Knowledge and Risk Factors Prevalence of Non Communicable Diseases (NCDs) in Nigeria: a case study of Adult population in Delta State

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ABSTRACT

Non Communicable Diseases (NCDs) are the major causes of mortality and morbidity globally. Knowledge about NCDs and their risk factors are not only considered critical in NCDs prevention and management, but hold the potential to reduce the burden. This cross-sectional descriptive study was aimed at determining NCDs knowledge level and risk factors prevalence among adult population in Delta State. A semi-structured, interviewer-administered questionnaire was used to collect quantitative data from the participants and was then subjected to data analysis using of SPSS version 20. Findings shows low knowledge of NCDs and its risk factors with only 16.66% having good knowledge of NCDs and 12.17% good knowledge level of its risk factors. Prevalence profile of the risk factors among the participants revealed varied responses, with four risks factors showing high prevalence value of above 20%: sedentarism (23.96%); high fast foods consumption (39.79%); inadequate fruit and vegetable (37.70%); excess soft drinks consumption (62.71%). Hypertension was the most self –reported NCDs among the studied population (43.75%); followed by arthritis and low back pain (23.13%); Bronchial asthma (20.42%) and diabetes (8.54%). These findings revealed clustering of NCDs risk factors among the studied population, thus an expected increase in NCDs burden consequently. Since most of these risk factors can be reduced by behavioral modifications, population - wide education on NCDs and its risks factors as well as the strengthening of existing Primary health care centers for early detection of NCDs is herewith suggested.

1. INTRODUCTION

The world population is increasingly facing an unprecedented burden of non – communicable diseases [1]. Emerging data on global non – communicable diseases (NCDs) fatality revealed a devastating outcome with a huge toll on health, economy, and human potential; chiefly from cardiovascular diseases, diabetes, cancer and chronic respiratory diseases [2]. According to WHO's *Global Status Report on NCDs 2014* for the year 2012, about 68% (38 million deaths) of the 57 million deaths reported globally was caused by NCDs [3]. Disquietingly, 28 million of the reported deaths occur in low – and middle – income countries, like Nigeria [4].

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Nigeria is presently experiencing an epidemiological transition from Communicable to non-Communicable Diseases, as the country is faced with population aging and a decline in the number of deaths from infectious diseases [5]. Although communicable diseases such as poliomyelitis, malaria, diarrhea, pneumonia, tuberculosis, HIV/AID remains the major cause of mortality, NCDs is gradually contributing to mortality across all ages and sexes [6]. About 24 % of the estimated 2.1 million deaths in Nigeria are caused by NCDs. mainly from cardiovascular diseases (7%), cancer (3%) diabetes (2%), and chronic respiratory diseases (1%) [4]. Risk factors predict the future of NCDs and underlie most non-communicable diseases [7]. The population is abashed with demographic aging, rapid unplanned urbanization, and globalization of unhealthy lifestyles which are NCDs driving forces [8]. Four risk factors for most NCDs namely - tobacco use, physical inactivity, unhealthy dietary behavior, and the harmful use of alcohol are increasing as diets shift to foods high in fats and sugars, while work and living situations become more sedentary.

Besides, tempting marketing of alcoholic beverages and tobacco products have also increased risk factors exposure, cumulating in an increased future diseases burden.

Previous hospital and population or community-based studies in Nigeria have imperceptibly entrenched the alarming prevalence of NCDs and its risk factors [8-15]. Studies in Nigeria on Knowledge and risk factors of NCDs have focused on specific NCDs like hypertension, obesity, diabetes etc knowledge and risk factors [16-21]. Only a few studies on the knowledge and prevalence of the behavioral risk factors contributing to NCDs among the general population have been undertaken.

Accordingly, this study aims to evaluate the knowledge of NCDs, and its risk factors as well as the prevalence of certain risk factors (tobacco use, physical inactivity, unhealthy dietary behavior, and the harmful use of alcohol) and it's clustering among adults population in Delta state, Nigeria.

2. MATERIALS AND METHODS

2.1 Study location

Delta State is an oil and agricultural producing state, located in the region known as the South-South geo-political zone with a population of 4,098,291 (males: 2,674,306; females: 2,024,085). The state lies approximately between Longitude 5°00 and 6°.45' East and Latitude 5°00 and 6°.30' North and land area of about 16,842km2.

