



# **Knowledge of Non-Communicable Diseases and Risk Factors among Final Year Students in a Tertiary Institution**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

**Background and Objective:** Chronic or non-communicable diseases (NCDs) are rapidly emerging as leading causes of morbidity and premature mortalities globally, with greater effect being felt in low and middle income nations. As poor health behaviours practised in youthful years have been implicated in developing NCDs in later years in life, It is important to understand the level of awareness of young people regarding NCDs in order to remedy any knowledge gaps and encourage healthy practices among them that will reduce the burden of these diseases in later life. This study seeks to describe the knowledge of two groups of final year students of a tertiary institution in Nigeria on the awareness and knowledge of non-communicable diseases and their risk factors.

**Methods:** The study was designed as a cross-sectional survey at the University of Lagos, Nigeria during the 2017/2018 academic session. A sample size of 422 final year students were used with convenient stratification. Self administered questionnaires was distributed to the class of students

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who consented to participating in the study. The questionnaires were used to assess the level of awareness of the students of non communicable diseases and their risk factors. Data obtained from the questionnaires was analyzed using SPSS version 21.

**Results:** A result of 94.7% was obtained. The results show 89.5% versus 65% of students in health related discipline (college of medicine campus) and those in Akoka campus respectively had good knowledge of NCDs and their risk factors while 10.5% versus 35% had poor knowledge.

**Conclusion:** Students in the campus of college of medicine had more knowledge of NCDs and their risk factors. Campus location of students had statistically significant relationship with awareness and knowledge on NCDs. ( $p, <0.05$ ).

*Keywords: Non-communicable diseases; Knowledge; risk factors; tertiary students.*

## ABBREVIATIONS

NCDs - Non-communicable diseases  
CVD - Cardiovascular disease  
DM - Diabetes mellitus  
WHO - World Health Organization  
UNDP -United Nations Development Programme

## 1. INTRODUCTION

Until recently, the burden of non-communicable diseases (NCDs) was generally thought to be a problem prevalent only in affluent countries. However, emerging evidence has indicated that the problem affects the developing nations even more than the developed ones. In fact recent estimates reveal that some 80% of NCDs deaths occur in low and medium income countries [1, 2]. With the decline in the prevalence of many infectious diseases but a steady increment of NCDs as a major causes of death, Nigeria and other sub-Saharan African countries are undergoing what has been coined as epidemiological transition [3].

Non-communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are generally of long duration and slow progression. The four main types of non communicable diseases are Chronic Respiratory Disease, Cancer, Cardiovascular disease and Diabetes mellitus [4]. Non-communicable diseases estimated to kill about 41 million people every year, is by implication responsible for 71% of all deaths globally [4]. Most of these are described as premature death as most victims are in their middle age, occurring among people under age 60, who are at the peak of their economic productivity. Sadly though, the low and middle-income countries are worst hit by this health care tragedy. Almost 30 percent of NCD deaths are from low- and middle income countries—compared to only 13 percent in high-income countries[5].

NCD related deaths keeps increasing, especially in low and middle-income countries and more than half of these diseases are associated with behaviours and practices that either begin or are reinforced during adolescence. These include tobacco use alcohol abuse, poor eating habits and lack of exercise [6-8].

The economic burden of CVD and other listed NCDs go beyond developed countries, even the developing ones feel the impact. This comes in the form of loss of income from disability and increased costs of healthcare, for treatment of NCDs are exorbitant being prolonged and often expensive. In an estimate of cumulative economic losses during 2011–2025, due to NCDs under a “business as usual” scenario in low- and middle-income countries, about US\$ 7 trillion would be involved which will be far higher than an annual US\$ 11.2 billion cost that can be used to implement a set of high-impact interventions and reduce the NCD burden [4]. Thus finances in low income setting can quickly be drained, resulting in poverty with rise in NCDs. More so, as NCDs increase, a poverty reduction initiative in low-income countries becomes highly impeded, because of increasing household costs associated with health care. People who are vulnerable and socially disadvantaged will get sicker and may die sooner because they are at greater risk of exposure to harmful products, (such as tobacco,poor dietary practices) and have limited access to good health care[7-9].

