Original Article

Pattern of non-communicable diseases seen in a tertiary hospital in Keffi, North Central Nigeria

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Abstract

Background: The burden of noncommunicable diseases (NCDs) is increasing in developing countries largely due to epidemiological transition. In this study, data of individuals who were seen in specialist medical clinics and wards in a hospital located in a fast-growing urban area were analyzed to identify the pattern of NCDs among the attendees.

Materials and Methods: A retrospective study of available registers and electronic medical records of adult patients with diagnoses of medical disorders seen between January 2006 and January 2016 at the specialist medical outpatient clinics and medical, emergency, and intensive care wards of Federal Medical Centre, Keffi, Nasarawa State, Nigeria, was carried out between January 2015 and January 2016. Medical records of 682 individuals were reviewed, and their data were extracted and analyzed.

Results: Females (59.1%) and people in the middle-age group (44.6%) constituted majority of adult participants who were seen in the facility for medical diseases. The prevalence of NCDs was 64.4%, with cardiovascular disease (CVD) being the most common (37.7%). Hypertension was the most prevalent CVD (70%).

Conclusion: NCDs were the predominant diseases seen at the specialist clinics and medical wards in the study. CVDs were the most prevalent NCDs followed by endocrine diseases.

Keywords: Cardiovascular diseases, epidemiological transition, noncommunicable diseases, specialist clinics and wards

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INTRODUCTION

Noncommunicable diseases (NCDs) are medical conditions or diseases that are by definition noninfectious and nontransmissible among people. The four main types of NCDs are cardiovascular diseases (CVDs), cancers, chronic lung diseases, and diabetes.[1,2] They have long been the leading causes of death in developed countries.[3,4] Alarmingly, NCDs are now the leading causes of death in most low-income and middle-income countries, with the disease burden increasing more rapidly in low-income country populations.

About a decade ago, four-fifths of NCD deaths occurred in low- and middle-income countries, and one-third of these

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deaths occurred in people aged <60 years.[5] In 2013, WHO estimates showed that NCDs caused 24% of total deaths that occurred in Nigeria, with 20% of these arising from CVDs, cancers, diabetes, and chronic respiratory diseases.[6] In countries such as Nigeria, Ghana, and South Africa, the prevalence of NCDs is increasing, while the threat of communicable and poverty-related diseases (malaria, infant mortality, cholera, and malnutrition) still exists.[7-9]

The increasing incidence of NCDs, especially CVDs, in different regions of the world, particularly in Sub-Saharan Africa, has been attributed to rapid epidemiological transition characterized by increasing urbanization and changing lifestyle. There is thus a resultant shift in CVD morbidity and mortality globally.[7,10]

CVD is a broad term used to describe a range of diseases that affect the heart and the circulatory system. Heart diseases develop as a result of complex interactions between genes and environment.[11-13] The most frequent forms of CVD are coronary heart disease and stroke, and other forms include hypertensive heart disease, arrhythmia, and heart failure.[14] In South Africa, CVD is the second leading cause of death after HIV, accounting for up to 40% of deaths among adults.[15] Nigeria with an approximate population of 169 million,[16] with 27.7% of the population between the ages of 30 and 70 years, has an estimated proportional mortality attributable to CVDs of 12%.[17,18] The prevalence of CVDs in recent hospital-based studies in Nigeria has varied from 20.46% in Enugu[19] (south east) to 32.1% in Ekiti[20] (south west) Nigeria.

This study aimed at determining the pattern of NCDs in the medical clinics and wards of Federal Medical Centre, Keffi, a tertiary hospital in Nasarawa State, North-Central Nigeria. The town and the neighborhood are fast growing in population[21-23] and undergoing a rapid epidemiological transition from the native agrarian environment, due to its closeness to Abuja, the Nigerian capital city, at a distance of about 50 km.

