

Pattern of Admissions to Medical Ward of Jimma University specialized hospital, Jimma, South West Ethiopia

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Abstract

Background: *Non-communicable diseases are the main reasons for admission to the medical wards in high-income countries. While in low and middle income countries communicable diseases are the main reasons for admission to the medical wards. However, in some low and middle income countries the reasons for admission are changing from communicable diseases to non-communicable diseases. But, data on reasons for admission to the medical wards of low income countries, like Ethiopia, is scarce. Therefore, this study will take five year data from Jima University specialized hospital internal medicine inpatient department.*

Objective: *evaluating the recent patterns of medical admissions to see whether there is a change in disease epidemiology in the study area.*

Methods: *A retrospective analysis of data from admission ward registers and patient case notes was done. Data was collected through chart review using structured questionnaire containing age; gender; duration of stay; clinical outcomes; discharge diagnosis and Secondary diagnosis. The International Statistical Classification of Disease was used for sorting and categorizing the diagnosis. All patients admitted to the adult medical wards at Jima University Specialized hospital for the period January 2013 to December 31, 2013 were included. Analysis was done using SPSS 20. Both descriptive and inferential analysis was done.*

Result: *A total of 306 patient case notes were reviewed. The mean age of the patients was 40.7 years (SD \pm 18.91). The highest number of admissions was among the age groups 21 to 30 years, 88 (28.8%). The most common reasons for admission to the medical wards of JUSH were certain infectious and parasitic diseases accounting for 128 (41.8%) admissions, all forms of TB 30(9.8%) was the most common infectious disease in the subcategory. The death rate among patients admitted to the medical wards was 8.8%.*

Conclusions: *Communicable diseases were still the common reasons for medical admissions at Jimma University Specialized Hospital.*

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List of abbreviations

AIDS	Acquired Immuno Deficiency Virus
ALOS	Average Length of Stay
CHD	Coronary Heart Disease
COPD	Chronic Obstructive Pulmonary Disease
CRD	Chronic Respiratory Disease
CVA	Cerebrovascular Accident
CVD	Cardiovascular Disease
HHF	Hypertensive Heart Failure
HIV	Human Immunodeficiency Virus
ICD	International classification of diseases
JUSH	Jima University Specialized Hospital
LMIC	low and middle income countries
NCD	Non-communicable diseases
SSA	sub-Saharan Africa
TB	Tuberculosis
WHO	world health organization

CHAPTER ONE: INTRODUCTION

1.1. Background

Non-communicable diseases (NCDs) refer to non-infectious diseases or illnesses that are caused by something other than pathogens. The term is used to imply a variety of conditions including cancer, cardiovascular diseases, diabetes mellitus, chronic respiratory diseases, musculoskeletal disorders and other conditions.(1)

Non-communicable diseases are the leading causes of death globally, killing more people each year than all other causes combined. Contrary to popular opinion, available data demonstrate that nearly 80% of deaths due to non-communicable diseases occur in low- and middle-income countries. Even in African nations, NCDs are rising rapidly and are projected to exceed communicable, maternal, perinatal, and nutritional diseases as the most common causes of death by 2030. (1). Of the 57 million deaths that occurred globally in 2008, thirty-six million were due to non-communicable diseases comprising mainly cardiovascular diseases, cancers, diabetes, and chronic lung diseases. The combined burden of these diseases is rising fastest among the lower-income countries, populations, and communities (2).

Non-communicable diseases are the main reasons for admission to the medical wards in high-income countries.(12-15) While in low and middle income countries communicable diseases are the main reasons for admission to the medical wards. (20-24) However, in some low and middle income countries the reasons for admission are changing from communicable diseases to non-communicable diseases. (26, 27 & 28).