2.2 Sampling and data collection

A descriptive cross-sectional study was utilized. The study was accomplished over a period of 8 months (June 2016 to January 2017). Administered questionnaires were 540, distributed equally between male and female participants (270 each) however, 480 questionnaires were used for data analysis due to observed incomplete information observed in 60 questionnaires.

Data on socio – demographic characteristics, knowledge of NCDs and its risk factors for the four major NCDs and its self-reported prevalence among the participants was collected after verbal informed consent was obtained and confidentiality assured using a pre-tested, interviewer-administered questionnaire that was modified from the WHO stepwise instrument for chronic disease risk factor surveillance [22]. Those who smoked or used smokeless tobacco daily in the past 30 days were considered as 'current' user. Data on moderate and vigorous physical activities (during work, leisure time and commutation) were transformed into minutes per week, then converted to metabolic equivalent task (MET)-minutes per week (one minute in moderate and transport related activities equal to 4 MET-minutes and one minute in vigorous activities equal to 8 MET-minutes). Minimum of 5 servings of fruit and/or vegetables per day is recommended

2.3 Statistical analysis of data

Questionnaires were sorted out, coded and data entered into excel spreadsheet and analyzed using SPSS software version [18]. Descriptive statistics were run to summarize the collected

data and results were present in frequencies and simple percentages. Mean and standard deviation were also calculated for variables and Chi-square test was applied to judge the association of study variables. The $p<0.05$ was considered to be statistically significant.

3. RESULTS

Table 1: shows the socio – demographic characteristics of the participants. Data from studied population (n = 480), shows male and female participants representing 56.25% (270), and 43.75% (210) of the population respectively. The participants mean age is 42.25 ± 13.85 years, while the mean age for male and female participants was 41.42 ± 13.72 and 43.31 ± 13.97 respectively. Over one – third (70.83%) of the participants are below 50 years of age (20 – 49). A little over half of the participants (52.3%) had only secondary school education, while participants with tertiary education were 24.58%. Occupational profile of the participants shows trading/business, artisanship and farming/others/none accounted for 85.21% of the studied population, while civil servants represented only 14.79%.

Table 1: Socio – demographic characteristics of the participants.

Variables	Freq(%) n = 480	Males (%) n = 270	Females (%) n = 210
Age (years)			
20 – 29	91 (18.96%)	57 (21.10%)	34 (16.2%)
30 – 39	148 (30.33%)	91 (33.70%)	57 (27.1%)
40 – 49	101 (21.04%)	36 (13.3%)	65 (31%)
50 – 59	81 (16.87%)	60 (22.0%)	21 (10%)
60 – 69	36 (7.5%)	16 (6%)	20 (9.5%)
70 – 79	23 (4.79%)	10 (4%)	13 (6.2%)
Mean ± SE	42.25(13.85)	41.42(13.72)	43.31 (13.97)
Educational Profile			
None/Primary	111 (23.12%)	62 (22.3%)	49 (23.33%)
Secondary	251 (52.30%)	147 (54.40%)	104 (49.50%)
Tertiary	118 (24.58%)	61 (22.6%)	57 (27.14%)
Occupational Profile			
Trading/ Business	179 (37.29%)	101 (37.40%)	78 (37.14%)
Artisans	121 (25.21%)	64 (23.70%)	57 (27.14%)
Civil servants	109 (22.71%)	68 (25.20%)	41 (19.52%)
others/ Farming	71 (14.79%)	37 (13.70%)	34 (16.2%)

Table 2: Knowledge of NCDs and common risk factors among studied adult population.

Knowledge of NCDs Types	Freq (%) n = 480	Male (%) n= 270	Female (%) n = 210	P – value
None	108 (22.5%)	65 (24.1%)	43(20.48%)	
Low < 3	186 (38.70%)	88 (32.6%)	98 (46.67%)	
Fair < 5	106 (22. 10%)	63 (23.3%)	43 (20.47%)	0.01
Good > 5	80 (16.70%)	54 (20%)	26 (12.38%)	
Knowledge of risk factors				
None	157(32.71%)	75 (27.78%)	82 (39.04%)	
Low < 2	193 (40.20%)	116 (42.96%)	80 (38.10%)	
Fair < 4	79 (16.46%)	48 (17.78%)	31 (14.76%)	0.06
Good > 5	51 (10.63%)	31 (11.48%)	17 (8.10%)	