MATERIALS AND METHODS

A retrospective study of adult patients with diagnosis of medical disorders seen between January 2006 and January 2016 at the specialist medical outpatient clinics, emergency and intensive care wards, as well as medical wards of Federal Medical Centre, Keffi, Nasarawa State, Nigeria, was carried out between January 2015 and January 2016 using available clinic and ward registers and electronic medical records. This study was approved by the Ethical Committee of Federal Medical Centre, Keffi, Nasarawa State. Age, sex, date of admission, and diagnosis were among the data retrieved from the records. Diagnosis of individual disease was based on case notes, and relevant results of investigations were requested by the attending physicians at the time of clinic visit, admission, or discharge. The International Classification of Diseases-10 of the International Statistical Classification of Diseases and Related Health Problems[24] was used. Where there was doubt, there was reconciliation between the medical record that coded the diseases, the authors, and the admitting physicians.

Data analysis

Data were extracted and analyzed. Chi-square test was used to test the association between categorical variables. Continuous variables were analyzed using Student's "*t*-test." Comparison of mean ± standard deviations (SDs) of parameters across groups was done using one-way ANOVA, and Duncan *post hoc* multiple comparison was done to indicate means for groups in homogenous subsets (means not significantly different). All statistical analyses were carried out using the Statistical Package for Social Sciences (SPSS Inc. Chicago, IL, USA) software version 16.0. $P < 0.05$ was considered statistically significant.

RESULTS

A total of 682 individuals were seen at the specialist medical clinics and wards within the period of study. Public servants, traders, and farmers constituted 45.7% (165), 27.1% (98), and 21.65% (78) of the participants, respectively. Females constituted 59.1% (403) and males constituted 40.9% (279) of the participants [Figure 1]. Participants aged 40–59 years in the middle-age group were seen most commonly (44.6%), followed by those

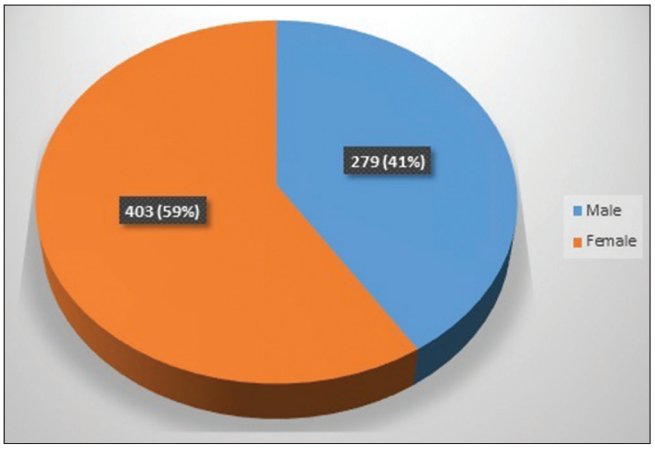

Figure 1: Sex distribution in the study

aged 60 years and above, the elderly age group (33.2%), while the late teens of 18–19 years and those aged 20–39 years in the young age group (22.1%) were the least seen. CVDs were the most common diseases occurring in 37.7% of the individuals, followed by endocrine diseases (23.7%), gastrointestinal diseases (11.8%), and neurological diseases (10.2%). Dermatological (0.4%) and hematological (0.9%) diseases occurred least among the participants [Figure 2]. CVDs found in the participants were hypertension (26.5%); cerebrovascular diseases (7%); heart failure (3.4%) from hypertensive heart failure, dilated cardiomyopathy, peripartum cardiomyopathy, rheumatic heart diseases, cor pulmonale due to chronic obstructive pulmonary diseases (0.4%); and ischemic heart diseases (0.3%). Other NCDs found include endocrine diseases (thyroid and diabetes mellitus) with their complications (23.7%); chronic obstructive pulmonary diseases (0.8%) (bronchial asthma 0.6% and chronic bronchitis 0.2%); sickle cell anemia (0.3%); and cancers such as hepatic malignancies (1.1%) and cutaneous Kaposi sarcoma (0.2%).

The age range of the participants was between 18 and 101 years, with a mean ± SD of 51.58 ± 16.32 years. The mean age was highest among participants with endocrine diseases (56.73), followed by those with rheumatological (56.64), neurological (54.24), and CVDs. Hematological diseases were most prevalent in participants with a mean age of 31.33 years [Figure 3].

