be managed with diet, while 65% had no idea of the management of DM. Only 6% knew that genetics was a risk factor for DM, while 69% did not know. A greater number (5%) of the participants were willing to check their BGL in order to test for DM, and 73% indicated they could discuss their statuses. This showed that there was not a bad stigma or negative perception which could potentially negatively influence attitudes of the rural dwellers towards DM sufferers.

According to this study, the prevalence of DM, given by random BGL of 200 mg/dl and above, was **1.15%.** This was recorded in 2 females within the age range of 35-44. This rate is comparatively low when contrasted with

other studies conducted in rural areas across Nigeria. For instance, a study in a rural, agrarian community in South-South Nigeria reported a prevalence rate of 1.8% (Egbi et al., 2016). Similarly, in Agbani, South-East Nigeria, a prevalence rate of 1.7% was recorded (Ndibuagu et al., 2016). A study in rural communities of Abuja found a higher prevalence rate of 4.4% [20]. Additionally, the International Diabetes Federation (IDF) reports the overall prevalence of diabetes in rural Nigeria to range from 0.65% to 4.8% [21]. These variations can be attributed to differences in lifestyle, dietary habits, genetic factors, and access to healthcare services across different rural areas. Ultimately, 1.15% falls on the lower end of this spectrum, suggesting relatively better control or lower risk factors for diabetes in the Nomeh-Unateze area compared to other rural regions.

There was also a low prevalence of Pre-Diabetes (140-199 mg/dl) indicated from the study. 4% of the females and 8.3% of the males who agreed to test for Diabetes, as seen in Table C, were pre-diabetic. This gives a prevalence of prediabetes at 4.6%, which is lower than the 5.53% evaluated by Nwafor, *et al.* [22] in a southern Nigerian community.

4.3. Hypertension (HPT)

The prevalence of Hypertension was determined by evaluating the systolic and diastolic blood pressures of the participant. 32.5% of the study participants had SBP within the hypertensive range of SBP >140. This comprised 17.6% of the males and 35.5% of the females who were checked. These were all above 45 years of age. Furthermore, the diastolic blood pressure was also checked and after analysis, statistics showed that 17.6% of the males and 29.5% of the females who got checked for Hypertension had a hypertensive DBP(>90mmHg) which is outside the safe range for DBP (60-90mmHg). This mean showed that a total 27.5% rate of the participants had a hypertensive DBP. These were all postmenopausal women (above 45 years).

In younger adults, men generally exhibit a higher prevalence of hypertension compared to women. This trend persists until middle age. Research indicates that men are more likely to develop hypertension before the age of 45, while the prevalence in women remains relatively lower during this period [23]. Hormonal changes, particularly those associated with menopause, play a crucial role in this shift. Estrogen, the primary female sex hormone, is known to have a protective effect on blood vessels, helping to maintain lower blood pressure levels. Studies have shown that premenopausal women benefit from this protective effect, which contributes to their lower rates of hypertension compared to men of the same age [24]. After menopause, the decline in estrogen levels removes this protective effect, leading to increased blood pressure and a higher risk of developing hypertension [25]. This indicated higher prevalence of hypertension in postmenopausal women is therefore consistent with previous research.

In respect to knowledge about Hypertension, 97% of the participants had already heard about HPT before this study. However, only a few percent very knowledgeable. 43% knew it is another contagious disease, 37% agreed it can cause death, 30% knew it is not hereditary. All other participants either didn't know or answered wrongly. This data from this study showed a great awareness about hypertension, a fair knowledge base among the rural dwellers and also a better health seeking attitude towards management of HPT. However, some barriers were identified which impaired the abilities of some of the rural dwellers to cope with the condition. A female correspondent who already knew she was hypertensive said;

"I couldn't keep up with my medications after my husband died some years ago. I have children in school, I have to take care of some bills and when I am done with that, I don't have enough money to spare to go to buy drugs so I am just managing myself".

Another participant gave her reason for not continuing her medication for managing hypertension, saying;

"The way price of drugs has increased recently makes it very hard for me to go and buy drugs"

A female correspondent whose blood pressure was checked said;

"I am happy you people came to hold this outreach. I would love to be checking my BP regularly but prices of checkup have increased, so I hardly go to check my BP now"

These challenges, coupled with the lack of indentation knowledge about this condition still leaves a lot of rural dwellers in the community at risk. It was also noted that there are no prevalent misconceptions about HPT. 97% were willing to get tested and 86% indicated they will be able to discuss their status with people if found hypertensive.

4.4. Typhoid Fever

A prevalence rate of **1.05%** was calculated among the participants. The percentage of males who tested positive for typhoid was 5.88%, and there was no female who tested positive for Typhoid fever. This higher prevalence of Typhoid fever in males is relative to the higher prevalence which was recorded by Faruku, *et al.* [26], in which the rate in males was 7.5%, and that in female participants was 5.0%.

The 1.05% prevalence of Typhoid in Nomeh-Unateze is slightly higher than what was discovered in a rural area of Benue, Nigeria, by Eze, *et al.* [27]. Their study reported a prevalence rate of 1.0%, which is similar to that in omeh-Unateze. The lower rate was attributed to recent public health interventions and better access to clean water [27].