Table 2 shows knowledge of NCDs and its risk factors among the studied population. Findings displayed a disturbing gradient. **No,** and **low**- knowledge of NCDs and its risk factors

were 61.2% and 72.91% respectively, representing above half of the studied adult population, while **good** knowledge of NCDs were 16.70% and 10.63%. NCDs knowledge profile was statistically significant (p = 0.01), while its risk factors knowledge was not significant statistically (p = 0.06) between male and female studied population

Table 3 shows the self-prevalence profile of NCDs behavioral risk factors as self-acknowledged by studied adult population. Finding shows that 41 (8.50%) acknowledged current smoking status; 78(16.25%) admitted the use of tobacco before while over half (68%) of the participants never smoked (statistically significant difference observed between the male and female participants, p = 0.00). Excessive alcohol intake was observed in 8.6% of the adult population, while 88.83% avowed to modest/occasional alcohol consumption (statistically significant difference observed between male and female participants, p = 0.00). Physical activity profile revealed self- reported low physical activity of 115 (23.96%), while 40.42% self-reported high physical activity (statistically significant difference was observed in physical activity profile between male and female participants, p = 0.00). Unhealthy dietary behavior revealed the following self-admitted gradients: fast food consumption 191 (39.79%),

insufficient fruits and vegetables intake 301 (62.71%), soft drinks 259 (53.96 %) and salt intake 115 (23.96%) (Statistically significant difference was observed between the male and female participants, p = 0.00).

Table 4 shows risk factors clustering distribution among the studied adult population. Findings revealed a clustering of modifiable risk factors for NCDs in apparently healthy studied adult population. About 15.63% of the studied adult population was free from any self-reported risk factors investigated, 32.71% of the respondents have one risk factors, 43.12% at least two risk factors while 8.54% self-reported above two risk factors clustering in the apparently healthy respondents (statistically significant difference observed in risk factors clustering between the compared male and female participants, p = 0.04).

Table 5 shows the prevalence of NCDs as self-reported by the participants (Adults population). Only 4.38% of the population had no self-reported history of NCDs; hypertension was 43.75%, arthritis, and low back pains 33.75%, bronchial asthma 9.58% while diabetes mellitus prevalence as self-reported was 8.54% (statistically significant difference observed in self-reported prevalence of NCDs between male and female participants, p = 0.00).

Table 3: Prevalence Profile of NCDs behavioral risk factors as self acknowledged by studied adult population

Behavioral Risk Factors	Freq. (%) n = 480	Male (%) n = 270	Female (%) n = 210	P –value
TOBACCO USE				
(a). Used before	113 (23.50%)	106 (39.3%)	7 (3.3%)	
(b). Currently using	41 (8.50%)	37 (13.70%)	4 (1.9%)	0.00
(c). Never smoked	326 (68.0%)	127 (47.0%)	199 (94.8%)	
ALCOHOL INTAKE				
(c). Never used	51 (10.62%)	27(10%)	24 (11.43%)	
(d). Modest/occasional	388 (80.83%)	204 (75.6%)	184 (87.62%)	0.00
(e). Heavy drinkers	41 (8.6%)	39 (14.40%)	2 (0.95%)	
PHYSICAL ACTIVITY				
(f). Low	126 (26.25%)	48 (17.8%)	78 (37.1%)	
(g). Moderate	160 (33.33%)	114 (42.2%)	46(21.90%)	0.00
(h). High	194 (40.42 %)	108 (40%)	86 (41%)	
UNHEALTHY DIETARY BEHAVIORS				
(i). Insufficient fruits/vegetable	301 (62.71%)	190 (70.37%)	111 (52.86%)	
(j). Fast food	191 (39.79%)	80 (29.63%)	111 (52.86%)	0.00
(k). Soft drinks	259 (53.96%)	91(33.70%)	168 (80%)	
(l). Salt intake	115 (23.96%)	53 (19.63%)	62 (29.52%)	

Table 4: Risk factors clustering distribution among the studied adult population

Risk factors	Freq (%) n = 480	Male (%) n = 270	Female (%) n = 210	P- value
Non	75 (15.63%)	46 (17.04%)	29 (13.81%)	
One	157 (32.71%)	86 (31.85%)	71 (33.80%)	0.04
Two	207 (43.12%)	111 (41.11%)	96 (45.71%)	
Above two	41 (8.54%)	27(10%)	14 (6.67%)	

