



Lifestyle Diseases: Knowledge and Related Practice among Residents of Uyo Metropolis

D. C. Opara^{1*} and U. S. Ekanem¹

¹Department of Community Health, Faculty of Clinical Sciences, University of Uyo, Uyo, Nigeria.

Authors' contributions

Author DCO designed the study, wrote the protocol and interpreted the data. Both authors anchored the field study and gathered the initial data. Author USE performed preliminary data analysis. Author DCO managed the literature searches and produced the initial draft. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJMAH/2016/28771

Editor(s):

(1) Janvier Gasana, Department of Environmental & Occupational Health, EO Epidemiology, and EO Medicine, Robert Stempel College of Public Health & Social Work, Florida International University, USA.

Reviewers:

(1) O. S. Agbaje, University of Nigeria, Nsukka, Nigeria.

(2) Didem Sunay, Karabuk University Medical School, Karabuk, Turkey.

Complete Peer review History: <http://www.sciencedomain.org/review-history/16503>

Original Research Article

Received 4th August 2016
Accepted 28th September 2016
Published 11th October 2016

ABSTRACT

Aim: The study was aimed at determining the knowledge of some lifestyle diseases such as stroke, hypertension, diabetes, chronic obstructive pulmonary diseases and obesity by residents of Uyo Metropolis, and their practices to prevent such diseases and documenting the knowledge of lifestyle diseases, activity profile, health seeking behavior and dietary practice of respondents.

Study Design: It was a cross-sectional study.

Place and Duration of Study: The study was conducted in Uyo metropolis; in markets, motor parks, secondary schools, the mechanic village and the Federal Civil Service Secretariat; between June and July, 2016.

Methodology: Three hundred and twenty-eight respondents participated in the study. Data was collected using a structured self-administered questionnaire. Data was analyzed using SPSS version 20.0.

Results: Most of the respondents were male (52.7%), never married (49.1%) and attained tertiary education (53.7%). Most of the respondents have good knowledge of symptoms of lifestyle diseases (62.8%) but not of their causes and prevention; however there was a significant difference when highest level of education and location was considered ($P < .05$). Most of the respondents (67.1%) spend nil to two hours on leisure/sedentary activities during the day and this consisted

*Corresponding author: E-mail: cheimerem_dominica@yahoo.com;
Communication E-mail: nsisong99@yahoo.com;

mainly of male respondents (35.7%). Most of the respondents with tertiary qualifications and located at federal secretariat visit the hospital when sick unlike respondents located at the market, motor parks and mechanic village who buy drugs from the chemist; a significant difference was recorded ($P < .05$). Most of the respondents take sugar added drinks (43.9%) and pastries (49.9%) nil-3 times in a week and many reported taking alcohol (67.9%).

Conclusion: Demographic characteristics such as level of education and location affect knowledge of lifestyle diseases, physical activity and health seeking behavior of respondents in Uyo. Intervention studies should be conducted to educate the masses on the necessity to maintain a healthy lifestyle which includes eating well, engaging in exercise and visiting the hospital/ wellness clinic regularly.

Keywords: Lifestyle; dietary; activity profile; symptoms; intervention; knowledge.

1. INTRODUCTION

Rapid industrialization, urbanization, economic development and market globalization over the past decades have contributed to rapid changes in diet and lifestyles. This is having a significant impact on the health and nutritional status of populations, particularly in developing countries and in countries in epidemiological and nutrition transition phases. Changes in dietary and lifestyle patterns are associated with increased occurrence of chronic Non Communicable diseases (NCDs) such as obesity, diabetes mellitus, cardiovascular disease (CVD), Chronic Obstructive Pulmonary Diseases (COPD), hypertension, stroke and some cancers. These scenarios have placed additional burdens on already overburdened national health budgets, more so in developing countries [1].

In a bid to mitigate the rise in chronic diseases, WHO in 2010 recommended that countries should develop and implement a comprehensive policy and plan for the prevention and control of major NCDs. To reduce modifiable risk factors, countries were advised to establish a high-level national multi-sectoral mechanism to plan, guide, monitor and evaluate the enactment of a national policy with the involvement of non-health sectors; conduct a comprehensive assessment of the characteristics and magnitude of NCDs; including an analysis of their effect on government sectors; review and strengthen, when necessary, evidence-based legislation, together with fiscal and other relevant policies that are effective in reducing modifiable risk factors and their determinants [2].

In 2002, WHO identified risk factors of chronic NCDs as being among the top ten risks to health. These risk factors include physical inactivity, unhealthy diet, raised cholesterol, smoking habits and excessive alcohol intake. It further stated

that elimination of these primary risk factors could lead to eradication of 80% cases of heart disease, stroke, type 2 diabetes, and 40% cases of cancers [3].

In 2006, WHO published simple life course strategies to prevent these chronic diseases; also the American Institute for Cancer Research [4] has recommended three simple cost effective strategies for the prevention of cancers, these are (1) Eat well, (2) move more and (3) stay lean. Regrettably there is no operational policy, strategy or action plan for the control of NCDs in Nigeria [5].

Records show that yearly 1.9 million, 2.7 million, 2.6 million, 7.1 million and 4.4 million deaths occur due to physical inactivity, low fruit and vegetable consumption, being overweight or obese, raised blood pressure and raised total cholesterol levels respectively [6]. The disease burden of NCDs is increasing in both low and middle income countries [7].