In sub-Saharan Africa, death resulting from cardiovascular disease is on an average 10 years earlier than in developed countries[6]. Diabetes mellitus (DM), is also an increasing problem in this region, particularly Nigeria, where type 2 DM is known to be the most common. In native Africans, 650,000 people of a projected 965 million are diagnosed with cancer yearly, with the lifetime risk in females being twice that of their peers in the developed world [9]. Reports

of types of cancer prevalent in Nigeria include cervical, breast, prostate, skin and gastric cancers [10]. Cancer is considered one of the leading causes of morbidity and mortality worldwide. A WHO/UNDP 2020 review on the state of NCDs has it that, a third of death from cancer cases results from preventable risk factors of obesity, unhealthy diet, physical inactivity and use of tobacco and alcohol [11]. More revealing in the report is the close association of NCDs risk factors with COVID -19 infections and death [11]

Africa has made great strides in reducing the burden of communicable diseases. However, the rise in NCDs threatens to undo health and developmental progress already recorded in various areas, including the Millennium Development Goals for poverty, education, and maternal and child health. High rates of poverty and inequality in the African region exacerbates the challenges, and research shows that social context—particularly living in low income neighbourhoods—is an important precursor for NCD risks [12]. Widespread chronic illness translates to decreased labour outputs, lower returns on human capital investments, and increased health care costs. And for the already weak healthcare systems in Africa, particularly Nigeria where issues such as HIV/AIDS, infectious diseases, and poor maternal and child health have remained a major problem, the rise in NCDs will only result in “multiple burden of disease”[13].

Behaviours established during adolescence have long-lasting consequences for Non-Communicable Diseases (NCDs). Global trends indicate that these NCD-related behaviours are on the rise among young people and that they establish patterns of behaviour that persist throughout life. In many cases, these habits and practices are often hard to change. Evidence points to adolescence as a crucial period in the development of adult NCDs. Monitoring trends in risk factors and scaling up proven, cost-effective interventions to create health promoting environments for young people are important strategies for addressing NCDs [4]. These activities are especially critical in Africa, which has the highest population of young people in the world and this number is rapidly expanding. If risk behaviours can be curbed among Africa’s young people, the region stands a chance of averting a potentially large and costly NCD epidemic in the future.

Treating people with NCDs can be complex. It

usually will involve advanced diagnostics and medication, as well as prolonged duration of care and intensive disability management. Thus a rising NCD epidemic will require more resources for strengthening and adapting health systems. Given that the rates of social and economic growth in the African region are unlikely to keep pace with the rapid rise of NCDs, taking urgent preventive action is imminent. Since many NCDs are associated with behaviours that are established in adolescence, a focus on adolescents is therefore important in preventing NCDs. Also, considering the economic implications in seeking treatment for NCDs, preventive measures would be the be ideal to avert avoidable expenses. The health status of young adults (in this case, students) represents the well-being of a society and its development potential. There is need to test the knowledge of young ones, such as students on non-communicable diseases and their awareness of the associated risk factors that can be prevented. NCDs share key risk factors—tobacco use, harmful use of alcohol, physical inactivity, and unhealthy diet—all modifiable behaviours typically established during adolescence or young adulthood, and can set the stage for NCDs later in life [5].

This research is therefore aimed at assessing the knowledge of students in their final year of study in The University of Lagos on non-communicable diseases and their risk factors. Final year students are expected to have good levels of exposure, awareness and education as persons who have spent at least 3 years in a higher institution of learning, hence the reason for preference of this population.

