Predictors of Non-Communicable Diseases Among Cohort of Service Personnel Within Nigeria Customs Service

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Abstract

Background/Introduction The world is experiencing a global epidemic of Non-communicable diseases-(NCDs), mainly cardiovascular diseases (CVDs), chronic respiratory diseases and diabetes represent a leading threat to human health and development.

Non-communicable diseases (NCDs) are a global burden that has been forecasted long ago, especially in low and middle-income countries like Nigeria. This epidemiologic transition has been linked to urbanization, industrialization, and globalization leading to lifestyle changes that promote NCDs. The study aimed at determining the predictor for Non-communicable diseases and the prevalence of cardiovascular conditions (hypertension), metabolic disorder (diabetes mellitus) and in activities (obesity) among cohort service personnel within Nigeria customs service. A cohort quantitative study was carried out.

This study type provided a detailed account of participants view or engagement in specific behavior which was stated in numerical measurement and statistic. A purposive sampling technique was used to enroll participant, interviewer-administered questionnaire was used to collect quantitative data from the respondents and was then subjected to data analysis using Strata.

Among the respondents, 29 (14.65) were female and 169 (85.35) male with a mean age of 39.7, minimum age 25, maximum age 59. Only 21.2% of respondents engaged in physical activity at least five times in a week while 78.9% believed that tracking to their office is part of the exercise. 74.75 per cent rarely take fruits and 56.06 per cent don't like vegetables, 6. 51% add raw salt to already-prepared meals; 4.04, 26.8 and 10.1% take sweet/soft drinks with snacks daily, weekly and monthly respectively. Only 51(25.8%) respondent have ever checked their blood pressure and glucose level before now, while 74.2 per cent have never checked their blood pressure and glucose level.

To tackle the increasing prevalence of Non-communicable diseases among the cohort service personnel of the Nigeria customs service (NCS) we have to understand the risk factors for NCDs. Targeted interventions will include other service personnel as well.

Keywords*: Non-Communicable Diseases (NCDs), risk factors and predictors.*

Introduction

According to the World Health Organization report on Global Health Observatory data for 2015, there were 56 million deaths recorded worldwide, (GHO, 2015). As contained in the report, the bulk of the death were attributed to NCDs. When the deaths were classified according to the main causes, the top four causes of death were cardiovascular heart diseases (17.7 million deaths or 45%); cancers were second with 8.8 million deaths (22%); third were chronic obstructive airway diseases with 3.9 million deaths while diabetes was fourth with 1.9 million deaths. (WHO/GHO, 2017).

Nigeria accounted for an estimated 28 per cent of Non-communicable diseases (NCDs) mortality in 2008. The most prevalent NCDs as at then were cardiovascular diseases, which accounted for 12 per cent of total deaths across all age groups. Cancer 4%, non-communicable variants of respiratory diseases 3% and diabetes 2% (commonwealth health, 2008). Nigeria and other Sub-Saharan African countries are undergoing epidemiological transition (Adeboyin, 2005).

The burden of non-communicable diseases (NCDs) was thought to be a problem afflicting only affluent countries. However, emerging evidence has indicated that the problem affects developing nations more than the developed ones (WHO, 2012). With the decline in the prevalence of many

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infectious diseases and a steady increment of NCDs as major causes of death. Cardiovascular disease (CVD) is defined as any serious, abnormal condition of the heart or blood vessels (arteries, veins).

Cardiovascular disease includes coronary heart disease (CHD), stroke, peripheral vascular disease, congenital heart disease, endocarditis, and many other conditions (WHO, 2012). In Africa, it has been predicted that the prevalence of NCDs will cause almost three-quarters much death as in perinatal, maternal, communicable and nutritional diseases by 2020, and by 2030 will be the most common causes of death in Africa.

Globally Diabetes, Cancer, and chronic respiratory diseases have been reported as the most chronic NCDs (WHO, 2011). Global diet is undergoing an alarming transition: staple foods are becoming more refined and processed; fat and meat intakes are increasing; more processed dairy products and other foods are consumed; and larger numbers of meals are consumed outside the home, making households more reliant on the food industry. Dietary habits have been influenced by urbanization, which is responsible for the rising trend of non-communicable diseases.

Globalization and industrialization where the move from a traditional to a Western-type diet is a characteristic feature. According to the World Health Organization report on Global Health Observatory data for 2015, this transition has been associated with an increase in the global prevalence of non-communicable diseases (NCDs). (Vorster, 2009) In Nigeria, internet usage has allowed the medical team, especially nutritionist and dieticians to share unknown lifestyle and information with the larger community, which contribute to the risk of NCDs.