Diet is thought to play a significant role in the development of these non communicable diseases [8]. High quality diet has been shown to lead to 18%–26% lower risk of overall death and prevention of diet-related chronic diseases—CVD and cancer in postmenopausal women [9]. Studies have shown that high salt intake is positively associated with occurrence of arterial hypertension [10], while a reduction in salt intake is said to improve the general health of the public [11,12], and a reduction in the quantity of salt in processed food is reported to prevent about 70,000 annual deaths Britain by lowering blood pressure [12]. Also, dietary changes that involved a reduction in the saturated fat content of common cooking oil led to a decrease in serum cholesterol concentration over five years in the population in Mauritius [13]. However, another study reported that diets high in fat do not appear

to be the primary cause of the high prevalence of excess body fat [14]. Conversely, meals rich in protein are reported to be associated with reduced prevalence of hypertension, neck and lumbar disease [15].

There has been an increase in the number of fast food restaurants in Nigeria, where meals with high salt and sugar content, often also containing saturated fat are served. This has contributed to Nigerians, especially those in the urban areas, becoming more overweight and obese [2].

Physical activity and physical fitness (which relates to the ability to perform physical activity) are important modifiers of mortality and morbidity related to overweight and obesity. There is firm evidence that moderate to high fitness levels provide a substantially reduced risk of cardiovascular disease and all-cause mortality and that these benefits apply to all BMI levels. Furthermore, high fitness protects against mortality at all BMI levels in men with diabetes [1].

Over indulgence in alcohol consumption in addition to a balanced diet can result in obesity [16]. There is also an increased risk of morbidity and mortality including but not limited to liver disease, hypertension, arrhythmias and cancer [17,18].

Tobacco smoking has been well established by a recent survey monitoring a 50-year trend in smoking related mortality to cause cancer, respiratory diseases, heart disease and heart attacks [19]. Smokeless tobacco is also hazardous to health and can lead to nicotine addiction, oral cancer and tooth decay [20,21].

Hypertension is a common health problem in developing countries and a major risk factor for CVD and renal disease [1]. Its prevalence is probably on the increase in developing countries, where adoption of so-called western lifestyles and rapid urbanization are expected to increase morbidity and mortality. Genetic and environmental factors are reported to play a key role in the incidence of hypertension [22].

In Nigeria, NCDs account for 24% of total deaths [5]. However, provision of information is not enough; this is because peoples' health-related practices are associated with the general practices, beliefs and norms of the community/institution they find themselves in, in relation to both diet and health seeking behavior. In Akwa Ibom State, studies have reported the

prevalence of obesity and hypertension as 17.2% and 47% respectively [23,24]. The purpose of this study therefore was to determine the knowledge of some lifestyle diseases by residents of Uyo Metropolis, and their practices to prevent such diseases. Specifically, we sought to find out the knowledge of the causes, symptoms and practices to prevent against some lifestyle diseases such as diabetes, hypertension, stroke, obesity and COPD; by residents in Uyo Metropolis.

2. METHODOLOGY

The study was carried out in Uyo, Akwa Ibom state. Uyo is the capital of Akwa Ibom state in the South-South region of Nigeria. Uyo is situated at 5.02° North latitude, 7.55° East longitude and 196 meters above sea level. According to the 2006 National Population Commission census, It has a population of 305,961 people.

2.1 Sample Size Determination

The minimum sample size (n) was determined using the formula for prevalence studies [25]:

$$n = zpq/d^2$$

Where

z=95%; confidence interval= 1.96
p=probability of event occurring, (taken as 82%, as reported prevalence knowledge of diabetes [26] p=0.82

$$q = 1 - p = 1 - 0.82 = 0.18$$

d=0.05 which is acceptable margin of error.

Therefore n=227

This was increased to 330 to take care of attrition and invalid data.

2.1.1 Sample selection

2.1.1.1 Multi staged sample selection

Stage one; Selection of respondents from formal and informal sectors

(a) From a listing of all private schools in Uyo, one (Cornelia Connelly secondary school) was randomly picked, from a listing of all public schools in Uyo, two (Government Technical College and Uyo High School) were randomly picked. From a listing of

Federal government establishments in the state the federal secretariat complex was randomly picked.

(b) The Two main markets (Itam and Akpan-Andem markets), the two largest motor parks (Itam and AKTC parks) and the largest mechanic village were purposefully selected in order to select from the informal sector.

Stage two; from a list of all the adults in the selected locations, 33 respondents were randomly selected from each location to make up the total sample size of 330. The selected respondents were traced to their offices/ shops where the interview was conducted. The researchers trained four field assistants in both vernacular (Ibibio language) and Pidgin English to ensure that the uneducated respondents understand the questions being asked and to standardize an understanding of the vernacular names and descriptions of signs and symptoms and names of the diseases. They also practiced the questions among themselves to ensure that they understood the questions to be asked. Only adults above 18 years were included in the study and this includes: Teachers in Government Technical College, Cornelia Connelly College and Uyo High School; Traders in Itam and Akpan-Andem markets (they were assisted in filling the questionnaires); Artisans in mechanic village, Itam and AKTC parks and Civil servants in Ministry of Works and Ministry of Internal Revenue. Structured questionnaires were administered to a total of 330 respondents; of which 328 were collected.

2.1.2 Informed consent

The purpose of the research was explained to each respondent by the researchers, they were informed that the research was purely for academic purposes, their responses would be treated with the strictest confidentiality, and at no time or place would their responses be related to their persons. The survey would not involve collection of body fluid or test would be involved. They were free to refuse participation. All those selected accepted to participate and were then asked to sign a consent form.