1.2. Problem statement

The 2010 Global Burden of Disease Study has significantly improved our knowledge of changing patterns of diseases in Africa.(3-4) The World Health Organization (WHO) has predicted a shift in the burden of disease in Africa away from communicable diseases and towards non-communicable diseases (NCD) as populations age and the impact of diseases such as HIV/AIDS, tuberculosis and malaria are reduced.(1) However, the predicted timescale for the point at which NCDs become a greater burden on health services in Africa than communicable diseases is uncertain. The WHO suggests that NCDs will be a more common cause of death than communicable, Perinatal, maternal or nutritional disease in Africa by 2030. (1)

Common, preventable risk factors underlie most NCDs. These risk factors are a leading cause of the death and disability burden in nearly all countries, regardless of economic development. The leading risk factor globally for mortality is raised blood pressure (responsible for 13% of deaths globally), followed by tobacco use (9%), raised blood glucose (6%), physical inactivity (6%), and overweight and obesity (5%). (29)

The prevalence of these risk factors varied between country income groups, with the pattern of variation differing between risk factors and with gender. High-, middle- and low-income countries had differing risk profiles. Several risk factors have the highest prevalence in high-income countries. These include physical inactivity among women, total fat consumption, and raised total cholesterol. Some risk factors have become more common in middle-income countries. These include tobacco use among men, and overweight and obesity.(1)

A recent systematic review highlighted the lack of reliable data on medical admissions to hospitals in Africa.(5) The authors reviewed publications between 1950 and 2010 and found 27 articles of sufficient methodological quality covering 86,307 adult medical admissions to hospitals in Africa.

Infectious and parasitic diseases are the leading causes of admission in Africa. (1, 2, 12-15). But the WHO report stated that the rate of rising in NCDs in low income countries, like SSA, is higher than the rate for communicable diseases. (1, 5, 21 & 22). The recent systematic review which analyzed publications between 1950 and 2010 reported that Infectious and parasitic diseases (19.8%) were the leading cause of admission, followed by respiratory (16.2%) and circulatory dysfunction (11.3%).(5)

World Health Organization (WHO) estimated in 2011 that 34% of Ethiopian population is dying from non-communicable diseases, with a national cardiovascular disease prevalence of 15%, cancer and chronic obstructive pulmonary disease prevalence of 4% each, and diabetes mellitus prevalence of 2%. Communicable maternal, Perinatal and nutritional conditions accounted for 57% of the deaths. Also WHO estimated the prevalence of risk factors in the country as 2.4% of the population is Current daily tobacco smokers (4.5% in males and 0.2% in females), Physical inactivity 17.9%, Raised blood pressure 35.2%, Overweight 7.4% and Obesity 1.1%. This WHO estimation is comparable with East African countries, such as Kenya, Uganda, and Eritrea (3).

Reports from Ethiopia are scarce and the available reports all show that the main causes of admissions were infectious diseases. Also those studies were evaluated the admission trends over one and two year period, this may have precluded the rate of increasing of NCDs even if the study figure showed a lower rate than infectious diseases. (7, 9, 10)

A few observational studies from the largest teaching hospital in Addis (Tikur Anbessa Hospital) have reported a steady increase in the proportion of admissions due to stroke, myocardial infarction, and diabetes mellitus. AMI was the third commonest cause of admission to the medical intensive care unit at Tikur Anbessa Teaching Hospital during the period 1988 to 1997, accounting for 8.8% admissions. Hypertension was the most common risk factor of stroke and myocardial infarctions. Trends of admissions to the same center over sixteen-year period (1985-2000) showed steady increase in relative frequency of acute complications of non-communicable diseases consisting of diabetes, acute myocardial infarction and stroke while infectious diseases showed interspersed peaks of admissions coinciding with epidemics. (8)

Analysis of hospital admissions to study the disease patterns in the community has various limitations, for example, selection of very ill patients, those who are able to pay and whose home happens to be near the hospital. However, such analyses provide valuable information about severe forms of illnesses and help to identify diseases which are common and those which are rare. It also provides basis for comparison of the pattern with other communities as well as with the past situation in the same area so that any change can be identified and reasonably discussed.

