
Research Article



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**EPIDEMIOLOGY OF CHRONIC DISEASES AND THEIR CORRELATES
RETROSPECTIVE HOSPITAL BASED STUDY AT ZEWUDITU AND
ST. PAUL HOSPITALS OF ADDIS ABABA/ETHIOPIA**

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Abstract

A cross sectional study design was employed with a retrospectively review of 7628 randomly selected medical records of the patients who visited the study hospitals during the period from November 2010 to December 2011. The data was analyzed using SPSS 15. The study found out that the prevalence of chronic diseases in its aggregate form including Cardio Vascular Disease (CVD), Chronic Obstructive Pulmonary Diseases (COPD), Cancer and Diabetics Mellitus (DM) was 33.6%. About 18.1% of chronic disease patients had more than one of these major chronic diseases. It was also revealed that the prevalence of CVD was 18.5% (male 18.9% & female 18.2%), Cancer 4.5% (male 2% & female 6.2%), COPD 3% (male 3.8% & female 2.5%) and DM 13.8% (male 15.2% & female 12.8%). The aggregate Chronic disease had association with age and residence of the patient with $p < 0.001$, for each. Older patients and patients who live in Addis Ababa were higher odds to be diagnosed for chronic diseases than younger patients and patients who live in other regions outside of the capital.

Keywords: Chronic diseases, Retrospective, Hospital based study.

Introduction

Chronic diseases are diseases of long duration and generally slow progression. Chronic diseases, such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes, are by far the leading cause of mortality in the world, representing 63% of all deaths¹.

Chronic diseases are increasing in global prevalence. Although often associated with developed nations, the presence of chronic disease has become the dominant health burden in many developing countries. Chronic diseases were responsible for 50% of the disease burden in 23 high-burden developing countries in 2005 and will

cost those countries \$84 billion by 2015 if nothing is done to slow their growth².

Developing countries are experiencing a double burden of diseases, due to problems with both communicable and non-communicable diseases. This double burden will increase substantially in just a few years, if no action is initiated to reduce the non-communicable chronic diseases. Diseases in developing countries have important economic consequences on the individual, the family, community and potentially on the nation³. Reliable epidemiological data are useful for the design and implementation of effective strategies for the

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prevention and control of chronic diseases. There are, however, limited data on the epidemiology of chronic diseases and their correlates in many sub-Saharan African countries⁴. Ethiopia is among the least developed countries where the prevalence of chronic diseases is believed to be at the increasing trend. However, there is no timely research evidence that indicates the current prevalence of chronic diseases and their correlates in the country. The purpose of this study was, therefore, to assess the epidemiology of chronic diseases based on secondary data 'hospital records'. The study was conducted with the financial support of addis continental institute of Public Health (ACIPH).

Methodology

Study Setting

Ethiopia is Africa's oldest and independent country; it is the second largest country in Africa; with a total population of 82.1 million⁵. Recently Ethiopia has implemented a three-tier Health care delivery system characterized by a first level of district health system comprising a primary hospital (with population coverage of 100,000 people), health centers (1/25,000 population) and their satellite Health Posts (1/5,000 population) connected to each other by a referral system. A Primary Hospital, Health center and health posts form a Primary health care unit (PHCU) with each health center having five satellite health posts. The second level in the tier is a General Hospital with population coverage of 1 million people; and the third a Specialized Hospital that covers a population of 5 million.

In the capital Addis Ababa there are about 48 hospitals (13 public & 35 Private owned), 56 public health centers and about 500 private clinics. These health facilities specially, the public referral hospitals provide health services for patients from the city as well as the other regions of the country. St. Paul and Zewuditu referral hospitals are among the major public referral hospitals in Addis Ababa that provide health services for the people throughout the country via referral and regular schemes. The source population for this study was the adult population that visited the two hospitals from November 2010 to December 2011.

Study Design

A cross-sectional study design was employed; and patient charts were reviewed. Sampled patient

charts were taken from medicine, surgery and gynecology departments of Zewuditu and St. Paul referral hospitals.

Sample Size

Based on the hypothesized prevalence of major chronic diseases (Cancer, DM and CVD), a statistically representative sample size needed to answer the research objectives was computed and found out 7628. Then multistage stratified sampling technique was used to select patient charts for review. The statistically representative sample estimate (7628) was proportionally allocated for the two sampled hospitals, based on their number of patients visited in the specific period. Thus, 3280 & 4348 samples were taken from Zewuditu and St. Paul hospital respectively. The allocated sample size further proportionally allotted to the medical (43%), surgery (44%) and gynecology (13%) departments. Therefore, the allocated samples were randomly selected from the lists of patients in the patient registry book of the three departments. As per the sampled patient code, details of each patient chart were reviewed and data were collected using pre-designed data abstraction template.