2.2 Research Instruments: Questionnaire

2.2.1 Section A: Socio-demographic characteristics

Data collected includes socio-demographic characteristics of the respondents such as gender, marital status, age, highest educational

level attained, occupational status and household income.

2.2.2 Section B: Knowledge about causes, symptoms and prevention of lifestyle diseases

Respondents were asked 18 questions each on their knowledge of the causes, signs/symptoms and prevention of lifestyle related chronic disease diseases such as diabetes, hypertension, obesity, Chronic Obstructive Pulmonary Disease and cancer. Knowledge of symptoms included questions such as: (a) frequent urination is a symptom of diabetes; (b) COPD can cause shortness of breath. Knowledge of causes included questions such as: (a) frequent consumption of salty foods increases the risk for hypertension; (b) COPD can be caused by cold weather. Knowledge of prevention included questions like: (a) regular exercisers are less likely to develop diabetes; (b) maintaining a healthy body weight reduces the risk of developing hypertension. Each respondent thus had a knowledge score. Respondents' knowledge was graded as 0-18 (poor), 19-36 (fair) and 37-54 (good).

2.2.3 Section C: Physical activity profile

Respondents were asked questions such as how many hours they spend on leisure activities, how many hours they sleep at night and how often they engage in exercise using a modification of [23,24]. The intensity of physical activities was categorised by using the following definitions:

2.2.3.1 Vigorous-intensity physical activity

Activities that require hard physical effort and cause large increase in breathing or heart rate, e.g. carrying or lifting heavy loads, digging or construction work, running, strenuous sports and weight lifting.

2.2.3.2 Moderate-intensity physical activity

Activities that require moderate physical effort and cause small increase in breathing or heart rate, e.g. brisk walking, carrying light loads, light bicycling and fast walking.

2.2.3.3 Work site activity

Physical activity at the times the individual spent doing work, such as paid or unpaid work, household chores, harvesting food, fishing, or hunting for food and seeking employment.

2.2.3.4 Transportation activity

Physical activity when travelling to or from places, such as going to work or shopping.

2.2.3.5 Leisure-time activity

Physical activity in leisure time, i.e. recreation, fitness and sports.

2.2.4 Section D: Health seeking behavior

Health seeking behavior of respondents was also documented via questions such as have you been sick in the last 3 weeks? If yes, what did you do? An adaptation of [26,27] Responses included; Visited the hospital, bought drugs at the chemist, visited the pharmacy, took herbs etc.

2.2.5 Section E: Dietary practice

The dietary practice of respondents was measured with the aid of a food frequency table. An adaptation of [28]. Food Intake was categorized into:-

- (i) "Fruits and vegetables"
- (ii) "Unhealthy foods" (such as cake, meat pie, fried food, alcohol, sweetened drinks).
- (iii) Carbohydrate rich foods (such as rice, yam, potato, garri/fufu),
- (iv) Plant protein foods,(such as beans, moi moi, bean cake)

Study participants were asked to state the frequency of consumption of such foods in a descending scale (such as once daily, six times, five times, four times, three times, two times a week).

2.3 Statistical Analysis

The data collected was analyzed using IBM Statistical Package for Social Sciences (SPSS), version 20.0 (IBM SPSS, Armonk, New York). The statistical significant level was set at $p < 0.05$. The categorical variable result was presented as percentages. Inferential statistics was done using Pearson's Chi-square and likelihood ratio.

3. RESULTS AND DISCUSSION

3.1 Socio-demographic Characteristics

A total of 328 respondents consisting of 155 (47.3%) females and 173 (52.7) males were included in the study. Close to half (49.1%) of the

respondents were never married, 47.9% were aged between 18-35, while 53.7% had tertiary education. About a third, 29.9% were businessmen/women. 25.9% of the respondents were located at markets. Most of them (133, 40.5%) were civil servants. Furthermore, 42.7% had a household income of below fifty thousand naira (N50,000) (At the official exchange rate of N315.50 per dollar as at 7th September 2016). However except for the age and location, there were no other significant differences ($P < 0.05$) in the socio-demographic characteristics of males compared to females. This is further shown in Table 1.

3.2 Knowledge about Causes, Symptoms and Prevention of Lifestyle Diseases

Most of the respondents, 62.8%, had a good knowledge of symptoms of lifestyle diseases. However, a much lower proportion, 36%, had a good knowledge of their causes and prevention. Further analysis showed that respondents with tertiary qualifications had good knowledge about both symptoms (38.1%) and causes and prevention (25.3%) when compared to respondents with lower or no formal education (6.7%) and (2.7%) respectively. The difference was significant at $p < 0.05$. Also, respondents located in schools had better knowledge about the symptoms (18.3%) of the diseases than knowledge about its causes and prevention (8.8%) (Table 2).

3.3 Physical Activity

Two thirds of the respondents (67.1%) spend nil to two hours on leisure/sedentary activities during the day and this consisted mainly of males (35.7%); further analysis with gender, highest level of education and location showed no significant difference ($P > 0.05$) in this category (Table 3 and 4). Most of the respondents spend 6-7 hours sleeping at night (39.6%); further analysis with gender and highest level of education showed no significant relationship ($P > 0.05$) (Table 3), however a significant difference is observed when analyzed in terms of location ($P < 0.05$) (Table 4). Also most of the respondents engage in exercise daily (37.8%) which consists of (19.8%) males and (18.0%) females (Table 3). Further analysis showed a significant difference when highest level of education is considered ($P < 0.05$) but not significant by gender and location ($P > 0.05$) (Tables 3 and 4).