This 1.05% prevalence is lower than the 3.2% previously reported by Abba, *et al.* [28] among rural communities in Enugu State. The higher rate was linked to poor sanitation, contaminated water sources, and lack of awareness about hygiene practices [28]. It is also lower than the 2.5% prevalence in rural areas in Ogun state, Nigeria, as reported by Akinyemi, *et al.* [29]. A research conducted by Nduka, *et al.* [30] reported a prevalence rate of 4.7% in rural communities of Ebonyi State, Nigeria. A prevalence rate of 1.2% was also reported by a study in rural Kwara

State, by Adekunle, *et al.* [31]. This is also slightly higher than the 1.05% at Nomeh-Unateze. Improvements in sanitation and access to healthcare were noted as contributing factors to the relatively low prevalence The lower prevalence of Typhoid fever as in Nomeh-Unateze community of Nkanu-East LGA of Enugu state can be attributed to improved sanitation and purification of water, availability of healthy water sources for both drinking, and cooking.

A male survey correspondent within the age range of 25-34, when asked if they drank the water from the river in the village, replied,

"It has been a long time since we stopped drinking this river water. If you look at it, you'll see it is no longer very clean. People even rarely go to swim in it any more. We have better drinking water available to us".

The awareness levels of Typhoid fever among the rural dwellers in the community is quite high. 97% of the participants already knew about typhoid fever. Their knowledge about the disease seems basic as 50% of the correspondents didn't know if it was contagious or capable of causing death. 69% didn't know if it can be transmitted through poor hygiene, and 66% didn't know the treatment or management regime for Typhoid Fever (if it can be cured). Table 1.0 shows that 97% of the participants were willing to test for Typhoid and 84% were willing to discuss the status with other people, even if found positive via the rapid test. Also, only 13% of the correspondents indicated that they will not be able to have physical contact with a sufferer of typhoid fever. This shows that there is no significant level of stigmatization or segregation towards sufferers of Typhoid fever.

4.5. Identified Gaps

There is limited data on lifestyle and behavioral factors that may have contributed to the prevalence rate of these chronic diseases at the time of this study. Being a cross-sectional study, and so a snapshot, it does not reflect trends or changes over time, limiting the understanding of the dynamics of these diseases in this community. The study did not completely explore the accessibility and quality of healthcare services available to the population, nor did it check for or evaluate previous public health interventions that may have been done in the community to compare it with the level of awareness, knowledge, type of perception and the prevalence of these diseases.

4.6. Limitations and Challenges of Conducting Research

Although this study aimed to determine the prevalence, perception and awareness of these diseases in the whole of Nomeh-Unateze community in LGA of Enugu state, the results from this study cannot be generalized to the population of the Nomeh-Unateze, as it recruited fewer participants than the hypothetical sample size. More so, the data obtained were obtained under conditions which could have slightly altered some results. For instance, some of the participants struggled with other participants while waiting for their turns to be checked and this could have caused some increase in their blood pressures, making it higher than normal. Also, the very high disparity between the number of males and females in the community did not allow for a very balanced and unbiased representation of the statuses of the males in the community.

5. Conclusion

This study has highlighted the high rate of low level education which has negatively impacted awareness and knowledge of the severity, mode of transmission and perceptions of the chronic diseases HIV, Hypertension, Diabetes Mellitus, Typhoid fever. It was also deduced that not all these diseases carried stigma as more people were open to talking about Hypertension, Diabetes and Typhoid than HIV, so there is a direct relationship between stigma and dreaded diseases. The 0.0% prevalence rate of HIV gotten from this research is unusual but not entirely unprecedented. Some studies have reported very low or even zero prevalence rates in specific rural populations due to factors like effective local HIV prevention programs, limited exposure to high-risk behaviors, or successful awareness campaigns. However, these cases are rare and often reflect localized successes rather than broader trends. An association was established between hypertension and postmenopausal women (35.5% for SBP, 29.5% for DBP) and also women had the identified cases of Diabetes Mellitus (1.15%), while men had the only incidences of Typhoid fever identified (1.05%). Some people feared testing for diseases because of the fear of finding out their status. This endangers them by prolonging the period between contraction of the disease and beginning of treatment, which could lead to both worsening of the condition such that treatment becomes very costly, difficult or impossible. The findings from this research and previous researches underscore the need for context-specific interventions tailored to the needs of rural communities .Future research should involve medical outreach that will both evaluate the level of stigma and fear associated with these diseases and aim at drastically reducing them. This cross-sectional study provides just a snapshot of these diseases and the variables in the given time. So, I recommend that future researchers should conduct longitudinal studies to check for the changes in the trends of prevalence rates of these diseases over time. Regular exercises could also be organized by Community health workers to offer a sense of belonging, care, support and safety to the rural dwellers. This will in turn build their confidence in the healthcare sector of the community. Addressing research gaps and overcoming challenges will require collaborative efforts and innovative approaches to studying chronic diseases in rural communities [32, 33]. Healthcare personnels should also keep a good record of mortality rates of the diseases in this community as they would be very necessary for longitudinal studies. It was observed that there is some level of backwardness in the level of awareness and knowledge of the causes, risk factors, treatment or management of these diseases. This provides information for informed interventions aimed at increasing knowledge base and improving perceptions of these diseases among rural dwellers. The government should provide grants or financial support to NGOs, private organizations and researchers who desire to conduct longitudinal studies, as it is more cost demanding than a cross-sectional study such as this one. The government should also provide some free test glucometers and blood pressure test kits to homes with diabetic

or hypertensive patient or person(s). This helps them properly monitor their conditions, and be more in charge of their health outcomes. The government should also erect better health facilities and equip them to give tests, checkups, and drugs to the rural dwellers free of charge or at subsidized rates. The government can also provide scholarships to the young people of Nomeh-Unateze to increase their academic levels of education. Because if more people went to higher institutions, the increased knowledge they gain would be shared to different persons in the community, thus increasing knowledge, since it has been deduced from this study that more people get their information about diseases from friends and family.

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