Data Collection Procedure

Data collectors were nurses from the study hospitals'; one from each of the three department gynecology, surgery and medicine. a day long orientation training was given to them on the abstraction form and the purpose of the study. Two supervisors were assigned, one for each study hospital so as to ensure data quality. The review was carried out over 45days (February 15 to March 30/2012).

Data analysis

Data analysis was done in SPSS. Data cleaning was undertaken prior to any analysis. Outliers in the scale variables were explored using stem and leaf plots, and through computing standard values; and corrective measures such as replacing scale variables with mean was done. Pair wise test of multi co-linearity was made among independent factors. Independent variables that had correlation of 0.7 and above were either of the two variables was reduced from the logistic analysis. The analysis was done using univariate, bivariate and multivariate techniques. In the multinomial analysis mainly logistic regression analysis was

executed for the four major prevalent chronic diseases. Each of the four major chronic diseases as well as their aggregate was taken as dependent variable. Socio-demographic variables (age, sex and residence etc) were taken as independent variables for the logistic regression.

Ethical Considerations

Before the commencement of this research, the study proposal was given to ACIPH and University of Gondar review board, Addis Ababa health bureau and St. Paul hospital. Ethical approval was obtained from each of the parties.

Result and discussion

Prevalence of major chronic diseases

Table 01 below shows the overall prevalence of major chronic diseases including diabetes mellitus, cancer, cardio vascular diseases and chronic obstructive pulmonary diseases was 33.6%. Of whom 27.5% were found with only one major chronic disease; 5.9% had two major chronic diseases and only 1.1% was found with three or

more chronic diseases. 18.1% of chronic diseases patients had two or more major chronic diseases.

On the other hand, the analysis was made to examine the independent prevalence of the major chronic diseases. As shown in figure 1 below the prevalence of cardio-vascular diseases was 18.5%, in which about 67% of CVD cases were contributed by hypertension. Prevalence of cancer was 4.5%; of whom breast cancer contributed 14.3%, cervical cancer 9.1% of the cases, and ovary tumor contributed 6.1%. Prevalence of COPD was 3%; and the prevalence of diabetes mellitus was 13.8% in which the majority of the cases about 71% were type II diabetes.

About 92.3% of all the cases were confirmed by at least one examination instrument (laboratory (86.2%), X-ray (23.9%), Ultrasound (39.2%).

The analysis regarding the stage of cancer found out that, the stage of 89.1% of cancers cases were not defined, 4.8% at third stage, 4.4% at second stage and only 1.6% found at first stage.

Table No. 01: Prevalence of chronic disease in its aggregate form among the sampled patients of Zewuditu and St. Paul hospitals from November/2010 to December 2011

Diagnosis for major chronic diseases	Frequency	Percent	Cumulative Percent
Had the four major chronic diseases	2	.0	.0
Had three major chronic diseases	8	.1	.1
Had two major chronic diseases	435	5.9	6.1
Had one major chronic diseases	2013	27.5	33.6
Had no major chronic diseases	4862	66.4	100.0
Total	7320	100.0	

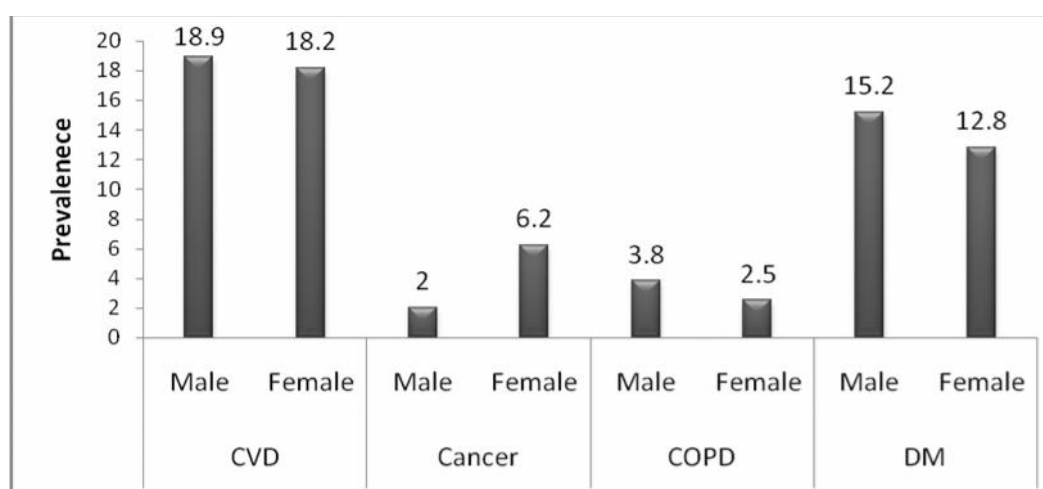


Fig. 01: Prevalence of major chronic diseases among the sampled patients of Zewuditu and St. Paul hospitals from November/2010 to December 2011