Table 1. Socio-demographic characteristics of respondents and their comparisons according to gender'

		Gender		Total n (%)	Chi-square/ p value
		Female n(%)	Male n(%)		
Marital status	Never married	79(24.1)	82(25.0)	161(49.1)	4.295/ P=.23
	Married	65(19.8)	77(23.5)	142(43.3)	
	Divorced	9(2.7)	6(1.8)	15(4.6)	
	Widowed	2(.6)	8(2.4)	10(3.0)	
	Total	155(47.3)	173(52.7)	328(100.0)	
Age	18-35	84(25.6)	73(22.3)	157(47.9)	18.895/ P<.05
	36-59	67(20.4)	71(21.6)	138(42.1)	
	60 and above	4(1.2)	29(8.8)	33(10.1)	
	Total	155(47.3)	173(52.7)	328(100.0)	
Highest educational level attained	Primary	2(.6)	11(3.4)	13(4.0)	6.246/ P=.10
	Secondary	55(16.8)	57(17.4)	112(34.1)	
	Tertiary	87(26.5)	89(27.1)	176(53.7)	
	No formal education	11(3.4)	16(4.9)	27(8.2)	
	Total	155(47.3)	173(52.7)	328(100.0)	
Occupational status	Civil servant	71(21.6)	62(18.9)	133(40.5)	11.816/ P=.06
	Unemployed	5(1.5)	6(1.8)	11(3.4)	
	Artisan	21(6.4)	34(10.4)	55(16.8)	
	Student	14(4.3)	7(2.1)	21(6.4)	
	CEO/Political office holder	6(1.8)	4(1.2)	10(3.0)	
	Businessman/woman	38(11.6)	60(18.3)	98(29.9)	
	Total	155(47.3)	173(52.7)	328(100.0)	
Household income in Naira	below N50,000	67(20.4)	73(22.3)	140(42.7)	6.204/ P=.28
	N50,000-N100,000	56(17.1)	54(16.5)	110(33.5)	
	N101,000-N200,000	18(5.5)	19(5.8)	37(11.3)	
	N201,000-N300,000	2(.6)	11(3.4)	13(4.0)	
	N301,000-N400,000	8(2.4)	10(3.0)	18(5.5)	
	Above N400,000	4(1.2)	6(1.8)	10(3.0)	
Total	155(47.3)	173(52.7)	328(100.0)		

Significant at $p < 0.05$

3.4 Health Seeking Behavior

A total of 159 (48.5%) respondents reported being sick in the last 3 weeks; 13.1% of which are respondents located in schools. Further analysis showed that 12.5% of the respondents located in schools visited the hospital, respondents in motor parks either bought drugs at the chemist (12, 7.5%) or visited the pharmacist (12, 7.5%), 3.1% of those located at mechanic village bought drugs at the chemist, 8.8% of those in federal secretariat visited the hospital while 8.8% of those in market bought drugs at the chemist. A significant difference was recorded ($P<.05$) (Table 5).

3.5 Dietary Practices

Findings of this study show that 144 (43.9%) of the respondents took sugar added drinks, 164 (49.9%) took pastries and 223, 67.9%) take alcohol nil to 3 times in a week. More males (28.7%) than females (22.2%) were eating plant

protein foods 4-6 times a week, although the difference was not significant at $p<0.05$. More females (16.2%) than males (8.5%) reported eating fruits daily and more females (14.3%) than males (9.8%) also reported eating bread and tea daily. The differences were significant at $p < 0.05$ (Tables 6 and 7).

4. DISCUSSION

Non communicable diseases, often referred to as chronic diseases usually begin in middle age after long exposure to an unhealthy lifestyle involving tobacco use, lack of physical activity and consumption of unhealthy diets; thus predisposing to hypertension, diabetes, cancer, obesity among others [28].

Previous research reported a poor level of perception of hypertension and awareness of the lifestyle-modification measures through the mass media, but a high level of willingness to adopt the lifestyle measures [29]. It has further been proven that a significant relationship exists

between knowledge of diet-related chronic diseases and the dietary practices of adolescents; as knowledge of the diseases increased, dietary diversity also improved [30]. The findings of this study lend credence to these reports. Though a good knowledge of causes of NCDs was recorded, further analysis revealed that knowledge of its prevention and symptoms was below par. Notably, respondents with tertiary qualification had a far better knowledge of its causes, symptoms and preventions when compared with respondents with lower academic qualifications.

Proper physical activity has been proven to have many health-promoting properties and has a direct, independent role in reducing cardiovascular disease mortality [28]. The low level of physical activity of the Nigerian civil servants has been attributed to occupational activities and associated with raised blood pressure, insulin levels and weight [31]. This however is in contrast with the findings of the present study; where 58% of respondents at the Federal Civil Service Secretariat reported spending just nil-2 hours daily on leisure/sedentary activities.