## 2. METHODS

### 2.1 Study Site

This study was carried out at the College of Medicine campus( Idi- araba) and Akoka (Main) Campus of the University of Lagos, Lagos State, Nigeria. The University of Lagos popularly known as UNILAG is a federal government tertiary institution in Lagos State, Southwestern Nigeria. The main campus is located at Akoka, Yaba, while the Campus of the College of Medicine is located a few kilometres from the main campus at Idi-Araba, Surulere, all on the Lagos mainland. The University has fourteen academic units comprising a broad range of professional faculties and schools. Most faculties are located on the main campus except the Faculties of

Pharmacy, Clinical Sciences, Basic Medical Sciences and Dental Sciences which are sited within the College of Medicine in Idi-Araba. The College of Medicine is also the site of the Lagos University Teaching Hospital (LUTH).

## 2.2 Study Design

The study was a cross sectional study to determine the knowledge of students with medical background from College of Medicine, Idi-araba and those without medical background from the Main campus of the University of Lagos on Non-communicable diseases and its risk factors. The study was carried out to test the knowledge of students in their final year of study with preference given to the level of knowledge and exposure of students in their final year of study.

## 2.3 Inclusion Criteria

Final year students of academic units at the College of Medicine and at Akoka (the main campus) of the University of Lagos who gave consent to the study.

## 2.4 Exclusion Criteria

Undergraduate students that are not in their final year of study.

## 2.5 Data Collection

A structured questionnaire was developed to assess the knowledge of final year students who gave consent to the study on non-communicable disease and its risk factors. The first part of the questionnaire covered the respondent's demographics which include: age, gender, marital status, religion, campus, course of study and level. The next section of the questionnaire included questions on awareness of non-communicable disease, and series of questions to determine their knowledge on the concept and meaning of non-communicable disease, the four different classes of non-communicable diseases and its risk factors.

## 2.6 Sample Population

A total of 400 final year students of the University of Lagos was sampled both at the College of Medicine and Akoka campus. Specifically, 210 students were sampled at the College of Medicine across Faculty of Science, Faculty of Basic Medical Science(Pharmacology,

Physiology, Medical Laboratory Science, Biochemistry) and Faculty of Clinical Science (Physiotherapy, Nursing, Medicine, Dentistry). For Akoka campus, students from Faculty of Science, Faculty of Law, Faculty of Education and Faculty of Social Science.

## 2.7 Sample Size

A convenient sample of 400 students in total was used for the study, with 210 students at the College of Medicine and 190 at Akoka Campus. The questionnaire was self-administered across Faculty of Science, Faculty of Law, Faculty of Education and Faculty of Social science for the student population at Akoka campus while the questionnaire was administered to students in Faculty of Basic Medical Science, Dentistry and Faculty of Pharmacy in the college of Medicine. The required sample size was determined using this formula:

$$Ss = (1.96)^2 \times \frac{0.5 \times (1-0.5)}{(0.05)^2}$$

Where

SS = desired sample size

$$SS = Z^2 \times \frac{P \times (1-P)}{C^2}$$

Z = Z value (e.g 1.96 for 95% confidence interval)  
P = percentage picking a choice, expressed as decimal (0.5 used for specific sample needed)  
C = Confidence interval, expressed as a decimal (e.g 0.05 = +/- 5)

On substituting above values = 384.1  
*approximately 384*

To cater for error in sampling, 10% of the sample was added. (Attrition) 10% of 384 = 38.4384 + 38 = 422 *Thus total sample size = 422*

## 2.8 Statistical Analysis

The data gathered with the aid of the questionnaires, was analysed using Statistical Package for the Social Sciences (SPSS) version 21.

## 2.9 Study Limitations

A total of 400 respondents were analysed as opposed to the 422 sample size; the questionnaires administered were not completely

retrieved hence the reason for the deficit in the sample size total.

### 3. RESULTS AND DISCUSSION

A total of 422 self-structured questionnaires were distributed to assess the knowledge of non communicable diseases and its risk factors among students in the University of Lagos. Exactly 400 of the questionnaires were returned and found adequate for analysis giving a response rate of 94.8%.

