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ORIGINAL ARTICLE

Assessment of Prevalence of Communicable and Non-Communicable Diseases in a Rural Community and its Neighborhood in Enugu State, Nigeria: A Cross-Sectional Epidemiological Survey from a Health Outreach

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Abstract

Background: Africa faces a double burden of communicable and chronic non-communicable diseases which have long-term public health impact. This study is to ascertain the disease prevalence, the degree, and the predisposing risk factors of communicable and non-communicable disease in Uvuru, in Uzo-Uwani Enugu State.

Methods: This is a descriptive cross-sectional survey using convenience sampling technique conducted on residents in Uvuru Agada community in Uzo-Uwani Local Government Area of Enugu State using a two-part pro forma. The data was analysed using the Statistical Product and Service Solution (SPSS version 23.0) and results were presented as frequencies and percentages. Chi-square and Pearson correlation coefficient were used to determine statistical relationship existing among variables. Significance difference was accepted at 95% precision ($P < 0.05$).

Results: Majority 495 (70.7%) of the respondents were females while 656 (93.7%) were adults (> 19 years). Higher percentage 429 (61.3%) had a normal body mass index (BMI). Very few 8 (1.1%) had respiratory diseases while 469 (67.0%) had malaria. Majority 682 (97.4%) of the respondents had at least one non-communicable disease while only 91 (13.0%) had at least one non-communicable disease.

Conclusion: The prevalence of non-communicable diseases is high. Age, Gender and BMI are risk factors.

Keywords

Diseases, Epidemiological, Communicable, Non-communicable, Morbidity and mortality

Introduction

Africa faces a double burden of chronic and infectious diseases. Africa as a continent has been plagued with a high rate of infectious diseases while at the same time battling with a burgeoning chronic non-communicable disease. This double burden of communicable and chronic non-communicable diseases has long-term public health impact as it undermines healthcare systems. Infectious disease account for about 69% of deaths in sub-Saharan Africa, while chronic non-communicable disease like diabetes mellitus (DM), cardiovascular disease, respiratory diseases and cancers account for a quarter of the deaths in the region [1]. Due to the increasing rate of urbanization and

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changing lifestyle factors, Sub-Saharan Africa countries (SSA) currently experience one of the most rapid epidemiological transitions [2].

A report in 2011 showed that the number of reported cases of malaria in Nigeria increased from 2,834,174 in 2008 to 4,295,689 in 2009. Each day there are reports of about 1000 new infections with HIV. Despite all these, there are only 27 physicians per 100,000 people in Nigeria. Worse of all, these health practitioners are not distributed equitably between those in the rural and urban areas. Over 70% of doctors are concentrated in urban areas where 48% of the population resides; the remaining 30% are sparsely distributed in the rural areas that house 52% of the world population [3].

The rapid epidemiological transition of diseases has drastic effects on the health care system of low and middle-income countries like Nigeria due to limited access to health care, urbanization and weaker health care system. Lack of infrastructure for healthcare, urbanization, poverty, dietary changes and lack of government programs create enormous public health challenges and the reluctance of the African government, policy makers and health funding agencies to address this issue imposes significant burden for the health sector and in-turn the economy of SSA countries [4,5]. The weak health care system compounded the problem, as they do not have sufficient infrastructure put in place to cope with these burdens. Studies also reveal grave consequences of an increasing burden of chronic disease. Evidence from these studies shows that due to the high burden of chronic disease very few people will seek treatment which will in turn lead to high morbidity and mortality rate from disease that are potentially preventable [6].

As most survey of NCDs in Nigeria is mostly hospital based, fewer studies focus on community settings. Rural areas have been regarded as a breeding ground for diseases, poverty, and superstition. In rural communities, health services are greatly underutilized due to problems related to the availability of the health care services, quality of services offered and the cost of access to health care services. Thus, there is a need for an evaluation of the enormity of chronic, infectious and non-communicable disease burden in these low resource communities and also determine the prevalence and risk factors, this would highlight the need for further research and implementation of policies to tackle disease burden. The strategies should be contextualized and specific to each community. The approach to tackling these burdens should not be a one size fits all approach as different communities in Nigeria battle with different disease based on location. Thus, there is a need to prioritize various risk factors and address them accordingly.

Thus, this study was carried out to ascertain the disease prevalence in Uvuru, in Uzo-Uwani Enugu state, also the degree of communicable and non-communicable disease in this rural community as well as to evaluate the predisposing risk factors.