Significance of the Study

The finding of this study will redound to the benefit of service personnel within the Nigeria custom service considering that the knowledge of risk factors of NCDs such as; (overweight, hypertension, diabetes and cancer) plays an important role in improving health of officers in the service. The greater demand for healthy service personnel within the Nigeria custom service justified the need for more effective, lifestyle-changing teaching approaches. Thus, service personnel within the Nigeria custom service that apply the recommended approach derived from the results of this study will be able to improve and maintain good health.

Background

Recent epidemiological data suggest an increasing burden of NCDs in many African countries but these diseases have not been given adequate attention due to the overwhelming burden of infectious diseases. There are no recent reports or studies on NCDs or related issues in The Gambia, consequently, this report intends to stimulate further epidemiological studies and also policy initiatives to forestall an epidemic.

In the Gambia between 2008 and 2011, there is an increasing trend in the morbidity of 19.8%, hospitalization 9.9% and mortality 23.4% due to NCDs. There is a dearth of highly skilled health workforce as well as poor health infrastructures in The Gambia.

Globally NCDs account for 63% of mortality, and related NCDs deaths that occur in middle and low-income countries are 80%. Current projections indicate that the largest increase in related NCDs deaths by 2020 will be in Africa, related death of NCDs that is combined deaths from neonatal and maternal deaths, nutritional, and communicable diseases.

Out of many NCDs, four have been discovered as being accountable for about 75% of all NCD related mortality they are: chronic respiratory illnesses, diabetes, cardiovascular diseases, and cancer. These four NCDs share a risk factor: harmful alcohol use, poor physical inactivity, poor healthy diet and tobacco use. Currently over 36 million deaths occur annually, these are preventable disability and morbidity globally.

Effects of tobacco use in NCDs

The burden of NCDs was thought to be a problem of affluent countries alone. However, evidence has indicated that the problem affects developing nations more than the developed ones. (WHO, 2012) In Nigeria and other Sub-Sahara African are undergoing epidemiological transition with a steady NCDs increment as a major cause of death. (Adedoyin R.A. 2005).

This addresses the health consequences of tobacco use by young adults and children. Which consider the prenatal period examines the adverse effects of smoking before conception, even though this is not the main focus of this report, the recent updates in the 2004, 2006, and 2010 reports on tobacco use have covered the evidence on the increased risk of specific diseases and other adverse effects of active and involuntary smoking. (USDHHS, 2010)

Tobacco is a harmful substance that affects the health, and the income of Nigerians. Each year tobacco-caused disease, killed more than 17500 people, still more than 4,303,000 adults, and more than 370,000 children use tobacco each day. In tobacco epidemic Complacency, each passing year Nigeria's citizens are making tobacco's death toll to grow by ensuring that industry of tobacco continues to act without caring how they will affect the lives of adults and young children in the country.

In Nigeria there are no local studies on the effect of tobacco, large prospective epidemiological studies have shown the link between a cigarette smoking and CVD; this is in addition to preceding case-control studies that first alluded to the association. (WHO, 2012) Such studies could be generalized to the Nigerian population.

The implications of the results are further applicable to local Nigerian communities, having been faced with similar challenges of exposure to tobacco smoke. WHO estimates of 2010 state that 9% of Nigerian males and 0.2% of females smoke a cigarette? In a healthy country's population, tobacco control is an excellent investigation. By enforcing a comprehensive national smoke-free law on the advertisement of tobacco and promotion, Nigeria can pay the four 'best buys' in tobacco control policy.

Effect of alcohol abuse on human health

According to DALYS, Alcohol abuse is a major NCDs burden contributor Worldwide, it accounts for 4% of DALYs. (WHO, 2004 P35, 68) One-third of global occurrences of diseases, such as esophageal malignancy, homicide, epilepsy, and motor vehicle accidents, are attributed to alcohol abuse. (WHO, 2004) Although the relative contribution of alcohol abuse to NCDs is higher in developed countries, it is expected to increase in developing countries with the widespread opening of their markets to global alcohol conglomerates. (WHO, 2004) The prevalence of alcohol abuse in Nigeria is not known. However, WHO estimates the adult per capita consumption to be 32.06 of pure alcohol. (WHO, 2012)

Diet

Nigeria has witnessed a rise in the number of fast-food restaurants - serving meals with high salt and sugar content, often also containing saturated fat. This goes hand in hand with an increase in the availability of bottled drinks. Furthermore, canned fruit juices are becoming fashionable and are replacing natural fruits.

These eateries are patronized by people across all economic bands in society. The fortunes brought about by recent economic gains have brought about an emerging middle class with an enhanced purchasing capacity. The working class and the wealthy in Nigeria consider eating outside as trendy; as such, people of limited resources also tend to follow the emerging trend.