As revealed in Table 1, majority of the respondents 294 (73.5%) were females while 106 (26.3%) were males. Some 364 (91.0%) of the respondents were single while only 36 (9.0%) were married. On the basis of religious faith, 264 (66.0%) of the respondents were Christian, 130 (32.5%) were Islam while the remaining 6 (1.5%) were from other religions. A total of 210 (52.5%) of the respondents were from college of medicine while 190 (47.5%) were from the Akoka campus. Since the final year status for the students varied depending on the number of years of study stipulated for the discipline, 190 (47.5%) of the respondents were in 400 Level, 126 (31.5%) in 500 Level while only 84 (21.0%) were in their 600 Level. Of the respondents, 307 (76.8%) were within the age group 21-25 years, followed by 60 (15%) that were in the age range 26-30 years while only 33(8.2%) were less than 21 years of age.

The result, as presented in Table 2 and Fig. 1, show that majority of the respondents 341(83.25%) had good knowledge of non-communicable diseases and their risk factors while only 59 (14.75%) of the respondents had poor knowledge. Generally, a good number of those sampled (above 80%) could accurately identify three of the four main non-communicable diseases from a list of diseases while only about half of those sampled could accurately classify chronic obstructive pulmonary disease as NCD (Table 3). For students from the college of medicine campus, 89.5% of the respondents had good knowledge of non-communicable diseases and their risk factors while only 10.5% had poor knowledge. On the other hand, 65% of the respondent from the Akoka campus had good knowledge on non-communicable diseases and their risk factors but a larger percentage (35%) had poor knowledge. There is a statistically significant relationship between the campuses and their awareness and knowledge on non-communicable diseases with p-values less than

0.05 (p, <0.05).

The interest in improving the quality of life of people by reducing the epidemiological burden of Non-communicable disease prompted the study of knowledge of non-communicable disease and their risk factors among students in the University of Lagos. An important aspect of health sector proven to be a very effective means of prevention of disease burden is health education. Health education involves development of individual, group, institutional, community and systemic strategies to improve health knowledge, attitudes, practices, skills and behaviour. One of its missions is to contribute to the knowledge and understanding of health behaviours and their implications through scholarly research. The peculiarity of knowledge study to students is due to the fact that major risk factors of the NCDs are developed at early stage of life, the youthful age when the individual is still vibrant and willing to try out new things that might later become a difficult-to-change habits. A need thus arose to educate the youths to make informed decisions in avoiding these risk factors which results into diseases at the later stage of life.

The results show that the awareness level is higher for College of medicine students compared to Those at the Akoka campus (Fig. 2). This was not unexpected but can be attributed to the fact that College of Medicine students stay around a health care facility, the hospital and majorly participate in health care trainings such as ward rounds. They are predisposed to be aware about such disease conditions. It is observed that a higher percentage of students of College of Medicine have a good knowledge of these NCDs and their risk factors compared to Akoka students. This result can also be associated with the fact that students at the College of Medicine are inclined towards health related issues and conditions by virtue of their training with basic to advance knowledge in pathological conditions. According to a similar study carried out on students in a higher secondary institution, baseline knowledge regarding the risk factors of hypertension such as high salt consumption, obesity, stress, and lack of physical activity was 25.9%, 23.3%, 65.5%, and 21.6%, respectively [13].

The baseline knowledge of the students about the hazards of poor health behaviour (e.g.smoking, alcohol consumption, and lack of physical activity) such as cancer, hypertension, heart attack, and obesity were 74.1%, 14.7%,