Table 5: Prevalence of NCDs as self avowed by participants

NCDs	Frequency (%) n = 480	Male (%) n = 270	Female (%) n = 210	p- valve
None	21 (4.38%)	15(5.55%)	6 (2.86%)	
Hypertension	210 (43.75%)	111 (41.11%)	99 (47.14%)	
Arthritis and low back pain	162(33.75%)	91(33.70%)	71 (33.80%)	0.00
Bronchial asthma(BA)	46 (9.58%)	29 (10.74%)	17 (41.84%)	
Diabetes	41 (8.54%)	24 (8.89%)	17 (8.09%)	

4. DISCUSSION

Risk factors are those factors that are associated with the development of NCDs. knowledge play an essential role in the early identification, detection, and prevention of NCDs. The disproportionate percentage of male (56.25%) and female (43.75%) participants observed in this study is associated with uneager and lethargy exhibited by most female participants. Most investigated variables were not self-acknowledged by 12.5% of the participants, all female (Table 1).

The results of the knowledge of NCDs and its risk factors among the participants were consistent with previous study in Nigeria by Oladepo et al. [23] who reported overall poor knowledge of cardiovascular diseases (CVD) and its risk factor in a baseline study to assess knowledge of NCDs and its behavioral risk factors among rural southwestern Nigeria with over 56% of the participants unable to identify a single risk factors. Also, a similar study by CEHURD (2014) on non-communicable disease in Uganda also reported very low knowledge level of NCDs, as over 67% of the participants had no basic idea of NCDs [24]. Nonetheless, an identical study by Thippeswamy and Chikkegowda [25] in India acknowledged a fairly improved knowledge. The Low knowledge level reflected in this study maybe partly tied to the participant's poor educational status, as only 24.58% of the participants had a tertiary education, while over 75.42% were below the tertiary level of education (Table 2).

Although eight risk factors were identified by WHO report (2002) as primary measurable contributors to NCDs in a given population, in this study four risk factors were measured: tobacco use, harmful use of alcohol, physical inactivity and unhealthy dietary behavior (fast foods consumption, fruits/vegetables, sugar based drinks and salt intake). The prevalence of each risk factor varied considerably as was reported in previous studies [8, 12, 27, 32, 35].

Use of tobacco is an important risk factor for coronary heart disease (CHD), lung cancer and diabetic neuropathy in patients with both type II and I diabetes and stroke [21]. Tobacco smoking and exposure to secondhand smoke together are responsible for about 6.3 million annual deaths worldwide and 6.3% of the global burden of disease, mostly in low- and middle-income countries [26]. The Prevalence of 8.54% for current smoking admitted is homogenous with 8.7% reported by Adepoju et al [27], however, a lower prevalence was reported by .Ayankogbe et al [28].

Alcohol consumption is responsible for about 2.7 million annual deaths and 3.9% of the global burden of disease. Alcohol abuse is a major risk factor for cancers, cardiac, gastrointestinal, hematologic, immune, neuralgic, muscular-skeletal chronic liver disease, unintentional injuries, alcohol-related violence, neuro-psychiatric conditions [29-31]. Prevalence profile of 8.54% for harmful alcohol use was admitted in this study is fairly consistent with 10.2% reported by Odunaya et al [32]. Modest/occasional alcohol use of 80.83%, self-reported in this study calls for urgent strategies to regulate the production, marketing, advertising and availability of alcohol as moderate users of today are tomorrow abusers.

Physical inactivity is one of the major risk factors for many NCDs such as hypertension, non-insulin dependent diabetes mellitus (NDDM), stroke, obesity, and Fibromyalgia [32]. Physical inactivity prevalence of 23.96% collaborates 27.9% in a similar study in Nigeria [32], but lower than the global 31% previously submitted [33, 34] and 65.5% reported by Oyeyemi et al [35]. The high physical activity self-reported in this study may be partly due to the respondent's occupational profile as two-third of the respondent's occupation (77.29%) involves sufficient vigorous activities. Furthermore, 70.33% of the respondents are below the age of 50 years which represent the most active age range.

Unhealthy dietary behaviors constituted the highest prevailing risk factor unveiled in this study Unhealthy dietary behaviors are risk factors for chronic disease conditions such as cancers, cardiovascular diseases, increased blood pressure, insulin resistance and hyperglycemia and obesity [36, 37]. High prevalence of unhealthy dietary pattern reported in this study is consistent the reported pattern in previous studies [8, 12, 32, 36]. The high prevalence of unhealthy dietary behaviors reported in this study may be partly due to the globalization of unhealthy transition and increasing transient nature of the population which have grown the trend of eating fast foods typically high in fat, sugar, salts and low in fiber (Table 3).