1.3. Significance of the study

Current knowledge of the trends in adult medical admissions from NCDs to referral hospitals in Ethiopia is not well studied. This hospital based study, which was conducted at JUSH, will serve as a point of reference regarding trends of adult medical admissions in referral hospitals in Ethiopia and Jimma area in particular and add to the existing body of knowledge.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Non-communicable diseases (NCDs) are the leading causes of death globally, killing more people each year than all other causes combined. Contrary to popular opinion, available data demonstrate that nearly 80% of NCD deaths occur in low- and middle-income countries. Of the 57 million deaths that occurred globally in 2008, 36 million, almost 2/3rd, were due to NCDs, comprising mainly cardiovascular diseases, cancers, diabetes and chronic lung diseases. The combined burden of these diseases is rising fastest among lower-income countries, populations and communities, where they impose large, avoidable costs in human, social and economic terms.(1)

A total of 57 million deaths occurred in the world during 2008; 36 million (63%) were due to NCDs, principally cardiovascular diseases, diabetes, cancer and chronic respiratory diseases (3). Nearly 80% of these NCD deaths (29 million) occurred in low- and middle-income countries. NCDs are the most frequent causes of death in most countries in the Americas, the Eastern Mediterranean, Europe, South-East Asia, and the Western Pacific. In the African Region, there are still more deaths from infectious diseases than NCDs. Even there, however, the prevalence of NCDs is rising rapidly and is projected to cause almost three-quarters as many deaths as communicable, maternal, perinatal, and nutritional diseases by 2020, and to exceed them as the most common causes of death by 2030. (3)

2.2 Morbidity Pattern in admitted patients

In developed countries Non-communicable diseases namely cardiovascular diseases are the main reasons for medical admissions. For instance, In the Australian study, the most common reason for admissions to the medical wards was cardiovascular disease, 29% (12). In another study, admissions to medical wards at a hospital in Hong Kong were most frequently associated with the cardiovascular system which made up 30.3% of all medical cases (13).

In a study done in Germany, which analyzed the development of case numbers for heart failure in relation to the period up to 2050, reported that Heart in 2006, at 317 000 primary diagnoses,

heart failure had become the most common reason for hospital admission in Germany. In 2007 hospital admissions for heart failure rose by a further 5.6% to 335 000 cases.(14)

In 2007, 12.7% of all non-pregnancy related admissions to hospital and 27.4% of those for individuals aged 60 years or older were due to cardiovascular diseases in Brazil. Of special note is the burden of congestive heart failure: in people older than 60 years, it is the most common cause of admission to hospital, and in people over 80, it causes 27% of admissions to hospital in women and 33% in men. The burden of diabetes can also be gauged by the fact that 7.4% of all non-pregnancy related admissions to hospital and 9.3% of all hospital costs in the period 1999–2001 could be attributable to diabetes. (20)

A review of 27 studies done in Africa reporting data on 86,307 medical admissions for the period from 1950-2010, showed that Infectious and parasitic diseases, including malaria, bacterial diseases, and HIV disease, were the leading cause of admission over the period accounting for 19.8% (95% CI 19.6_20.1) of all admissions. Respiratory illnesses were second accounting for 16.2% (95% CI 16.0_16.5) of admissions while diseases of the circulatory system were third at 11.3% (95% CI 11.0_11.5). Also Infectious and parasitic diseases, disorders of the circulatory system, and digestive system disorders were the leading causes of death accounting for 17.1% (95% CI 16.4_17.9), 16.0% (95% CI 15.3_16.8), and 16.2% (95% CI 15.4_16.9) of all deaths, respectively. (23)

Findings from a study on Burden of disease in adults admitted to hospital in a rural region of coastal Kenya, the main causes of admission to hospital in women living within 5 km of the hospital were infectious and parasitic diseases (303 per 100 000 person-years of observation), pregnancy-related disorders (239 per 100 000 person-years of observation), and circulatory illnesses (105 per 100 000 person-years of observation). Leading causes of hospital admission in men living within 5 km of the hospital were infectious and parasitic diseases (169 per 100 000 person-years of observation), injuries (135 per 100 000 person-years of observation), and digestive system disorders (112 per 100 000 person-years of observation). HIV-related diseases were the leading cause of disability-adjusted lifeyears lost (2050 per 100 000 person-years of

observation), followed by non-communicable diseases (741 per 100 000 personyears of observation). Infectious and parasitic diseases, dominated by HIV-related illnesses, accounted for 39% of all hospital deaths, most of which occurred in patients younger than 55 years of age. Circulatory system illnesses, mainly stroke and heart failure, were the second most common cause of death, and accounted for 16% of all deaths in hospital.(24)