Eating away from home is not only related to urbanization and social class, but also to the demand of shift work imposed upon industrial workers and services delivery points like hospitals per capita. All these have brought about an increase in per capita annual food consumption in Nigeria.

Cultural preferences for an obese phenotype as a marker of affluence or wellbeing in Nigeria and other parts of Africa have helped in fueling the growing obesity epidemic and its attendant comorbidities. In some parts of Nigeria, young women are kept in fattening homes where they are fed high-calorie energy-dense fatty meals with minimal physical activity as part of preparations for a wedding ceremony.

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Physical in activities

In Nigeria, this has become more pronounced among the young, creating childhood obesity and its attendant implications. A widely spaced urban neighborhood encourages the culture of moving in cars, also creating limited access to local public spaces and recreational facilities.

Rural-urban migrations lead to the formation of urban slums which overstretches the urban facilities. lack of proper sidewalks and exercise services such as the gymnasium and football pitches has ultimately restricted the options for physical activity by having limited or no parks in some cities. In middle and low-income countries account for most of the global burden disease.

Globalization, industrialization and urbanization have linked to epidemiologic transition leading to lifestyle changes that promote NCDs. In Nigeria, the influence of urbanization is apparent in most of the cities, with the increased use of motorized transport and sedentary occupation such as office work and trade. Which is accompanied by high risk dietary and lifestyle behavior's, which include: excessive alcohol use, excessive calories and inadequate fruits and vegetable intake, physical inactivity and tobacco use.

The evidence of the increasing burden of NCD and the risk factors has provoked targeted public health intervention in Sub Sahara Africa. Lack of data on health and economic burdens attributable to NCDs particularly in urban areas have prevented the actions needed to curb this rising toll of NCDs in Nigeria. This study aims to place additional evidence among a cohort of service personnel within Nigeria customs service by documenting the self-reported prevalence of selected NCDs and associated risk behavior.

Patient characteristics are an often misreported or underreported set of measurements in smokers or alcoholics care studies but are extremely important to quantify and report as they may be potential confounders. Diagnostic features, comorbidities, and any factor that might affect patient outcome needs to be measured and reported for each study group as well.

These characteristics and factors may be potential confounders of the relationship between your "exposure of interest" such as poor lifestyle and the outcome of physical inactivity. Planning for and measuring these attributes goes a long way toward dealing with the role of confounding. The Nigerian custom medical team will lead a multidisciplinary research team in a study of lifestyle factors that contribute to non-communicable diseases (NCDs), a rapidly emerging public health challenge among cohort of service personnel within Nigeria custom service. Results of the study will give policy makers of Nigeria custom service a reliable knowledge base on which to make informed health policy decisions.

Effect of alcohol abuse on human health

According to DALYS, Alcohol abuse is a major NCDs burden contributor Worldwide, it accounts for 4% of DALYs. (WHO, 2004 P35, 68) One-third of global occurrences of diseases, such as esophageal malignancy, homicide, epilepsy, and motor vehicle accidents, are attributed to alcohol abuse. (WHO, 2004) Although the relative contribution of alcohol abuse to NCDs is higher in developed countries, it is expected to increase in developing countries with the widespread opening of their markets to global alcohol conglomerates. (WHO, 2004) The prevalence of alcohol abuse in Nigeria is not known. However, WHO estimates the adult per capita consumption to be 32.06 of pure alcohol. (WHO, 2012)

The oretical and conceptual framework

Non-communicable diseases (NCDs), including diabetes, heart disease, cancer, chronic lung disease and stroke, are collectively responsible for almost 70% of all deaths worldwide. Almost three-quarters of all NCD deaths, and 82% of the 16 million people who died prematurely, or before reaching 70 years of age, occur in low- and middle-income countries. The rise of NCDs has been driven by primarily four major risk factors: physical inactivity, tobacco use, the harmful use of alcohol and unhealthy diets.

Methodology

The methodology employed for the purpose of this research shows the study design, study population, sample size, sampling technique, Method of data collection, ethical approval and data analysis. Nigeria custom service was established in 1891, with Mr. T. A. Wall, as the Director-General of customs for collection of Inland Revenue in Niger Coast protectorate. In 1922 the first Comptroller of Customs and Excise was appointed and the name

Department of Customs and Excise. In 1945 two division was set up under the leadership of Mr. Nicol a Briton, Maritime Division which has the responsibility of collecting import and excise duties while the preventive

Division was responsible for enforcement duties which included prevention of smuggling as well as arrest and prosecution of smugglers. Nigeria customs service is an independent agency under the supervisory oversight of the Nigerian ministry of finance.