Methods

Study design

This is a descriptive cross-sectional survey using convenience sampling technique conducted on all individuals (no age limit) in Uvuru Agada community in UzoUwani Local Government Area of Enugu State.

Study setting

The study was carried out in Uvuru Agada in UzoUwani Local Government Area of Enugu State, South-east geopolitical zone of Nigeria. UzoUwani L.G.A lies on the coordinates: latitude 6°45'N and longitude 7°45'E with a total population of more than 124,480 people. Uvuru Agada, also known as Ogbo-Uvuru, is one of the communities in Uzo Uwani located roughly 31 kilometers from Nsukka town with a total land mass of about 1,355 km^2. The community consist of ten (10) villages namely: Amono, Inama, Ogwu, Okasibi, Ugbene, Umudia, Umuntu, Utokpu, Utomaka and Uvuru-ani. It is an Igbo speaking area whose indigenes are traditionally farmers while others are petty traders. The village is characterized by a variation of weather. The wet season is oppressive and overcast, the dry season is muggy and partly cloudy and it is warm year-round. Over the course of the year, the temperature typically varies from 61 °F to 87 °F and is rarely below 55 °F or above 91 °F. The community mostly get their medical treatment in case of illness from the local chemists, herbalist or the unequipped local health center in the community.

Sample size

The sample size for the study was calculated to be 383 with the aid of a sample size calculator at *www.raosoft/samplesize.com.* However, a total of 700 respondents with symptoms of one or more communicable or non-communicable diseases were used for the study so as to obtain a result that can represent a population.

Study instrument

A two-part pro forma was developed and used to collect data from the participants. The first section of the pro forma is to obtain the respondents socio-demographic (gender and age) and clinical (height and weight) characteristics. All clinical measurements were conducted using validated instruments.

Body mass index (weight/height^2) was used to classify the adult respondents (< 19 years) into underweight, normal weight, overweight and obese using reference standards by World Health Organisation (1995) as follows: Underweight = < 18.50 kg/m^2, Normal range = 18.50-24.99 kg/m^2, Overweight = 25.00-29.99 kg/m^2, Obese = ≥ 30.0 kg/m^3 while body mass index-for-age (BMI-for-age) was used to classify respondents aged

< 19 years into underweight, normal, overweight and obese using WHO (2007) median reference Z-score standard.

The second section was used to obtain information on the various the type of disease (as diagnosed by a qualified physician). The diseases were then categorized into communicable or non-communicable diseases category. No identifier information was obtained from the participants, to maintain confidentiality throughout the study.

Data collection

A three days outreach was conducted in the community to obtain data on the age of the respondents, gender of the respondents, anthropometric measurements (height & weight) as well as clinical characteristics of the respondents such as the presence of respiratory diseases, fungal diseases, eye diseases, pelvic inflammatory diseases, malaria, hypertension, ulcer, urinary tract infection, enteric fever, eye defects, diabetes mellitus, arthritis, worm infections, allergic reactions, seizure, spinalspodylosis and inguinal hernia.

The data were collected and documented in a data collection sheet by 8 health practitioners involving medical doctors, pharmacists and medical lab scientists. Prior to the outreach, however, a preliminary visit was made to the community to sensitize them on the outreach so that they can turn up for the research. After the three days outreach, the researcher collected the data sheets of all the respondents used for the study for further analysis.

Data and statistical analysis

The data collected from the field were coded and entered into the computer and analysed using the computer software package; Statistical Product and Service Solution (SPSS version 23.0). The results were presented as frequencies and percentages. Chi-square and Pearson correlation coefficient were used to determine statistical relationship existing among variables. Significance difference was accepted at 95% precision ($P < 0.05$).

Inclusion criteria

Respondents who sailed through the hurdle of the exclusion criteria were included in the study.

Exclusion criteria

Respondents without at least one of either communicable or non-communicable disease and who were not living in the area of study at the time of the study were excluded from the study.

Informed consent

Verbal consent and written consent (in the form of a signed document) was obtained from each participant before they were included to participate in the study.

Ethical consideration

Ethical approval was obtained from the research and ethics committee of the Faculty of pharmaceutical Sciences University of Nigeria Nsukka before the commencement of this study.