Risk factors clustering in the studied adult population unveiled high clustering of NCDs risk factors. A **risk factor** is defined as an attribute, characteristic or exposure of an individual which increases the likelihood of developing a disease or injury [38, 39]. Overall, only 15.63% adults in the study population were free of any self – reported risk factor while risk factor was self-admitted in 84.37% (one risk factor – 32.71%, two – 43.12%, above two – 8.54). The risk factor clustering self – reported in this study is accordant with previous studies in Nigeria [32, 40, 41]. The unhealthy pattern of behavior and high clustering frequencies observed in this study is an indication of suboptimal population health and present a compelling need to design elaborate preventive healthcare strategies essentially tailored towards early detection of individual risk factors (Table 4).

Findings on NCDs prevalence of the population as self-reported by participants is a major health concern, and a firm confirmation of increased morbidity and mortality from NCDs in Nigeria in future. Sadly, only 13.54% of the participants were without any apparently NCDs history. Hypertension presented the highest self-admitted NCDs prevalence of 43.75% among the participants. This study is fairly homogenous with 47.2% reported by Akinlua et al [17] and 41% reported by Tagurum et al [12]. Nonetheless, lower prevalence was reported by other regional studies; Ulasi et al reported 32.8% [42]; Ogah et al reported 31.8% [13]; Ajayi et al reported 33.1% [43]. The higher prevalence reported in this study may be a function of the occupational stress level of the participants who are predominantly farmers, artisans and trader. This is affirmed by a study on Occupational stress by

Rosenthal and Alter [44] who collaborated the relationship between occupational stress and hypertension. Diabetes mellitus (DM) is an etiologically multi-factorial metabolic disorder resulting from an aberration in carbohydrate, protein and fat metabolism caused by a defect in insulin secretion or inaction [45]. In Nigeria, the prevalence of DM in 2010 was 4.7% and projected to increase to 5.5% in the year 2030 [46]. The self-reported prevalence of 8.54% reported in this study is higher than the national projected prevalence. Over the years diabetes prevalence has been increasing steadily as affirmed by results from previous studies; survey by Osuntokun *et al* (1972) in Ibadan estimated a prevalence of 0.4%; [47]; Ohwovoriole *et al* (1988) reported 1.6% [48]; Ulasi *et al* (2010) reported 14.7% [42], while Ige *et al* (2013) reported 11.1% [11]. The 8.54% prevalence self – reported for diabetes in this study maybe traceable to westernization of lifestyle, rapidly decreasing physical activity and changes in dietary habits.

Arthritis and low back pain are the most common cause of severe long-term pain and physical disability globally. It is characterized by loss of joint cartilage that leads to pain and loss of function primarily in the knees and hips [49]. Although there is a paucity of data on past prevalence of these diseases, the self-reported prevalence of 33.75% admitted in this study was higher than 13.8% (arthritis) and 5.6% (low back pain) reported by Tagurum *et al* [12]. The higher prevalence of 33.75% self-reported in this study is partly due to occupational risk factors, as 77.29% of the participants occupation occasionally requires lifting, pushing and pulling actions which may cause spine vibration. Also, the adult's population been the focus of this study may have also contributed to the high self-reported prevalence.

World Health Organization (WHO) estimates the global burden of asthma in adults to be 4.3% (50). The prevalence of 9.58% self-reported in this study is consistent 10.7% and 10.2% reported in previous studies on diabetes prevalence [51, 52].

4.1. Study limitation

The present study has several limitations. Firstly, the cross-sectional design does not allow for any inferences on causality. Secondly, self-reported prevalence for the four health conditions (hypertension, arthritis, bronchial asthma and diabetes is likely to have under-reported the actual prevalence, as all the data collected are susceptible to recall bias. Thirdly, the study was carried out in urban and semi-urban population in Delta state, and does not provide information on rural prevalence. A study of wholly rural population will be of importance, for more comprehensive prevalence distribution

5. CONCLUSION

This study confirms a gap in knowledge on NCDs and its risk factors in Nigeria. Sadly clustering of risk factors was high among the participants. Population-based intervention strategies focusing on bridging the knowledge gap and minimizing risk factors prevalence is the most cost effective approach to downsizing the growing epidemics. In addition, there is a need for a comprehensive study of all younger adults below 20 years of age for a wholistic estimation of studied variables.

Conflict of Interests: There are no conflicts of interest.

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