Study design

We carried out a cohort quantitative study. This study type provides a detailed account of participant's view or engagement in specific behaviors which was stated in numerical measurement and statistic.

Study population

The study population are service personnel within the Nigeria customs service, of Nigeria customs service, which comprises Badagry, Yekeme, Ijora, Barbeach, Igbokoda and Kebi as out station with the command headquarters at Ibafon Apapa and some officers in zone 'A' Lagos.

Sample size calculation for respondent

1. Population size is over 17,000
2. Using a 95% confidence interval, and 99%
3. A Sample size of 200

Sampling techniques

A purposive sampling technique was used to enroll participants. All respondents that showed willingness in Nigeria customs service within zone 'A' Lagos were used for the study

Method of data collection

Data were obtained by using questionnaire and investigations which include: blood pressure check, blood glucose check, weight, and height and waist circumference.

Ethical consideration

Informed Consent was sought from the Customs Area Comptroller of the Commands in the zone 'A' Lagos for the all participants.

Data collection method/ instrument for the study

Data was obtained using a questionnaire.

A plan of work and timeline

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Table 1. Plan of action for the prevention and control of NCDs among cohort service personnel of Nigeria customs service

Strategic of action	Specific objective	Indicator
NCD Risk factor and protective factors	Reduce tobacco use and exposure to secondhand smoke.	*Number of service personnel that by 2019 will achieve a reduction in tobacco smoking.
	Reduce the harmful use of alcohol.	*Number of service personnel that by 2019 achieve a reduction of harmful use of alcohol.
	Promote healthy eating for health and well-being.	*Number of service personnel that reduce the intake of non-alcoholic beverages high in saturated fats, trans-fatty acid, free sugars and salt.
	Promote active living for health and well-being and to prevent obesity.	*Number of service personnel that by 2019 reduce prevalence of insufficient adult physical activity.
Health system response to NCDs and risk	Improve the quality of health services for NCD management	Number of customs area commands implemented a model of integrated management for NCDs.
	Increase access to and rational use of essential medicines and technologies for screening, diagnosis, treatment, control, rehabilitation, and palliative care of NCDs.	*Number of Nigeria service commands that by 2019 achieve the level of availability of affordable basic technologies and essential medicines including generics required to treat the four main NCDs in both Hospital and clinics, established by the organization.
		Number of customs area commands with a plan in place, as appropriate, to increase access to affordable treatment options for patients affected by CKD, particularly end stage renal disease.
	Implement effective, evidence-based and cost-effective interventions for treatment and control of CVDs, hypertension, diabetes, cancers and chronic respiratory diseases.	Number of customs area commands that by 2019 achieve the level set for raised blood glucose/ diabetes from the national baseline to the level set for interim reporting to WHO Global Monitoring Framework, and contribute to the 2025 global target of a halt in prevalence of raised blood glucose/diabetes assessed by age-standardized prevalence of raised blood glucose/diabetes among adults aged 18+ years (defined as fasting plasma glucose value ≥7.0 mmol/L (126 mg/dl) or on medication for raised blood glucose)
		Number of countries that by 2019 achieve the level set for adult obesity, from the national baseline to the level set, for interim reporting to WHO Global Monitoring Framework and contribute to the 2025 global target of a halt in prevalence of adult obesity assessed through age standardized prevalence of overweight and obesity in persons aged 18+ years (defined as BMI ≥25 kg/m2 for overweight or ≥30 kg/m2 for obesity).

Result and discussion

The socio-demographic characteristics of respondents are presented in Table 1.1 to table 1.5. Out of 198 respondents who participated in this study, 29 (14.6%) were females and 169 (85.4%) male, most of the respondents were between the ages of 30-39 (42.92), and 40-49 (35.35), while others fall between the ages of 25-29 (9.59), 50-59 (12.12). Majority of the respondents were married (72.22) while very few had never married (14.65) and separated (5.05) widowed (5.56) and 2.53 divorced. The educational status of the respondent showed that about 17.17 were secondary school leavers, 32.83 had a diploma, 44.44 had a degree and 5.56 had post-graduate degree.

The Ethnicity of the respondents was presented according to the major ethnic groups of Nigeria, and showed a preponderance of the Hausa ethnic group with about 39.39, while the Igbo and Yoruba Ethnic groups were 20.20, 23.23 respectively. The remaining 17.17 were from other minority groups.