Table 2. Distribution of respondents' knowledge about causes, prevention and symptoms of lifestyle diseases according to gender, highest educational level attained and location

		Knowledge about symptoms of lifestyle diseases			Total	Knowledge about causes and prevention of lifestyle diseases			Total
		Poor n(%)	Fair n(%)	Good n(%)		Poor n(%)	Fair n(%)	Good n(%)	
Gender	Female	19 (5.8)	35 (10.7)	101 (30.8)	155 (47.3)	19 (5.8)	87 (26.5)	49 (14.9)	155 (47.3)
	Male	12 (3.7)	56 (17.1)	105 (32.0)	173 (52.7)	17 (5.2)	87 (26.5)	69 (21.0)	173 (52.7)
	Total	31 (9.5)	91 (27.7)	206 (62.8)	328 (100.0)	36 (11.0)	174 (53.0)	118 (36.0)	328 (100.0)
Chi-squ/P value		5.533/ <i>P</i> =.06				2.521/ <i>P</i> =.28			
H.edu	Primary	1 (.3)	7 (2.1)	5 (1.5)	13 (4.0)	4 (1.2)	6 (1.8)	3 (.9)	13 (4.0)
	Secondary	11 (3.4)	42 (12.8)	59 (18.0)	112 (34.1)	14 (4.3)	72 (22.0)	26 (7.9)	112 (34.1)
	Tertiary	19 (5.8)	32 (9.8)	125 (38.1)	176 (53.7)	7 (2.1)	86 (26.2)	83 (25.3)	176 (53.7)
	No formal education	0 (.0)	10 (3.0)	17 (5.2)	27 (8.2)	11 (3.4)	10 (3.0)	6 (1.8)	27 (8.2)
	Total	31 (9.5)	91 (27.7)	206 (62.8)	328 (100.0)	36 (11.0)	174 (53.0)	118 (36.0)	328 (100.0)
L.R /P value		23.990/ <i>P</i> =.001				44.915/ <i>P</i> <.05			
L.	School	11 (3.4)	12 (3.7)	60 (18.3)	83 (25.3)	5 (1.5)	49 (14.9)	29 (8.8)	83 (25.3)
	Motor parks	2 (.6)	23 (7.0)	49 (14.9)	74 (22.6)	8 (2.4)	52 (15.9)	14 (4.3)	74 (22.6)
	Mechanic village	2 (.6)	14 (4.3)	20 (6.1)	36 (11.0)	8 (2.4)	15 (4.6)	13 (4.0)	36 (11.0)
	Fed. secretariat	13 (4.0)	14 (4.3)	23 (7.0)	50 (15.2)	1 (.3)	27 (8.2)	22 (6.7)	50 (15.2)
	Market	3 (.9)	28 (8.5)	54 (16.5)	85 (25.9)	14 (4.3)	31 (9.5)	40 (12.2)	85 (25.9)
	Total	31 (9.5)	91 (27.7)	206 (62.8)	328 (100.0)	36 (11.0)	174 (53.0)	118 (36.0)	328 (100.0)
	L. R /P value		33.685/ <i>P</i> <.05				33.959/ <i>P</i> <.05		

h.edu- highest level of education attained, l- location, fed.- federal, L.R- likelihood ration, squ- square significant at p,< 0.05

Table 3. Distribution of respondents' physical activity according to gender and highest level of education attained

		Gender		Total n(%)	Highest level of education attained				Total n(%)
		Female n(%)	Male n(%)		Pri n(%)	Sec n(%)	Ter n(%)	No F.E n(%)	
Hours spent	0-2	103	117	220	10	73	117	20	220
On leisure/ sedentary	3-6	(31.4)	(35.7)	(67.1)	(3.0)	(22.3)	(35.7)	(6.1)	(67.1)
activities	7-10	39	45	84	3	24	51	6	84
during the day		(11.9)	(13.7)	(25.6)	(.9)	(7.3)	(15.5)	(1.8)	(25.6)
	Total	13	11	24	0	15	8	1	24
		(4.0)	(3.4)	(7.3)	(.0)	(4.6)	(2.4)	(.3)	(7.3)
		155	173	328	13	112	176	27	328
		(47.3)	(52.7)	(100.0)	(4.0)	(34.1)	(53.7)	(8.2)	(100.0)
Likelihood ratio /P value		0.0.499/ P=.77			11.314/ P=.07				
Hours spent	4-5	37	34	71	5	28	33	5	71
sleeping		(11.3)	(10.4)	(21.6)	(1.5)	(8.5)	(10.1)	(1.5)	(21.6)
at night	6-7	53	77	130	3	39	80	8	130
		(16.2)	(23.5)	(39.6)	(.9)	(11.9)	(24.4)	(2.4)	(39.6)
	8 or more	65	62	127	5	45	63	14	127
		(19.8)	(18.9)	(38.7)	(1.5)	(13.7)	(19.2)	(4.3)	(38.7)
	Total	155	173	328	13	112	176	27	328
		(47.3)	(52.7)	(100.0)	(4.0)	(34.1)	(53.7)	(8.2)	(100.0)
Likelihood ratio /P value		3.666/ P=.16			8.245/ P=.22				
How often	Daily	59	65	124	7	52	53	12	124
do you		(18.0)	(19.8)	(37.8)	(2.1)	(15.9)	(16.2)	(3.7)	(37.8)
engage in	3 or more	51	59	110	5	30	69	6	110
exercise	times weekly	(15.5)	(18.0)	(33.5)	(1.5)	(9.1)	(21.0)	(1.8)	(33.5)
(moderate/ strenuous)	Rarely	45	49	94	1	30	54	9	94
		(13.7)	(14.9)	(28.7)	(.3)	(9.1)	(16.5)	(2.7)	(28.7)
	Total	155	173	328	13	112	176	27	328
		(47.3)	(52.7)	(100.0)	(4.0)	(34.1)	(53.7)	(8.2)	(100.0)
Linear by linear / P		.001/ P=.98			4.303/ P=.03				

Pri- primary, sec- secondary, ter- tertiary, no.f.e- no formal education
Significant at p < 0.05

Previous research has documented a poor health seeking behavior of Nigerians; noting that the commonest form of diagnosis by the respondents was self diagnosis; adding that the initial choice of care for most respondents was a visit to a patent medicine dealer popularly known as 'chemist' [31] mainly due to lack of funds for hospital bills [32,33]. Findings of the present study support these reports; most respondents at motor parks, mechanic village and markets reported buying drugs at the chemist when sick while those in federal secretariat visited the hospital. This may be because the Federal Civil Servants are enrolled in National Health Insurance Scheme, thus they have some health insurance coverage.