Results

Majority 495 (70.7%) of the respondents were females while 205 (29.3%) were males. Most 656 (93.7%) of the respondents were adults (> 19 years), some 20 (2.9%) & 11 (1.6%) were pre-schoolers' (2-5 years), infants (< 2 years) and school age children (6-12 years) respectively while very few 2 (0.3%) were adolescents (13-19 years). Higher percentage 429 (61.3%) of the respondents had a normal body mass index (BMI) while very few 53 (7.6%) & 62 (8.9%) of them were obese and underweight respectively (Table 1).

Findings on prevalence on communicable disease reveals that very few 8 (1.1%) of the respondents had respiratory diseases, 17 (2.4%) had fungal disease, 58 (8.3%) had eye disease while 15 (2.1%) had pelvic inflammatory disease.

About 469 (67.0%) of the respondents had malaria while 15 (2.1%) had diabetes mellitus. Only 1 (0.1%), 4 (0.6%) and 5 (0.7%) had inguinal-hernia, spinalspodylosis and seizure respectively.

Majority 682 (97.4%) of the respondents had at least one non-communicable disease while only 91 (13.0%) of the respondents had at least one non-communicable disease. Table 2 shows the summary of the prevalence of the communicable and non-communicable diseases among the respondents.

Table 1: General characteristics of the respondents/patients.

Variable	Frequency	Percentage
Sex		
Male	205	29.3
Female	495	70.7
Total	700	100.0
Age group		
< 2 years	11	1.6
2-5 years	20	2.9
6-12 years	11	1.6
13-19 years	2	0.3
> 19 years	656	93.7
Total	700	100.0
Body mass index (BMI)/BMI-for-age		
Underweight	62	8.9
Normal	429	61.3
Overweight	156	22.3
Obese	53	7.6
Total	700	100.0

There was a significant association between enteric fever and gender of the respondents. The male (44.9%) respondents significantly had more enteric fever disease compared to the female counterparts (36.8%) and vice versa. However, there was no significant association between gender and the prevalence of eye disease, malaria, hypertension, ulcer, arthritis, worm infections and allergic reactions.

There was a significant ($P < 0.05$) association between the age of the respondents and the prevalence of malaria, hypertension, enteric fever, arthritis, worm infections and allergic reactions. Majority (81.8% vs. 95.0%) of infants (< 2 years) and pre-schoolers (2-5 years) respectively had malaria while all (100.0%) of the school age children (6-12 years) also had malaria with only 65.5% of the adult (> 19 years) respondents having malaria. About 23.6% of those aged > 19 years were hypertensive while only 9.1% of the infants (< 2 years) were hypertensive. Majority (72.7%, 70.0% and 81.8%) of those aged < 2 years, 2-5 years and 6-12 years respectively had enteric fever while only 36.9% of respondents aged > 19 years had enteric fever. More than one-third (36.9%) of adult respondents (> 19 years) had arthritis while only 5.0% of those aged 2-5 years had arthritis. About 24.1% of respondents aged > 19 years had worm infection while only 5.0% of those aged 2-5 years had worm infection. Some (45.5% vs. 40.0% vs. 36.4%) of infants (< 2 years), pre-schoolers (2-5 years) and school age children (6-12 years) respectively had allergic reaction while all (100.0%) of the adolescent children (13-19 years) had allergic reaction with only 9.9% of the adult (> 19 years) respondents having allergic reaction. No Significant ($P > 0.05$) association was observed between age of the respondents and the prevalence of eye diseases and ulcer (See Table 3).

Table 4 shows the association between BMI/BMI-for-age and the diseases predominant in the study area. A significant ($P < 0.05$) relationship occurred in the association between BMI/BMI-for-age of

Table 2: Overall prevalence of communicable and non-communicable diseases among the respondents.

Variable	Frequency	Percentage
Communicable disease		
Yes	91	13.0
No	609	87.0
Total	700	100.0
Non-communicable disease		
Yes	682	97.4
No	18	2.6
Total	700	100.0

Table 3: Association between age, gender and the prevalence between communicable and non- communicable diseases.