Table 1. Social- demographic information

Table 1.1. Gender

Sex	Frequency	Percentage	Cumulative
Male	169	85.35	85.35
Female	29	14.65	100.00
Total	198	100.00	

Table 1.2. Age

Age	Frequency	percentage
25-29	19	9.6
30-39	85	42.9
40-49	70	35.4
50-59	24	12.1
Total	198	100

Table 1.3. Marital status

Marital status	Frequency	Percent	Cumulative
Single	29	14.65	14.65
Married	143	72.22	86.87
Divorced	5	2.53	89.39
Separated	10	5.05	94.44
Widowed	11	5.56	100.00
Total	198	100.00	

Table1.4. Education qualifications

Education	Frequency	Percent	Cum
Secondary	34	17.17	17.17
Diploma	65	32.83	50.00
Degree	88	44.44	94.44
pgd	11	5.56	100.00
Total	198	100.00	

Table 1.5. Ethnicity

Ethnic group	Frequency	Percent	Cumulative
Yoruba	46	23.23	23.23
Igbo	40	20.20	43.43
Hausa	78	39.39	82.83
Others	34	17.17	100.00
Total	198	100.00	

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Table 2. Respondent response on prevalence of various risk factors to NCDs

Table 2. 1 shows the respondent behavioral measures, 14.65 are still smoking while 26.26 had smoked before, 6.57 are active smokers the smoked daily, 5.05 smoke weekly and 3.54 smoke monthly. 4.04 Of the respondents takes alcohol on a daily bases, 4.55 weekly and 3.03 monthly, 3.03 are binge drinkers.

Table 2.1. Showing respondent that are current smoking

Current smoking	Frequency	Percent	Cumulative
Yes	29	14.65	14.65
No	169	85.35	100.00
Total	198	100.00	

Table 2.2. Respondent that smoked

Ever smoked	Frequency	Percent	Cum
Yes	52	26.26	26.26
No	146	73.74	100.00
Total	198	100.00	

Table 2.3. Frequency of tobacco products use

Frequency			
Tobacco use	**Frequency**	**Percent**	**Cum**
Daily	13	6.57	6.57
Weekly	10	5.05	11.62
Monthly	7	3.54	15.15
None	168	84.85	100.00
Total	198	100.00	

Table 2.4. showing current smokers with hypertension

	Hypertension		
Active smoker	**Yes**	**No**	**Total**
Yes	5	24	29
No	54	115	169
Total	59	139	198

Table 2.5. Show exposed case of hypertension due to tobacco smoking an unexposed case

csi 5 24 54 115			
	Exposed	**Unexposed**	**Total**
Cases	5	24	115
Noncases	54	115	169
Total	59	139	198
Risk	0847458	1726619	1464646
Point estimate | [95% Conf. Interval]			
Risk difference	0879161	1827739	0069417
Risk ratio	4908192	1967553	1.224381
Prev. frac. ex	5091808	2243815	8032447
Prev. frac. Pop | .1517256 |			
chi2 (1) = 2.56 Pr>chi2 = 0.1095			

Table 2.6. Showing result for alcohol consumption

Ever drank	Frequency	Percent	Cum
Yes	36	18.18	18.18
No	162	81.82	100.00
Total	198	100.00	

Table 2.7. Frequency of alcohol intake

Frequency of Intake	Frequency	Percent	Cum.
Daily	8	4.04	4.04
Weekly	9	4.55	8.59
Monthly	6	3.03	11.62
None	175	88.38	100.00
Total	198	100.00	

Table 2.8. Showing marital status of alcohol intake

	Take alcohol		
Marital status	**Yes**	**No**	**Total**
Single	5	24	29
Married	23	120	143
Divorced	2	3	5
Separated	5	5	10
Widowed	1	10	11
Total	36	162	198

Table 2.9. Marital status of drink rate

Marital Status	daily	weekly	monthly	none	Total
Single	0	2	2	25	29
Married	7	4	3	129	143
Divorced	0	1	1	3	5
Separated	1	2	0	7	10
Widowed	0	0	0	11	11
Total	8	9	6	175	198

Table 2.10. Marital status number of bottles ingested in a siting

	Number of bottles					
Marital Status	**1**	**2**	**3**	**4 & above**	**None**	**Total**
Single	3	1	0	0	25	29
Married	3	5	1	5	129	143
Divorced	0	0	1	1	3	5
Separated	1	0	2	0	7	10
Widowed	0	0	0	0	11	11
Total	7	6	4	6	175	198

Table 3. Shows respondents response on diet.

Seventy-four-point eight percent rarely take fruits, only 3.3takes fruits on a daily bases, while 56.06 don't like taking vegetable and 6.51 add raw salt to already-prepared meals. 40.91 takes sweet/soft drinks with 4.04 who takes daily a week, and 17.7% took snacks daily. 20.20 admitted eating daily at home, 25.76, 30.81 and 23.23 eat weekly, monthly and after three months at home respectively.