A study which reviews hospitalization and mortality due to NCDs from health facilities in The Gambia between 2008 and 2011 shows the percentage increase in total morbidity due to NCDs reported over a 4-year period is approximately 19.8% while increase in hospital admissions due to NCDs reported during the same period is approximately 9.9%. (22)

In one study done in Nigeria which sought the pattern and outcome of medical admissions (2001-2004), Infectious diseases accounted for 31% of the total admissions. The three most common infectious diseases were: tuberculosis, 11.2%; pneumonias, 5.5%; and sepsis syndrome, 4%. NCDs constitute 69% of admission in this review. Hypertensive heart failure (HHF) was the commonest disease entity diagnosed at admission. It accounted for 18.4% of total admission, followed by CVA (12.1 %) and TB (9.7%). (26)

Similarly a two year review, from Jan.2006-Dec.2007, of medical admissions at the emergency unit of a Nigerian tertiary health facility showed that infectious diseases accounted for the highest incidence of admissions (1132; 47.6%). This was followed by diseases of the cardiovascular system (414; 17.4%), central nervous (227; 9.5%) and endocrine (193; 8.1%) systems, respectively. The least proportion of admissions was accounted for by dermatological conditions (4; 0.2%). Overall, non-communicable diseases accounted for 1245 (52.4%) of the cases and communicable diseases for 1132(47.4%). (27)

In a specific age group, Elderly populations in Africa, by far NCDs are the major reasons of admission in medical wards [80.4% (n = 703)] whilst tuberculosis, malaria and HIV/AIDS accounted for only [4.5% (n = 39)]. Stroke (n = 213, 24.4%) was the most common reason for admission, followed by cardiac or circulatory dysfunction (n = 155, 17.7%). (28)

A review of studies in Ethiopia from 1960-2011 on the epidemiology of NCDs found a cardiovascular disease prevalence of 7.2% and 24% from two hospital-based studies and diabetes prevalence of 0.5% and 1.2% from two hospital-based studies. In similar review, on the impact of these diseases on hospital admissions: cardiovascular disease accounts for 3%-12.6% and found to have increased between 1970s and 2000s; cancer accounts for 1.1%-2.8%, diabetes accounts for 0.5%-1.2%, and chronic obstructive diseases account for 2.7%-4.3% of morbidity. (6)

A prospective study done in Gondar College of Medical Sciences (GCMS) teaching hospital to see the changing pattern of diseases in medical admissions for the time period from October 1994 to September 1995 admissions to the were studied prospectively showed that the top ten diseases responsible for admissions, in order of decreasing frequency, were as follows: tuberculosis (25.4%), anaemia (6.5%), acute gastro-enteritis and colitis (6.1%), diabetes mellitus (6.0%), pneumonia (5.9%), chronic diarrhea (4.96%), falciparum malaria (4.6%), chronic liver disease (4.2%), severe hypertension (4.2%), and stroke (3.0%). The mortality rate was 19.1% and tuberculosis and central nervous system diseases were the leading causes of hospital mortality, accounting for 35% and 18% of all deaths, respectively. (7)

In all past study reports from medical admissions in Jima University Specialized Hospital, infectious diseases were the commonest reasons of medical admissions. In a study which was undertaken 16 years ago a 2 year record (between Sep 1993 and August 1995) of admission to the medical wards of Jimma University Specialized hospital (JUSH) was reviewed. This study found infectious diseases as the major reasons for admission (42.5%) and a high mortality rate of 12.3%. (9)The recent report is 5 years back which reviewed a one year hospital data (Jan. 2008-Dec.2008). This study revealed a similar report with the previous one showing that Communicable diseases; namely severe community acquired pneumonia 139(22.8%), all infectious and parasitic diseases category 100 (16.4%), and pyogenic as well as chronic meningitis 80(13.1%) were the most common reasons for admission. The death rate among patients admitted to the medical wards was 12.6 %.(8)