Variable	Communicable disease, n (%)		Non-Communicable disease, n (%)	
	Yes	No	Yes	No
Sex				
Male	22 (10%)	183 (89.3%)	203 (99%)	2 (1%)
Female	69 (13.9%)	426 (86.1%)	479 (96.8%)	16 (3.2%)
Age group				
Adult	86 (13.1%)	570 (86.9%)	638 (97.3%)	18 (2.7%)
< 2 year	1 (9.1%)	10 (90.9%)	11 (100%)	0 (0%)
2-5 years	1 (5%)	19 (95%)	20 (100%)	0 (0%)
6-12 years	2 (18.2%)	9 (81.8%)	11 (100%)	0 (0%)
13-19 years	1 (50%)	1 (50%)	2 (0%)	0 (0%)

Table 4: Association between BMI/BMI-for-age and the diseases predominant in the study area.

Disease Condition	Variable	Underweight n (%)	normal n (%)	Overweight n (%)	Obese n (%)	Total n (%)	χ^2	df	P-value
Eye disease	Yes	7 (11.3)	32 (7.5)	11 (7.1)	8 (15.1)	58 (8.3)			
	No	55 (88.7)	397 (92.5)	145 (92.9)	45 (84.9)	642 (91.7)	4.668	3	0.198
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			
Malaria	Yes	50 (80.6)	305 (71.1)	88 (56.4)	26 (49.1)	469 (67.0)			
	No	12 (19.4)	124 (28.9)	68 (43.6)	27 (50.9)	231 (33.0)	24.106	3	0.000*
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			
Hypertension	Yes	4 (6.5)	41 (9.6)	67 (42.9)	44 (83.0)	156 (22.3)			
	No	58 (93.5)	388 (90.4)	89 (57.1)	9 (17.0)	544 (77.7)	20.441	3	0.000*
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			

Ulcer	Yes	10 (16.1)	80 (18.6)	33 (21.2)	9 (17.0)	132 (18.9)			
	No	52 (83.9)	349 (81.4)	123 (78.8)	44 (83.0)	568 (81.1)	0.974	3	0.808
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			
Enteric fever	Yes	27 (43.5)	188 (43.8)	49 (31.4)	10 (18.9)	274 (39.1)			
	No	35 (56.5)	241 (56.2)	107 (68.6)	43 (81.1)	426 (60.9)	17.511	3	0.001*
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			
Arthritis	Yes	3 (4.8)	53 (12.4)	73 (46.8)	30 (56.6)	159 (22.7)			
	No	59 (95.2)	376 (87.6)	83 (53.2)	23 (43.4)	541 (77.3)	12.718	3	0.000*
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			
Worm infections	Yes	30 (48.4)	159 (37.1)	58 (37.2)	16 (30.2)	263 (37.6)			
	No	32 (51.6)	270 (62.9)	98 (62.8)	37 (69.8)	437 (62.4)	4.381	3	0.223
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			
Allergic reactions	Yes	13 (21.0)	58 (13.5)	11 (7.1)	2 (3.8)	84 (12.0)			
	No	49 (79.0)	371 (86.5)	145 (92.9)	51 (96.2)	616 (88.0)	12.674	3	0.005*
	Total	62 (100.0)	429 (100.0)	156 (100.0)	53 (100.0)	700 (100.0)			

Yrs: years; n: frequency; %: percentage; df: degree of freedom; χ^2: chi-square; p: probability; *: statistically significant ($p < 0.05$)

the respondents and the prevalence of malaria, hypertension, enteric fever, arthritis and allergic reaction.

Higher percentage 50 (80.6%) of underweight respondents had malaria while 88 (56.4%) overweight and 26 (49.1%) obese respondents had malaria.

Majority 44 (83.0%) and nearly half 67 (42.9%) of obese and overweight respondents respectively were hypertensive while only 4 (6.5%) of underweight respondents and 41 (9.6%) of those with normal BMI were hypertensive.

Some 27 (43.5%) of underweight, 188 (43.8%) of normal weight and 49 (31.4%) of overweight respondents had enteric fever while only 10 (18.9%) of obese respondents had enteric fever.

Higher percentages 73 (46.8%) & 30 (56.6%) of overweight and obese respondents respectively had arthritis while only 3 (4.8%) underweight and 53 (12.4%) of respondents with normal BMI had arthritis.

Some 13 (21.0%) & 58 (13.5%) of underweight respondents and those with normal BMI respectively had allergic reaction while only 11 (7.1%) and 2 (3.8%) of overweight and obese respondents respectively had allergic reaction.

There was no significant association ($P > 0.05$) between BMI of the respondents and the prevalence of eye diseases, ulcer and worm infections in the region.