In addition, there is a Staff Clinic at the Federal Civil Service Secretariat where sick staff can attend to obtain healthcare.

It has been well documented that unhealthy dietary practice is a risk factor for chronic diseases [1]. WHO STEPS framework recommends consumption of plant based protein and daily consumption of fruits as a healthy dietary practice [22,34]. Previous researches have posited high intake of fried foods, sweetened drinks, alcohol, refined foods, etc [35,36]; both in children and young adults in Nigeria [36,37] this is in contrast with the documented findings of this research; most of the respondents reported taking

sweetened drinks and fried foods only with caution. Being self reported, the result depends on the accuracy of the responses. These findings should however be interpreted with caution. Being self reported, the result depends on the accuracy of the responses.

Table 4. Further distribution of respondents' physical activity according to location

		Location					Total	L.R/ P value
		School n (%)	Motor parks n (%)	Mechanic village n (%)	Federal secretariat n (%)	Market n (%)		
Hours spent on leisure/ sedentary activities during the day	0-2	55 (16.8)	48 (14.6)	23 (7.0)	29 (8.8)	65 (19.8)	220 (67.1)	8.087 P=.42
	3-6	23 (7.0)	20 (6.1)	9 (2.7)	18 (5.5)	14 (4.3)	84 (25.6)	
	7-10	5 (1.5)	6 (1.8)	4 (1.2)	3 (.9)	6 (1.8)	24 (7.3)	
	Total	83 (25.3)	74 (22.6)	36 (11.0)	50 (15.2)	85 (25.9)	328 (100.0)	
Hours spent sleeping at night	4-5	22 (6.7)	19 (5.8)	7 (2.1)	6 (1.8)	17 (5.2)	71 (21.6)	16.054 P=.04
	6-7	36 (11.0)	30 (9.1)	17 (5.2)	24 (7.3)	23 (7.0)	130 (39.6)	
	8 or more	25 (7.6)	25 (7.6)	12 (3.7)	20 (6.1)	45 (13.7)	127 (38.7)	
	Total	83 (25.3)	74 (22.6)	36 (11.0)	50 (15.2)	85 (25.9)	328 (100.0)	
How often do you engage in exercise (moderate/ strenuous)	Daily	28 (8.5)	37 (11.3)	12 (3.7)	21 (6.4)	26 (7.9)	124 (37.8)	12.666 P=.12
	3 or more times weekly	34 (10.4)	23 (7.0)	10 (3.0)	15 (4.6)	28 (8.5)	110 (33.5)	
	Rarely	21 (6.4)	14 (4.3)	14 (4.3)	14 (4.3)	31 (9.5)	94 (28.7)	
	Total	83 (25.3)	74 (22.6)	36 (11.0)	50 (15.2)	85 (25.9)	328 (100.0)	

L.R - likelihood ratio significant at $p < 0.05$

Table 5. Distribution of health seeking behavior of respondents according to location

		Location					Total	L.R/ P value
		School n (%)	Motor parks n (%)	Mechanic village n (%)	Federal secretariat n (%)	Market n (%)		
Have you been sick in the last 3 weeks	Yes	43 (13.1)	40 (12.2)	14 (4.3)	32 (9.8)	30 (9.1)	159 (48.5)	13.519 P<.05
	No	40 (12.2)	34 (10.4)	22 (6.7)	18 (5.5)	55 (16.8)	169 (51.5)	
	Total	83 (25.3)	74 (22.6)	36 (11.0)	50 (15.2)	85 (25.9)	328 (100.0)	
If yes what did you do	Visited the hospital	20 (12.5)	11 (6.9)	2 (1.3)	14 (8.8)	4 (2.5)	51 (31.9)	28.337 P<.05
	Bought drugs at the chemist	10 (6.3)	12 (7.5)	5 (3.1)	6 (3.8)	14 (8.8)	47 (29.4)	
	Visited the pharmacist	8 (5.0)	12 (7.5)	4 (2.5)	9 (5.6)	11 (6.9)	44 (27.5)	
	Took herbs	2 (1.3)	4 (2.5)	3 (1.9)	1 (.6)	1 (.6)	11 (6.9)	
	Prayer & fasting	4 (2.5)	1 (.6)	0 (.0)	2 (1.3)	0 (.0)	7 (4.4)	
	Total	44 (27.5)	40 (25.0)	14 (8.8)	32 (20.0)	30 (18.8)	160 (100.0)	

Table 6. Distribution of weekly intake of unhealthy foods by respondents according to gender