The mean weight ± SD was 68.29 ± 16.14 kg, and the mean body mass index (BMI) ± SD was 26.96 ± 6.13 kg/m^2. The mean BMI was highest among participants with rheumatological diseases (30.01), followed by cardiovascular (28.55) and endocrine diseases (27.67) [Table 1].

DISCUSSION

Females comprised 59.1% and males comprised 40.9% of the study population. Oguanobi *et al*. documented similar finding in Enugu,[19] Southeast Nigeria. This could be due to the low endurance threshold and attention-seeking characteristics of females in response to ill health when compared to males.[25] However, contrasting gender disparities were found in other similar studies.[20,25-27] Some of the reasons proposed for such preponderance of males

Table 1: Mean body mass index of individuals with the respective clinical diagnoses in the study

Diagnosis	Mean BMI	Standard deviation
Neurological diseases	25.88^{b}	5.37
Cardiovascular diseases	28.55^{b}	6.03
Respiratory diseases	22.99^{a}	5.31
Endocrine diseases	27.67^{b}	6.10
Renal diseases	24.38^{a}	5.69
GIT	23.78^{a}	5.16
Dermatology	19.69*	5.84
Haematology	17.29*	2.84
Infectious disease	25.25^{b}	5.96
Rheumatology	30.01	5.53
Others	23.75^{a}	5.13
F	6.196	
P value	< 0.001	

*,a,b,#Duncan multiple comparison test indicating mean not significantly different. BMI – Body mass index; GIT – Gastrointestinal tract

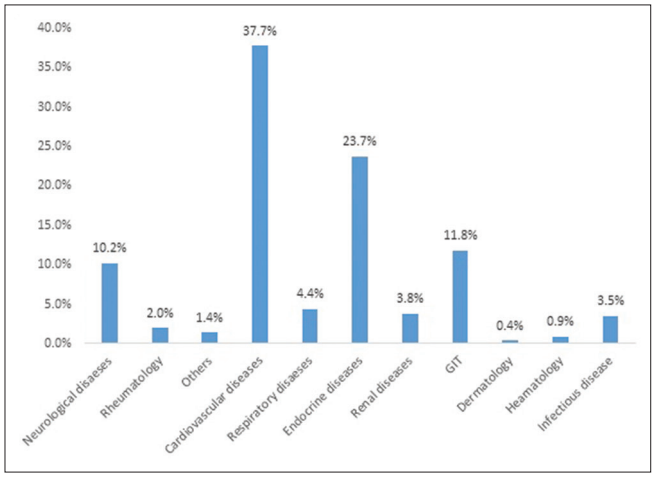

Figure 2: Prevalence of noncommunicable diseases in the study

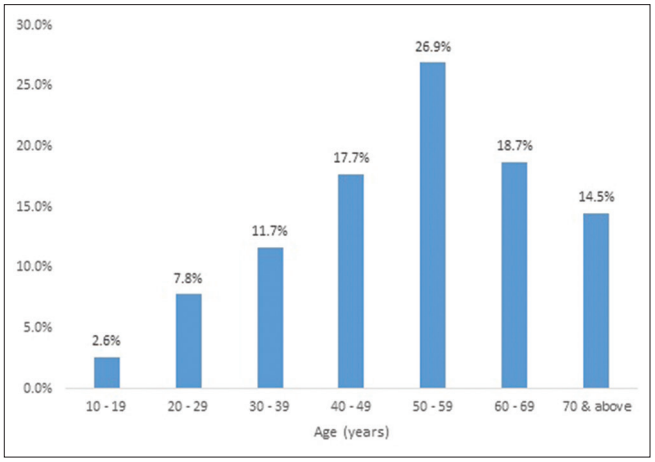

Figure 3: Age distribution in the study

included better economic empowerment of men and the atypical symptoms of heart disease in women.[27,28]

Most of the individuals in this study belong to middle and elderly age groups with no gender difference in age. Participants with endocrine and rheumatological diseases were older than those with neurological and CVDs, although these differences were not significant. The mean age is similar to the finding in other similar studies by Oguanobi *et al*.[19] (55.13 ± 15.37 years), Ogunmola and Oladosu[20] (56.1 + 18.8 years), and Ansa *et al*.[29] (52 ± 12.7), but lower than that obtained in another similar study in Nnewi by Osuji *et al*.[26] (60.7 ± 15.9).