Discussion

Findings from this study, revealed low prevalence of communicable diseases among respondents it was observed that eye diseases have the highest prevalence (8.3%) while respiratory diseases have the lowest prevalence. Rural areas are less likely to suffer communicable diseases when compared to urban areas [7]. This is due to the fact that urban areas are usually over populated and over-crowded and these two factors are crucial risk factors for the prevalence and spread of communicable diseases [8] however, rural areas are not usually overpopulated and overcrowded and this is a typical feature of the study area. Thus, there is less chances for the spread of communicable diseases. This factor is a likely indication for the low prevalence of communicable diseases in the study area.

There was a high prevalence of non-communicable diseases in this study; Malaria (67.0%), Enteric fever (39.1%), and worm infections (37.6%). These three non-communicable diseases are usually attributed to poverty, poor hygiene, inadequate access to good drinking water and poor sanitation [3]. Thus, it can be said that the prevalence of these non-communicable diseases is high in the study area due to poverty, poor hygiene, poor sanitation and inadequate access to portable water. The prevalence of hypertension and arthritis amongst the residents could be attributed to old age [9] as the demographic data revealed that majority of the respondents were older people. Seizures (0.7%), spinalspodylosis (0.6%), urinary tract infections (4.4%), diabetes mellitus (2.1%) and eye defects (5.1%) have low prevalence. Diabetes mellitus is a disease mainly attributed to hereditary and sedentary life style [10]. It is also known that unhealthy life-style habits are prevalent in urban cities and industrial hubs in Nigeria [11].

It was observed from this study that the overall prevalence of non-communicable diseases is higher than that of communicable diseases by a ratio of 7.5:1. The burden of non- communicable diseases continues to increase globally especially in developing countries with different risk factors contributing to the surge [12].

This is as a result of rapid urbanization, westernisation of lifestyle and dietary habits [13]. Most of the non-communicable diseaseses investigated in this study is attributed to poverty, poor hygiene, and inadequate access to portable drinking water, poor sanitation, hunger and starvation. Rural areas are likely to suffer a great burden of non-communicable diseases compared to urban areas because of their limited healthcare financing for non-communicable diseases and their relatively weak and unpureed health systems for these diseases [14].

Findings from this study show that there was no association between gender and prevalence of diseases which is in contrast to previous studies, where gender has been a risk factor associated with the prevalence of so many diseases [15]. Gender is a risk factor towards the prevalence of hypertension and arthritis; males have more risk to hypertension disease while females are at more risk of having arthritis. Although other factors such as obesity, sedentary lifestyle, alcohol and cigarette smoking should also be considered based on the fact that the absence of these risk factors may equally be the reason for the variation. However, it was also observed that a higher percentage of the males had enteric fever. Enteric fever is a disease that is associated with contaminated food and water, shellfish and vegetables grown in the water. Thus, the reason for the high prevalence of enteric fever in male than female in the study area may be attributed to the fact that female practice more personal hygiene than male and also the rate of utilization of contaminated food, water, shellfish and vegetables grown in water may be higher in male than female.

Findings from this study, reveals that there is no association ($p < 0.05$) between age and the prevalence of eye diseases and ulcer. Thus, this shows that age is not a risk factor for the prevalence of eye diseases and ulcer in the study area. However, there is an association of age with the prevalence of malaria, hypertension, enteric fever, arthritis, worm infections and allergic reactions which is in agreement with findings obtained from similar study where age has been shown to be risk factors for raised blood pressure [16]. The prevalence of hypertension in group > 19 years is the highest (23.6%) while < 2 yrs (9.1%) and other age study groups were 0%. As a result of aging, changes occur within the cardiovascular system like thickening of the arterial wall, thus the heart does more work in pushing blood against the thickened arterial blood pressure [17]. The observed 9.1% prevalence in hypertension in children < 2 years in the study area may be attributed to congenital cardiac malformations. Malaria is a disease that is endemic to sub-Saharan Africa [18]. Children and pregnant women are seen as the endangered group due to that likely occurrence of anaemia which agrees with findings from this study. The prevalence of enteric fever is seen to be 72.7% in < 2 years, 70% in 2-5 years, 81% in 6-12 years, 50% in 13-19 years and 36% in > 19 years. Since enteric fever is attributed to contaminated food and water and vegetables grown in the water, the high prevalence of enteric fever in < 2 years, 2-5 years, and 13-19 years may be that these age groups consume a lot of contaminated foods and water.