Correlates of major chronic diseases

The four major chronic diseases were merged and computed as one dependent variable for the aggregate major chronic diseases. The association of this variable with age, sex, and region, type of hospital, department, service scheme, and frequency of visit and admission status was tested. As shown in the table 2 below, prevalence of aggregate chronic disease doesn't have an association with sex. The prevalence of chronic disease has significant association with age. Older patients were more likely to be diagnosed for chronic diseases than younger patients ($p < 0.001$). A patient within the age range of (54 -93) was about six times more likely to be diagnosed with chronic diseases than patients within the age range of (13-28).

Patients from Addis Ababa were about 37% more chance to be diagnosed for chronic diseases than patients from regions. Patients who examined in St. Paul hospital were about 28% more probability to be found with chronic diseases than patients visited in Zewditu hospital. Patients who came repeatedly were about three times more likely to be diagnosed with chronic diseases than patients who came for the first time ($p < 0.001$). Patients who came through referral scheme were 28% less likely to be found with chronic diseases than patients who came through regular scheme. Chronic diseases accounted about 22% of hospital admission. The majority of chronic disease patients (82.4%) have got outpatient services; and the remaining 14.2% and 3.3% of the chronic disease patients were admitted and referred to the next step respectively.

Table No. 02: Association of the aggregate chronic disease with age, sex, residence and other factors among the sampled patients of Zewuditu and St. Paul hospitals, November/2010 –December/2011.

Factors	Chronic Disease		Crude	Adjusted	CI
	Yes	No	OR	OR	
Sex					
Male	1012	2023	1	1.0	--
Female	1446	2839	1	1.02	0.923-1.12
Age Category					
13-28	308	1674	1	1.0	--
29-40	502	1364	1.7	2.0	1.7-2.34
41-53	684	920	2.7	4.04	3.45-4.73
54-93	942	849	3.4	6.03	5.18-7.03
Region					
Addis Ababa	1886	3273	1	1	--
Oromia	453	1263	0.7	0.62	0.552-0.70
Other Regions	119	326	0.7	0.63	0.51-0.79
Hospital					
Zeuwditu	964	2205	1	1.0	--
St.Paul	1419	2657	1.2	1.28	1.16-1.42
Frequency of visit					
First	552	2363	1	1.0	--
Second	1890	2455	2.3	3.2	2.95-3.68
Service Scheme					
Regular	430	644	1	1.0	--
Referral	2006	4167	0.8	0.72	0.63-0.82
H. admission					
Admitted	345	1220	1		
Referred	83	569	0.6		
Out patient	2030	3073	1.8		

Study limitation

The method employed in this study was a cross sectional retrospectively reviewing of patient charts 'secondary data' in the selected hospitals. Consequently it was cost efficient, and less viable for ethical issues; as there was no direct contact with human subjects. However, the major limitation of the study was it lacks represent -

-ativeness neither to all the patients in the country nor the general population in Ethiopia. Moreover, some of the patient charts had incomplete information and hence it couldn't be possible to analyze important variables such as body mass index (BMI), blood pressure (BP) and other life style variables.

Conclusion

- The study found out that there is high prevalence of chronic diseases including CVD, COPD, cancer and DM in Ethiopia.
- The finding shows the existence of high interaction among major chronic diseases. The likelihood for a patient of one chronic disease to acquire another type of chronic diseases was high- that aggravates the level of vulnerability of the patient.
- Chronic diseases contributed about 22% of hospital admission; and it shows that the health system in Ethiopia is straining under an increasing rate of non-communicable diseases. Chronic diseases exert a significant burden on the health system of the country.
- Chronic diseases have significant positive association with age and urbanization.

Recommendation

- The author of this study highly recommends the urgent need of emphasizing the issue of chronic diseases in the health system of the country. That includes enhancing the involvement of international agencies, civil society and the private sector to promote further studies on chronic diseases that will use for program planning.
- In the health system of Ethiopia, there is HMIS, for the very purpose of using health facility data for decision making. Unfortunately, in my assessment I have learned that, the database was incomplete and

the indicators measured by the system were in aggregate form, couldn't enable researchers or data analysts to assess risk factors for a health problem. Thus, I recommend to the study hospital administration as well as administrations of other health facilities to give much emphasis to the data management and usability of the data collected in the routine health system.

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