2.3 Demographic characteristics of admitted patients

In a study done at a University hospital in Pakistan, The most common age group admitted in medical ward was between 46-65 yrs (37.6%), followed by between 26-45yrs (33%), <25yrs (15.9

%) , between 66-85 yrs (12.5 %) and >85 yrs were only 1%. Sex distribution in admitted patients was dominated by female gender 178 (54.4 %) against male gender 149 (45.6 %). (36)

A Systematic and critical review on the Frequency and clinical patterns of stroke in Iran reported that Stroke was slightly more common in females (range from 51%-53%) in the studies that included all age range. The clinical series showed a mean age of stroke within the 7th decade. (34)

A two year review, from Jan.2006-Dec.2007, of medical admissions at the emergency unit of a Nigerian tertiary health facility showed that The highest proportion of admissions was in the 30-39 years age group (17.6%), followed by 40-49 years (17.0%) and 20-29 (16.7%) age groups.(27)

In a rural region of coastal Kenya, Women were admitted to hospital at a significantly higher rate than were men (incidence rate ratio [IRR] 1.4, 95% CI 1.3–1.6; $p < 0.0001$). Rates of hospital admission for women were highest for infectious and parasitic diseases, pregnancy-related disorders, and circulatory disorders, with the rate of admission for infectious diseases for women roughly double that for men (IRR 1.8, 95% CI 1.5–2.1; $p < 0.0001$). In men, rates of hospital admission were highest for infectious and parasitic diseases, injuries, and digestive system illnesses. Rates of hospital admission for circulatory disorders did not vary significantly by sex (IRR 1.2, 95% CI 0.9–1.6; $p = 0.098$). (24)

In a study done in a tertiary health care facility in Uganda, from a total of 568 patients with respiratory diseases admitted to the pulmonary division ward chronic respiratory diseases (CRDs) accounted for 9.0% of the total admissions, following Tuberculosis (46.8%) and pneumonia (42.8%). The commonest CRDs were asthma and COPD accounting for 70.6% and 21.6% of all CRD admissions respectively. 330 (58.2%) were male and 238 (41.8%) were females. Five patients (9.8%) of the patients with CRD died, Asthma and COPD accounting 3 (8.3%) and 1 (9.1%) respectively. The mean ALOS for chronic respiratory disease was 5.6 days (\pm SD 8.6) and 5.2 days (\pm 6.2) for communicable respiratory disease. (35)

In a study done at Gonder hospital in 1994-1995 Out of the total of 1139 consecutively admitted patients in the study period, 583 (51.2%) were males and 556 (48.8%) were females. The median age was 30 years (range=12-98). (7)

In a study which was undertaken 20 years ago a 2 year record (between Sep 1993 and August 1995) of admission to the medical wards of Jimma University Specialized hospital (JUSH) evaluated a total of 1440 case notes and reported that the mean age was 35yr and the mean and median were 31 yrs and 25yrs respectively. The sex distribution was 1.6 to 1 in favor of males. The recent study done in JUSH evaluated a total of 610 patient case notes and reported the mean age of the patients was 36 years (SD \pm 15.75). The highest number of admissions 218 (35.7%) was among the age groups 21 to 30 years. From the total case note evaluated 326 (53.1%) were men and the male to female ratio was 1.1 to 1. The highest number of admissions came from the age group of 21 to 30 years, 221 (36.0%). The patients were predominantly, 362 (59.0%) from the rural areas. (9,10)

2.4 The average length of stay of those patients admitted from NCDs

In a study done at a University hospital in Pakistan, The average hospital stay of patients was 4 days and 96.30% of the patients stayed for less than 10 days. (37)