Age has always been a risk factor for the prevalence of arthritis. Previous studies reveal that increase age is a risk factor for the prevalence of arthritis; this is so because arthritis is caused by destruction to joints and connective tissues which is associated with advanced age. Arthritis is a most common chronic condition in > 15 years persons. The onset is often between 30-40 years and it affects 50% of person > 65 years [19]. This statement agrees with the result obtained from these study findings in this study. This shows that the prevalence of arthritis is associated with age.

It was also observed that age is associated with the prevalence of worm infections in the study. Respondents who are > 19 years had the highest prevalence when compared to other age groups {< 2 years (0%), 2-5 years (5%), 6-12 years (0%) and 13-19 years (0%}). Worm infections are usually associated with poverty, poor sanitation, bathing and drinking contaminated water, eating of improperly cooked meat and food as well as playing or walking on soil bare footed especially in the case of soil transmitted helminths [20]. Thus the high prevalence of worm infections observed in the > 19 years age group could be due to the fact that individuals within this age group are more physically active, they are responsible for taking care of themselves in terms of hygiene and feeding as most of them are students who may likely be living on their own. Hence they may be more disposed to worm infestations due to poor hygiene and drinking contaminated water (especially in this region where access to good water supply is a challenge), eating of improperly cooked meat and food, swimming in contaminated rivers or walking on soil contaminated with eggs and larva of these helminths especially those that walk bare footed on farm lands. The high prevalence of allergic reactions seen in age group 13-19 years in this study may be due to exposure to allergens that cause such reactions.

Results obtained from this study reveals that BMI has no association with the prevalence of eye diseases, ulcer and worm infections though there was an association with the prevalence of malaria, hypertension, enteric fever, arthritis and allergic reactions. It has been observed that in this study, the prevalence of malaria, enteric fever and allergic reactions decreases as the weight move from underweight to obese. The reason for the high prevalence in the underweight, normal weight and overweight may be due to the fact that the smaller body mass index allows the ease of penetration and spread of these parasites and allergens across blood and, body fluids and biological compartments.

Findings from this study also showed that the prevalence of hypertension and arthritis increases as the body mass index increases. The prevalence is high in the obese and the overweight respondents. Hypertension, the major risk factor for cardiovascular diseases (CVD) has been a global concern. This is because CVDs are the leading cause of death globally with estimated 17.5 million deaths yearly [21]. CVDs are also the leading non-communicable diseases in Nigeria [22]. The relationship between hypertension and obesity can be explained by deposit of fat causing narrowing or blockage of the arteries [23]. Thus, the heart does more work in pushing blood against the thickened arterial wall leading to an increase in arterial blood pressure [20]. Additionally, the adipose tissue also contributes to hypertension by their endocrine and paracrine effects on the endothelial cells by producing substances like cytokines and, leptin and adiponectin which have detrimental effects on the vasculature [24]. Obesity and overweight have been major risk factor for the prevalence of arthritis [17] which is in agreement with findings from this study where prevalence of arthritis is high in the obese and overweight groups but low in underweight and normal weight groups. All these extra weights can cause damage to joints, worsen the pain and stiffness of already damaged joints and can accelerate the disease progression. So, this can actually serve as a justifiable reason for the high prevalence of arthritis in overweight and obese respondents.

Conclusion

There is a high of prevalence of non- communicable diseases amongst residents of the rural community. Age, Gender and BMI are associated with the prevalence of non-communicable diseases and hence are risk factors in its prevalence. Hence there is need for health promotion and education as well as good clinical capabilities in reducing the burden of non-communicable diseases.

Recommendation

Health practitioners should visit rural areas sometimes and take a survey through medical outreaches and other health programs. Also, proper counselling should be given to these people on the best practice to manage both the communicable and non-communicable disease symptoms. It is as well necessary that the rural dwellers be advised on the best health practices and lifestyle to adopt in order to improve their health.

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Conflict of Interest

No conflict of interest associated with this study.

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Contributions of Authors

Isah A Designed the work; Ogbonna JDN; supervised the data collection and in the design of the work; Okeke N Ginikachukwu participated in involved in data collection; Aguiyi-Ikeanyi N Chinelo prepared the manuscript writing and carried out the data analysis; Nkechi J Okonkwo-Uzor edited the manuscript; Ohagwu M Beatrice-zita participated in involved in data collection; Onyia C Oluebube participated in involved in data collection.

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