The prevalence of NCDs in the study was 64.4%, whereas that of communicable diseases was 36.6%. This corroborates a similar study done in Ekiti State, Southwest Nigeria, where NCDs and communicable diseases constituted 68.4% and 31.6%, respectively, of the diseases found in patients.

The prevalence of CVD among the individuals was 37.7%. In a related study on hospital admission in a tertiary hospital in Ekiti State, CVDs accounted for 32.1% of admissions.[20] However, lower prevalence of 20.46% and 20.06% were found in similar hospital-based studies in Enugu[19] and Port Harcourt,[25] Nigeria, respectively. The lower prevalence seen in the last three studies may be because the studies were carried out on patients on admission only compared to that done in Keffi which was carried out on both patients on admission and those seen at the outpatient clinics.

In this study, the prevalence of NCDs increased with age. The increasing incidence and prevalence of CVDs occurring with advancing age was observed by Lakatta and Levy in their studies.[30] CVDs have been projected to account for 40% of all deaths and will rank as the leading cause among people aged 65 years and above by 2030.[31,32] Aging is associated with a progressive decline in numerous physiological processes, leading to an increased risk of health complications and diseases.[31] It has a remarkable effect on the heart and arterial system, leading to an increase in CVDs including atherosclerosis, hypertension, myocardial infarction, and stroke.[30]

Hypertension was the most common CVD accounting for 70% of the CVDs and 26.5% of the total number of medical subjects seen in the study. This is similar to findings by Oguanobi *et al*.[19] in a related and other recent studies on medical admissions from other parts of Nigeria, in which values ranging between 18% and 24% were reported.[33-35] The prevalence of hypertension in the study reflects the Nigerian national prevalence which ranges from 8% to 46.4% in both men and women as documented by Ogah *et al*.[36] It is also similar to the prevalence of hypertension of 22.7% found in a community-based study in adults from urban and rural areas in Abuja.[37] This is corroborated by findings in a survey of NCDs and their risk factors among university employees in Jos, Northcentral Nigeria, in which hypertension was the most common NCD (48.5%).[38] Changing lifestyles in the form of lack of exercise, intake of high-calorie dietary habits, and obesity as well as aging population are identified causes of the high prevalence of hypertension.

Cerebrovascular diseases (7%) were the second-most common CVD observed in the study. Other CVDs found in the study were heart failure (3.07%) from hypertension, dilated cardiomyopathy, peripartum cardiomyopathy, right-sided heart diseases (0.4%), rheumatic heart disease (0.5%), and ischemic heart disease in the form of angina pectoris (0.03%).

Endocrine diseases (23.7%), particularly diabetes mellitus, were among the NCDs found in the study. Rapidly changing environmental factors[36] such as urbanization, increasing sedentary lifestyles, and unhealthy dietary habits have been blamed for the increasing prevalence of type 2 diabetes in Africa as well as other low-income and middle-income countries in the world. Aging, unlike behavioral changes and obesity, is an unmodifiable risk factor and has been identified as one of the main drivers of diabetes.[39,40] Furthermore, the association between age, BMI, and the prevalence and incidence of Type 2 diabetes has been shown in different studies.[41-43] A recent study in Africa shows that most individuals with diabetes were younger than 60 years, with people aged 40–59 years comprising the highest proportion of 43.2%, whereas people aged 60–79 years accounted for about 18.8% of people with diabetes.[44]

Rheumatologic diseases (2%), namely osteoarthritis, rheumatoid arthritis, and gout, are other NCDs found and occurred in low prevalence in this study, affecting predominantly the elderly population. Epidemiological data in developing countries are lacking.[44-46]

CONCLUSION

Our findings demonstrate a high prevalence of NCDs in a hospital located in a fast-growing urban area of Keffi, Nasarawa state, Northcentral Nigeria. Cardiovascular and endocrine diseases were the most prevalent NCDs. Appropriate health planning is recommended for this

emerging trend in disease pattern. Being a retrospective study, one major limitation encountered was missing data.

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Conflicts of interest
There are no conflicts of interest.

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