Table 3. Showing results on diet

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Table 3.1 Fruit frequency intake

Adequate fruit intake	Frequency	Percent	Cum
Daily	6	3.03	3.03
5 times weekly	22	11.11	14.14
3 times weekly	22	11.11	25.25
2 times weekly	148	74.75	100.00
Total	198	100.00	

Table 3.1.1. Frequency of fruit intake per marital status

	Fruit intake				
Marital Status	**daily**	**5 x weekly**	**3 x weekly**	**don't like**	**Total**
Single	1	4	1	23	29
Married	5	14	16	108	143
Divorced	0	0	1	4	5
Separated	0	3	1	6	10
Widowed	0	1	3	7	11
Total	6	22	22	148	198

Table 3.2. Vegetable intake frequency in a week

Vegetable intake	Frequency	Percent	Cum
Daily intake	9	4.55	4.55
5 times weekly	31	15.66	20.20
3 times weekly	47	23.74	43.94
Don't like it	111	56.06	100.00
Total	198	100.00	

Table 3.3. Showing result of those that add table salt to meals

	Add salt food		
Marital Status	**Yes**	**No**	**Total**
Single	3	26	29
Married	16	126	142
Divorced	2	3	5
Separated	3	7	10
Widowed	1	10	11
Total	25	172	197

Table 3.4. Frequency of snacks/ drinks intake

	Frequency	Percent	Cum
Daily	8	4.04	4.04
Weekly	53	26.77	30.81
Monthly	20	10.10	40.91
None	117	59.09	100.00
Total	198	100.00	

Table 3.5. Frequency of eating at home

Home meal	Frequency	Percent	Cum
Daily	40	20.20	20.20
Weekly	51	25.76	45.96
Monthly	61	30.81	76.77
3 months & above	46	23.23	100.00
Total	198	100.00	

Table 4. Self-reported prevalence of NCD among respondent.

One hundred and fifty-six respondents (78.79) recorded a personal history of inadequate physical activity. NCDs 51 (25.8%) check their blood pressure and glucose level regularly, among these, 1 single, 42 married, 3 separated and 5 widowed. 59 of the respondents are known hypertensive, 39 (19.7) are on blood pressure medication while 20 of the respondents are not. Fourteen (7.07) of the respondents are known diabetic, and 6.07 are on diabetic medication. Family history of NCDs father 15 (7.58), mother 11(5.56) 19 (9.60) having a statistically significantly higher prevalence than both parents.

Table 4.1. Physical activities

	Frequency	**Percent**	**Cum**
0	42	21.21	21.21
1	156	78.79	100.00
Total	198	100.00	

Table 4.1.1. Physical activities cases and noncases

csi 8 34 31 125			
	Exposed	**Unexposed**	**Total**
Cases	8	34	42
Noncases	31	123	156
Total	39	159	156
Risk	2051282	2138365	2121212
Point estimate | [95% Conf. Interval]			
Risk difference	0087083	1505599	1331433
Risk ratio	959276	4831096	1.904766
Prev. frac. ex.	040724	9047656	5168904
Prev. frac. pop | .0080214			
chi2(1) = 0.01 Pr>chi2 = 0.9051			

Table 4.2. Blood pressure and glucose check

Blood pressure/glucose check	**Frequency**	**Percent**	**Cum**
Yes	51	25.76	25.76
No	147	74.24	100.00
Total	198	100.00	

Table 4.2.1. Marital status| blood pressure and sugar check

	Yes	**No**	**Total**
Single	1	28	29
Married	42	101	143
Divorced	0	5	5
Separated	3	7	10
Widowed	5	6	11
Total	51	147	198

Table 4.3. Known hypertensive respondents

	Frequency	**Percent**	**Cum**
Yes	59	29.80	29.80
No	139	70.20	100.00
Total	198	100.00	

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Table 4.4. Respondents on blood pressure medications

On BP drugs	Frequency	Percent	Cum
Yes	39	19.70	19.70
No	159	80.30	100.00
Total	198	100.00	

Table 4.4.1. CSI 8 34 31 125

	Exposed	Unexposed	Total
Cases	8	34	42
Non cases	31	125	156
Total	39	159	198
Risk	2051282	2138365	2121212
Point estimate | [95% Conf. Interval]			
Risk difference	0087083	1505599	1331433
Risk ratio	959276	4831096	1.904766
Prev. frac. Ex	040724	9047656	5168904
Prev. frac. pop .0080214 |			
chi2(1) = 0.01 Pr>chi2 = 0.9051			

Table 4.5. Known diabetic respondents

Diabetic	Frequency	Percent	Cum
Yes	14	7.07	7.07
No	184	92.93	100.00
Total	198	100.00	