Type of food		Gender		Total	Chi-square/ P value
		Female n (%)	Male n (%)		
Sugar added drinks	Daily	36 (11.0)	30 (9)	66 (20)	10.142/ P=.11
	4 – 6 times	48 (14.7)	70 (21.4)	118 (36.1)	
	Never to 3 times	71 (21.6)	73(22.3)	144 (43.9)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	
Unhealthy foods (meat pie, Cake, egg roll, buns) pastries	Daily	13(4.0)	17(5.2)	30(9.2)	4.456 P=.61
	4-6 times	58(17.7)	76 (23.2)	134(40.9)	
	Never- 3 times	84 (25.6)	80 (24.3)	164 (49.9)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	
Animal proteins (chicken, Goat meat, beef), Egg, milk & Milk products	Daily	62 (18.9)	57 (17.4)	119 (36.3)	6.421 P=.37
	4-6 times	62 (18.9)	88 (26.9)	150 (45.8)	
	Never-3 times	31 (9.5)	28 (8.5)	59 (18)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	
Alcohol	Daily	7 (2.1)	6 (1.8)	13 (4.0)	11.599/ P=.11
	4-6 times	33 (10.1)	58 (17.7)	91 (27.8)	
	Never-3 times	114 (34.7)	109 (33.2)	223 (67.9)	
	Total	154 (47.09)	173 (52.7)	327 (100.0)	

Table 7. Distribution of weekly intake of other staple foods by respondents according to gender

		Gender		Total	Chi-square/ P value
		Female n(%)	Male n(%)		
Garri/fufu/pounded yam with soup and meat/fish	Daily	52 (15.9)	64 (19.5)	116 (35.4)	5.822 P=.44
	4-6 times	69 (21)	82 (25)	151 (46)	
	Never-3 times	34 (10.4)	27 (8.2)	61 (18.6)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	
Beans/ Moi Moi/ bean cake (plant protein foods)	Daily	33 (10.1)	23 (7.0)	56 (17.1)	12.314 P=.05
	4-6 times	73 (22.2)	94 (28.7)	167 (50.9)	
	Never-3 times	49 (14.9)	56 (17)	105 (31.9)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	
Fruits	Daily	53 (16.2)	28 (8.5)	81 (24.7)	21.908 P=.001
	4-6 times	75 (22.9)	91 (27.8)	166 (50.7)	
	Never- 3 times	27 (8.3)	54 (16.4)	81 (24.7)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	
Rice/yam/potato With stew/meat/fish (carbohydrate rich Foods)	Daily	38 (11.6)	30 (9.1)	68 (20.7)	5.455/ P=.48
	4-6 times	74 (22.5)	91 (27.8)	165 (50.3)	
	Never-3 times	43 (13.1)	52 (15.8)	95 (28.9)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	
Bread and tea	Daily	47 (14.3)	32 (9.8)	79 (24.1)	16.608/ P=.01
	4-6 times	68 (20.7)	76 (23.1)	144 (43.8)	
	Never-3 times	40 (12.2)	65 (19.8)	105 (32)	
	Total	155 (47.3)	173 (52.7)	328 (100.0)	

5. CONCLUSION

The importance of maintaining a healthy lifestyle cannot be over emphasized. A person's food intake, action or inaction and physical activity profile goes a long way to predisposing him/her to non-communicable diseases such as diabetes, obesity, hypertension among others. Therefore, it is very important that knowledge about these diseases, their causes, prevention and symptoms be made available to the masses to

encourage healthy diets and physical activity with focus on the uneducated people in the informal sector (artisans and traders) as results of this research have shown that respondents with tertiary qualifications and located at federal secretariat or schools have a better knowledge than their less educated counterparts. Furthermore, low cost health services should be made available by the government for low income earners to discourage self diagnosis and buying of drugs from the chemist as

reported by most respondents in the informal sector.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. WHO/FAO. Diet, nutrition and the prevention of chronic disease: Report of a joint WHO/FAO expert consultation. WHO technical report series; 2003. ISBN 92 4 120916x. 916
2. Maiyaki MB, Garbati MA. The burden of non-communicable diseases in Nigeria; in the context of globalization. *Ann Afr Med.* 2014;13:1-10.
3. Healthy Nation. Ministry of health, environment, youth, sports and culture; caymans islands government. WHO STEPS chronic disease risk factor survey 2012; 2012.
4. American institute for cancer research; 2016. Available:preventcancer.aicr.org/new/flipbooks/AICR-2016-SPRING-publications-catalog-Spreads/files/mobile/index/html#1 (Accessed 23rd May 2016)
5. Egwari LO. Health education in the control and prevention of communicable and non-communicable diseases in Nigeria; 2015. Available:https://nimr.gov.ng/nimr/wp-content/uploads/2015/11/3.-Egwari_Communicable-and-Non-Communicable-Diseases-in-Nigeria.pdf (Accessed 19th May, 2016)
6. Swende TZ, Sokpo J, Tamen FI. Globalization and health: A critical appraisal. *Niger J Med.* 2008;17:135-8.
7. Lorga T, Aung MN, Naunboonruang P, Junlapeeya P, Payaprom A. Knowledge of communicable and noncommunicable diseases among Karen ethnic high school students in rural Thasongyang, the far northwest of Thailand. *Int J Gen Med.* 2013;6:519–26.
8. American Institute for Cancer Research. Food, nutrition and the prevention of cancer: A global perspective. World Cancer Research Fund and American Institute for Cancer Research. Washington, DC; 1997.
9. George SM, Ballard-Barbash R, Manson JE, Reedy J, Shikany JM, Subar AF, et al. Comparing indices of diet quality with chronic disease mortality risk in postmenopausal women in the women's health initiative observational study: Evidence to inform national dietary guidance. *Am J Epi Adv;* 2014. DOI: 10.1093/aje/kwu173
10. Elliott P, Stamler J, Nichols R. Intersalt revisited: Further analyses of 24 hour sodium excretion and blood pressure within and across populations. intersalt cooperative research group. *BMJ.* 1996; 312:1249–53.
11. Law MR, Frost CD, Wald NJ. Analysis of data from trials of salt reduction. *BMJ.* 1991;302:819-24.
12. Selmer RM, Kristiansen IS, Haglerød A, Graff-Iversen S, Larsen HK, Meyer HE, et al. Cost and health consequences of reducing the population intake of salt. *J Epidemiol Community Health.* 2000; 54:697–702.
13. Uusitalo U, Edith J, Feskens M, Tuomilehto J, Dowse G, Haw U, et al. Fall in total cholesterol concentration over five years in association with changes in fatty acid composition of cooking oil in mauritius: Cross sectional survey. *BMJ.* 1996;313:1044- 46.
14. Wang H, Deng F, Qu M, Yang P, Biao Y. Association between dietary patterns and chronic diseases among Chinese adults in Baoji. *Int J Chron Dis.* 2014;2014:Article ID 548269:7.
15. Willett WC, Leibel RL. Dietary fat is not a major determinant of body fat. *Am J Med.* 2002;113(9B):47S-59S.
16. Ray O, Ksir C (eds). *Drugs, Society and human behavior.* 6th ed. Mosby-year book inc. St Louis Missouri; 1993.
17. Hardman JG, Limbird LE (eds). *Goodman and Gilman's. The pharmacological basis of therapeutics.* 10th ed. New York, Mc Graw Hill; 2001.
18. Pelucchi C, Gallus S, Werner G, Bosetti G, La Vecchia C. Cancer risk associated with alcohol and tobacco use: Focus on upper aero-digestive tract and liver.
19. Thun MJ, et al. 50-year trends in smoking Related mortality in the US. *New England J of Med.* 2013;368:4.
20. Boffetta P, et al. Smokeless tobacco and cancer. *The Lancet.* 2008;9:667-75.