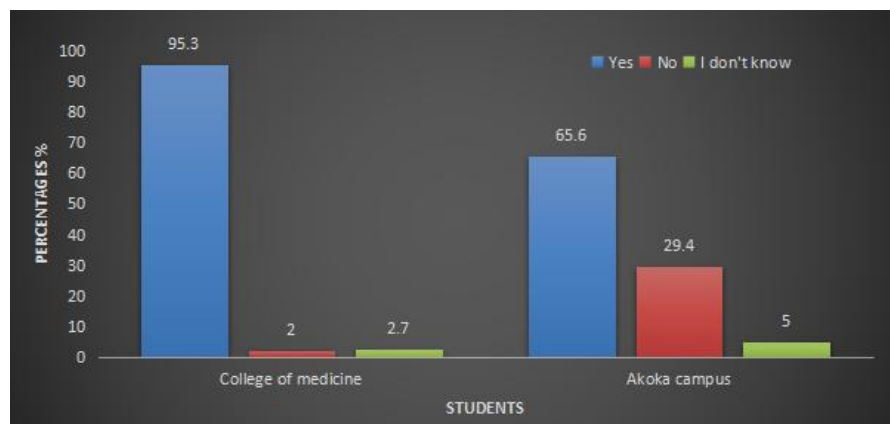
26.7%, and 13.8%, respectively and after the intervention, significantly increased to 89.7%, 56.0%, 74.1%, and 48.3%, respectively [14]. It becomes necessary then that intervention in the area of health education can equally be invaluable in bridging the knowledge gaps in the campus having less awareness as this will help to meet the global targets 2,3 and 5 of the WHO global status report on noncommunicable diseases of 2014 [4].

respiratory disease as NCD by the sampled population unlike for the other NCDs is corroborated by a similar study that reported of the the sampled population being familiar mainly with cardiovascular disease (hypertension) and diabetes mellitus [2]. Although the population sampled by Ramegowda *et al.*, [2] was predominantly educated up to high school, in this study students of a higher institution were sampled and this may explain why the awareness level was relatively higher.

The average level of awareness of chronic

**Table 1. Socio-demographic characteristics of the respondents**

Variables	Frequency	Percentage (%)
Gender		
Male	106	26.3
Female	294	73.5
Total	400	100.0
Marital status		
Single	364	91.0
Married	36	9.0
Total	400	100.0
Religion		
Islam	130	32.5
Christianity	264	66.0
Others	6	1.5
Total	400	100.0
Campus		
Akoka	190	47.5
College of Medicine	210	52.5
Total	400	100.0
Level		
400	190	47.5
500	126	31.5
600	84	21.0
Total	422	100.0



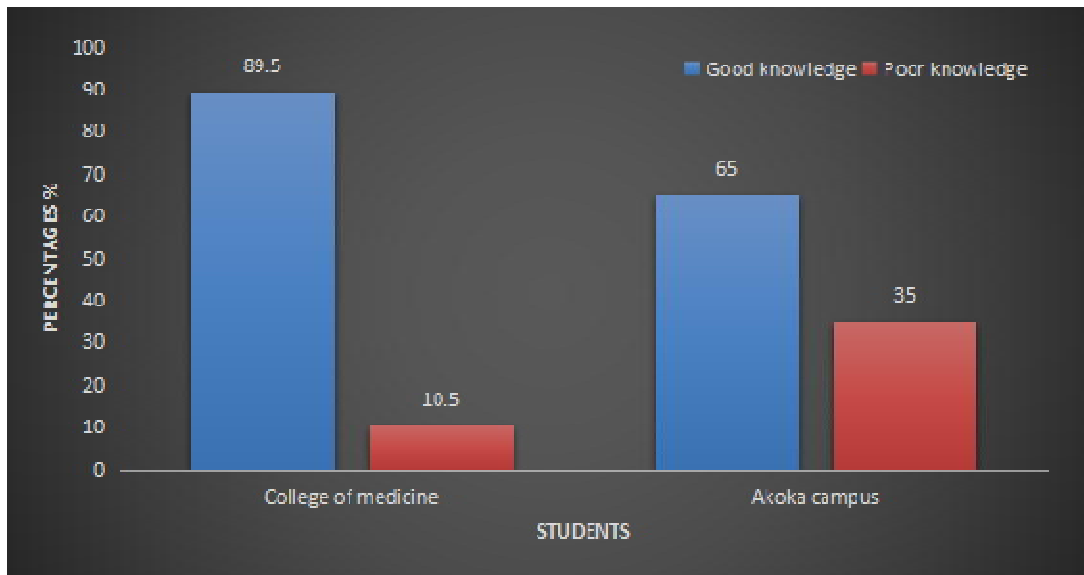
**Fig. 1. Showing awareness level of the respondents on non-communicable diseases from the two campuses**