Table 4.6. Respondents on diabetic drugs

On diabetic drugs	Frequency	Percent	Cum
Yes	12	6.06	6.06
No	186	93.94	100.00
Total	198	100.00	

Table 4.7. Family history of NCDs

NCDs	Frequency	Percent	Cum
Father	15	7.58	7.58
Mother	11	5.56	13.13
Siblings	19	9.60	22.73
None	153	77.27	100.00
Total	198	100.00	

Table 5.1. Respondent risk factor by marital status

Marital status	single	married	divorced	separated	widowed	total
Risk Factors						
Still smoking	10	14	3	1	1	29
Has smoked before	10	32	1	4	5	52
Daily alcohol intake	0	7	0	1	0	8
In adequate fruit/vegetable	33	105	5	12	13	136
Use added salt	3	16	2	3	1	25
Eat daily at home	6	25	3	2	4	40
Consume sweet drinks	1	6	0	0	1	8
Physical inactivity	21	115	5	6	9	156
Family history of NCD						

Father	3	10	1	1	1	15
Mother	3	6	0	1	1	11
Sibling	20	112	3	8	9	153
No regular medical checkup	28	101	5	7	6	14

Table 5.2. Self-reported prevalence of NCD among respondents by marital status

NCDs	Single	Married	divorced	separated	Widowed	total
Hypertensive	1	48	0	4	5	59
Diabetics	0	13	0	0	1	14
Arthritis	0	0	0	0	0	0
Low back pain	0	0	0	0	0	0

Table 6. Show respondent prevalence of overweight/obesity

In this tablet prevalence of overweight/obesity is182 (91.92) (154 males and 28 females). 62 had acceptable WC (14 of females and 48 of males). Similarly, only 16 respondents had normal BMI and 182 were overweight.

Table 6.1. Body mass index category by sex

Gender	Normal weight	Overweight & obese	Total
Male	15.0	154.0	169.0
Female	1.0	28.0	29.0
Total	16.0	182.0	198.0

Table 6.1.1. Respondent marital status BMI cat

	BMI category		
Marital status	**Normal weight**	**overweight**	**Total**
Single	5	24	29
Married	5	138	143
Divorced	2	3	5
Separated	2	8	10
Widowed	2	9	11
Total	16	182	198

Table 6.2. Status of waist-hip ratio category by sex

Gender	Male	Female	Total
Normal weight	48	14	62
Obese	121	15	136
Total	169	29	198

Table 6.2.1. WHR-category-marital status

Status	normal weight	Overweight	Total
Single	6	20	29
Married	45	98	143
Divorced	2	3	5
Separated	4	6	10
Widowed	2	9	11
Total	62	136	198

The acceptable FBG levels > 7mmol/L: 58.62 of females and 44.97 of males has normal blood glucose level making the total of 46.96 while 53.03 have unacceptable blood glucose level. Only about a third (44.4%) and 52.5% of the respondents had normal SBP and DBP respectively while 34.3% and 29.8% had SBP ≥ 140mmHg and DBP ≥ 90mmHg respectively.

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Table 7. Distributions of physical characteristics of respondents

Variables	**female (%) n=29**	**male (%) n=169**	**frequency n=198**
BMI (kg/m2)			
Normal wt. (18.5- 24.9) 1	15	3.44	96.55
Over wt, (25-29.9)	28	154	
Waist circumference (cm)			
Acceptable (<80, fe. (<94, men)	6(20.68)	65(38.46)	71 (35.85)
Unacceptable (>0.85, fe) (>0.95men)	23(79.3%)	04(52.5%)	127(64.14)
Waist/Hip Ratio			
Acceptable (<0.85, women) (<0.95men)	14 (48.26)	48 (28.40)	62(31.31)
Unacceptable (>0.85 women) (>0.95men)	15 (51.72)	121 (61.11)	136(68.68)
Blood glucose test			
Acceptable (<7mmol/L)	17 (58.62)	76 (44.97)	93 (46.96)
Unacceptable (>7mmol/L)	12 (41.37)	93 (55.02)	105 (55.03)
Systolic blood pressure			
Normal systolic PB-<120mmHg	17 (58.62)	71 (42.0%)	88 (44.4%)
Pre-hypertension 120-139mmHg	4 (13.79)	38 (22.5%)	42 (21.2%)
Hypertension ≥140mmHg	8 (27.58)	60 (35.5%)	68 (34.3%)
Diastolic blood pressure			
Normal diastolic BP< 80mmHg	18 (62.1%)	86 (50.9%)	104 (52.5%)
Prehypertension 80-89mmHg	6 (20.1%)	29 (17.2%)	35 (17.7%)
Hypertension ≥90mmHg	5 (17.2)	54 (32.0%)	59 (29.8%)