21. Tomar SL. Chewing tobacco use and dental caries among US men. J Am Dental Assoc. 1999;130:160.
22. WHO. STEPS: A Framework for surveillance the WHO. Surveillance of non communicable diseases. 2003; WHO/NMH/CIS 03001.
23. Ekanem US, Opara DC, Akwaowo CD. High blood pressure in a semi urban community in South-South Nigeria: A community based study. Afri Sci J. 2011; 13(1):56- 61.
24. Opara DC, Ekanem US, Akwaowo CD. Prevalence and risk factors for obesity and some diet related chronic diseases in a military settlement. Ibagwa, Nigeria. Nig J Nutr Sci. 2014;2:43-51.
25. Cochran, Snedecor. Statistical methods. IOWA State University; 1972.
26. Uzochukwu BSC, Onwujekwe OE. Socio-economic differences and health seeking behaviour for the diagnosis and treatment of malaria: A case study of four local government areas operating the Bamako initiative programme in south-east Nigeria. International Journal for Equity in Health. 2004;3:6.
27. Abdulraheem IS. Health needs assessment and determinants of health-seeking behaviour among elderly Nigerians: A house-hold survey. An Afr Med. 2007;6(2):58-63.
28. Anyika J, Uwaegbute AC. Frequency of consumption and nutritient content of some snacks eaten by adolescent female secondary and university students in Abia State, Nigeria. Nig j nutri sci. 2005;2(2). ISSN 0189-0913.
29. Alebiosu CO, Omisore AG, Abe OS, Kolawole, BA, Familoni OB, Adeleye JO, et al. Awareness and knowledge about diabetes mellitus and hypertension amongst adolescents in secondary schools, Oyo state, Nigeria- an interventional study by Sidcain research group. Re J H Sci. 2014;2(2):2360-7793.
30. Krisela S, Albertino D. Lifestyle and related risk factors for chronic diseases; 1972. Available:https://books.google.com.ng/books?hl=en&lr=&id=2u8m7pPQ_WwC&oi=fnd&pg=PA247&dq=knowledge+of+lifestyle+disease:+studies+in+Nigeria&ots=pIQHv561_&sig=53rOdJ0FitxvE5Q72CI7WgtldM&redir_esc=y#v=onepage&q=knowledge%20of%20lifestyle%20disease%3A%20studies%20in%20Nigeria&f=false (Accessed 25 July 2016)
31. Ike SO, Aniebue PN, Aniebue UU. Knowledge, perceptions and practices of lifestyle-modification measures among adult hypertensives in Nigeria. Trans R Soc Trop Med Hyg. 2010;104(1):55-60.
32. Nti CA, Brown A, Danquah A. Adolescents' knowledge of diet-related chronic diseases and dietary practices in Ghana. Food Nutr Sci. 2012;3:1527-1532.
33. Forrest KY, Bunker CH, Kriska AM, Ukoli FA, Huston SL, Markovic N. Physical activity and cardiovascular risk factors in a developing population. Medicine and Science in Sports and Exercise. 2001;33(9):1598-1604.
34. Thiam I, Samba K, Iwanga D. Diet related chronic diseases in the west African Region in UNSCN Diet related chronic diseases and the double burden of malnutrition in west Africa. 2006;33.
35. WHO Europe. Gaining health: The European strategy for the prevention and control of non-communicable diseases Copenhagen, Denmark. 2006;46. ISBN 92 890 21799.
36. Bruinsma J. World Agriculture; towards 2015/2030, an FAO Perspective, FAO, Rome and Earthscan London. Earthscan (OCLC). 2003;52083277. ISBN 9251048355
37. Opara DC, Ikpeme EE, Ekanem US. Prevalence of stunting, underweight and obesity in school aged children in Uyo, Nigeria. Pak J Nutr. 2010;9(5):459-66.

© 2016 Opara and Ekanem; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://sciencedomain.org/review-history/16503>