**Table 2. Awareness on non-communicable diseases (NCDs)**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
What does NCDs stand for?		
Non-communicable disease	395	98.75
New communicable disease	0	0
Non-conspicuous disease	0	0
Non-colony forming disease	0	0
Nil	5	1.25
Total	400	100
Have you heard of NCDs?		
Yes	329	82.25
No	47	11.75
I don't know	18	4.5
Nil	6	1.50
Total	400	100
If yes, what was your first source of knowledge?		
Online	28	7.00
School	237	59.25
Friends	25	6.25
Media	16	4.00
All	28	7.00
Nil	66	16.50
Total	400	100.00
Are NCDs transmittable?		
Yes	29	7.25
No	302	75.5
I don't know	59	14.75
Nil	10	2.5
Total	400	100
If yes, through what means?		
Contact	25	6.25
Non contact	14	3.50
None	26	6.50
I don't know	7	1.75
Nil	328	82.00
Total	400	100
NCDs can be divided into how many basic classes?		
Three	5	1.25
Four	13	3.25
Above four	20	5.00
I don't know	333	83.25
Nil	29	7.25
Total	400	100

**Table 3. The NCDs as known by the respondents**

<b>Diseases</b>	<b>Classification as NCD (%)</b>	<b>Not NCD (%)</b>
Diabetes mellitus	358 (89.5)	42 (10.5)
HIV/AIDS	55 (13.75)	345 (86.25)
Tuberculosis	30 (7.5)	370 (92.5)
Cancer	356 (89.0)	44 (11.0)
Hypertension	350 (87.5)	50 (12.5)
Stroke	380 (95.0)	20 (5.0)
Arthritis	320 (80.0)	80 (20.0)
Asthma	329 (82.25)	71 (17.75)
Chronic obstructive pulmonary disease	225 (56.25)	175 (43.75)
Malaria	304 (76.0)	96 (24.0)



**Fig. 2. Comparing the overall level of knowledge of Non-communicable Diseases and their risk factors among final year students of the College of Medicine and Akoka campus**

Statistical analysis, using the chi-square, was done to compare the level of awareness and knowledge of non-communicable diseases. The third objective of the study can be extrapolated from the p-values obtained. A p-value > 0.05 means there is no statistical significant difference while p-value < 0.05 indicates that there is significant difference. A p-value of 0.000 was obtained for awareness while a p-value of 0.001 was obtained for the overall knowledge; it can thus be inferred that based on this study, there is a significant difference between awareness and knowledge of students in College of Medicine and students at Akoka Campus about Non communicable diseases and its risk factors with College of Medicine students having a higher percentage.

This research establishes the need for public awareness on non-communicable diseases and its risk factors locally and globally especially in young population that are not medically inclined and a proper orientation for even the medically inclined students. The university is a perfect setting to explore this research as peer pressure, family problems, and desperate thirst for academic excellence amidst other factors prompt students into developing behavioural lifestyle that can be detrimental to their health in the long run. It also opens the ground for further research of the public awareness and education on non-communicable diseases and a post education analysis to determine progress and impact of the

education among students of University of Lagos.

#### 4. CONCLUSION

A larger percentage of the final year students of the University of Lagos, have good knowledge of non-communicable diseases irrespective of the discipline or the campus they are domiciled. The students in the College of Medicine campus of the University, however, had higher level of awareness of the non communicable diseases than students at the Akoka campus. Lastly, students of the College of Medicine campus also have a better knowledge of non-communicable diseases and their risk factors compared to students in the Akoka campus with had a relatively large knowledge gap.

#### CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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