Table 7. Distributions of physical characteristics of respondents

Status	**age**	**weight/kg**	**height/cm**	**waist/cm**	**BGT**	**systolic/bp**	**diastolic/bp**
N	198	198	198	198	197	198	198
Mean	39.71717	81.9596	161.3182	85.35354	85.85787	129.2929	80.75758
p50	39	83.5	160	84	80	120	80
Sd	8.015898	13.83068	4.772465	10.10233	17.04287	17.81191	11.39649
Variance	64.25463	191.2877	22.77642	102.0571	290.4593	317.264	129.88
range	34	86	29	74	158	80	50
min	25	54	149	66	70	110	70
Max	59	140	178	140	170	190	120
p25	34	69	158	80	76	120	70
p75	45	89	165	90	90	140	90

Discussion

This study was carried out to assess the risk factors for NCD in offices and men of the Nigeria customs service. There were a significantly higher number of males (85.4%) than females (14.7%) in this study. This could be due to the nature of the job which is an enforcement duty that enables them to intercept contraband such as illegal drugs and weapons, check travelers and their baggage, cargo, and mail assess and collect duties and other taxes. Most of the women involved in various offices. As a result of this finding, the resulting data was subjected to stratified analysis by sex to remove its effect as a possible confounder. Minimum age among respondents was 25 years and the maximum were 59.

The world health organization in 2002 identifies eight risk factors of which can easily be measured in populations that are causes of morbidity and motility linked to NCDs, this can be reduced through

preventive measures. These risk factors include tobacco use, alcohol use, and physical inactivity, low fruit intake/low vegetable intake, raised blood pressure and raise glucose level. This study revealed the presence of several of these risk factors for NCDs among the respondents.

More than half of the population studied had at least one risk factor for NCDs

Globally, low fruit and vegetable intake are estimated to contribute to the development of approximately 31% of coronary heart disease and 11% of ischemic stroke. Unhealthy diet constituted the most predominant risk factor in our study. Most respondents admitted to inadequate intake of fruits and vegetables as well as consumption of snacks rich in undesirable fatty acids, just 6.51 admitted to adding raw salt to already prepared meals.

These figures reflect poor knowledge of the dangers associated with high fat and salt consumption and calls for more educational interventions for and men of the Nigeria customs service.

Only 23 (11.6.) of the respondents admitted to taking alcohol and this low prevalence may be due to religious reasons since almost all the respondents are Muslims. Current tobacco smoking was also found to be low in this population 29 (14.65).

78.79 admitted to inadequate physical activity this is not surprising since majority of the respondents are so engaged combating smuggling that they don't have time for themselves.

One-third of respondents in this study had a personal history of NCD with hypertension being the highest at 29.80, diabetes mellitus 7.o7 and cancer 0.00. Prevalence of diabetes mellitus as defined by an FBG $\geq$ 7mmol/L in this study 53.03 and it was higher than the self-reported prevalence of 13.13, most of the respondent are overweight and hypertensive which means that a lot of the respondents were not aware of their health status.

Limitations

Some limitations of this study include the small sample size, and the use of a questionnaire in assessing some of the risk factors, a form of assessment that could be subjected to recall bias. In addition, this study was done in an area command may limit its generalized ability. It is recommended that longitudinal studies on larger samples of all the area commands be carried out to further document risk factors for NCD among cohort service personnel of Nigeria customs service.

Conclusion

Results of the study revealed that risk factors were present in relatively high levels and were associated with unawareness of the risk factors of NCDs Targeted educational and behavioral change communication intervention will go a long way in reducing the burden of NCD among cohort service personnel of the Nigeria customs service.

Recommendation

Based on these findings, it is recommended that,

1. There should be a replication of this study the headquarters, zonal headquarters and areas commands with medical facilities, using both quantitative and qualitative research designs.
2. Health education and counselling on the effect of tobacco, which is a harmful substance that affects the health, income and productiveness of officers and men of the service.
3. Intervention studies to include making arrangements for free medical checkups and giving health lectures in all the commands on risk factors of NCDs and its complication.
4. Addressing NCDs in Nigeria is a multi-dimensional challenge with multi-faceted implications. Initially, there has to be lobbying at the legislative level and at the doorsteps of developmental partners for appropriate investments and policies. This is to facilitate a national discussion that will result in the incorporation of these policies in the development and health agendas of the nation.
5. There is a need to develop cost-effective and evidence-based strategic models that are culturally appropriate and resource-sensitive.
6. Although population-wide interventions have enormous benefits in reducing the burden of NCDs, it does not address the individual needs of people with established diseases or those at risk. Individualized interventions require a strong health system as well as a system-wide approach focused at the social determinants of NCDs.

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