In a study done at teaching hospital in Nigeria, the length of stay in hospital ranged between 1 and 140 days with a mean of 13.5 ± 13.9 days and a median of 10 days. (38)

In Nigeria, at University of Ilorin Teaching Hospital, The mean duration of hospitalization was 15.6 ± 13.8 days. (26)

In a study done at Gonder hospital in 1994-1995 the median duration of hospitalization was 12 days (range=1-141 days) (7)

In a study which was undertaken 16 years ago a 2 year record (between Sep 1993 and August 1995) of admission to the medical wards of Jimma University Specialized hospital (JUSH) evaluated a total of 1440 case notes and reported that the hospital stay ranged from 1 day to 98days with a mean of 11.65 days and a median of 8 days. 34%, 60% and 84% of patients were

discharged with in 5, 10 and 20 days of hospital stay respectively. The recent study done in JUSH evaluated a total of 610 patient case notes and reported that 237 (39.3%) patients stayed in the hospital for five to ten days, 224 (36.9%) for more than ten days, while the remaining 145 (23.8%) had a hospital stay less than five days.(9,10)

2.5 Outcomes of adult medical admissions

WHO projections show that NCDs will be responsible for a significantly increased total number of deaths in the next decade. NCD deaths are projected to increase by 15% globally between 2010 and 2020 (to 44 million deaths). The greatest increases will be in the WHO regions of Africa, South-East Asia and the Eastern Mediterranean, where they will increase by over 20%. In contrast, in the European Region, WHO estimates there will be no increase. In the African Region, NCDs will cause around 3.9 million deaths by 2020.(2)

CVD is the leading cause of death in Europe, accounting for over 4 million deaths each year. Nearly half (49 percent) of all deaths are from CVD (55 percent of deaths in women and 43 percent of deaths in men). About half of all deaths from CVD are from CHD and nearly one-third is from stroke.(37).

In 2007, about 72% of all deaths in Brazil were attributable to NCDs (cardiovascular diseases, chronic respiratory diseases, diabetes, cancer, and others, including renal diseases), 10% to infectious or parasitic diseases, and 5% to maternal and child health disorders. This distribution contrasts with that of 1930, when infectious diseases accounted for 46% of all deaths in Brazilian state capitals. (20)

A Systematic and critical review on the Frequency and clinical patterns of stroke in Iran reported that the case fatality rate at 28 days for all type of stroke was 19.2%. (34)

A review of 27 studies done in Africa reporting data on 86,307 medical admissions for the period from 1950-2010 obtained in-hospital cause of death data for 9,695 patients from 15 studies in the period from 1950 to 2010. Infectious and parasitic diseases, disorders of the circulatory system, and digestive system disorders were the leading causes of death accounting for 17.1% (95% CI 16.4_17.9), 16.0% (95% CI 15.3_16.8), and 16.2% (95% CI 15.4_16.9) of all

deaths, respectively. The proportion of deaths caused by infectious and parasitic diseases increased during the period, which roughly coincides with the emergence of the HIV epidemic. The class of disease among all deaths varied with time in decades (χ^2_{1100} , df 30; $p < 0.0005$). The proportion of deaths caused by disorders of the circulatory system rose from 9.7% in 1950-59 to 19.4% in 2000-2010 (RR 2.0, 95% CI 1.5_2.7, χ^2 test for trend $p = 0.08$). Deaths caused by infectious and parasitic diseases rose from 11.8% in 1950_9 to 19.2% in 2000_2010 (RR 1.6, 95% CI 1.3_2.1). Comparison of the proportion of deaths caused by digestive system disorders at the beginning of the study period and at the end showed a decrease from 14.9% to 8.1% (RR 0.54, 95% CI 0.40_0.73). Deaths due to disorders of the endocrine, nervous, and genitourinary systems all showed significant decreases, but the combined contribution of these diagnostic categories to overall mortality was less than 20%. Two retrospective studies reported case fatality rates and the diagnostic categories with the highest case fatality rates were infectious and parasitic diseases (25%) and circulatory illnesses (21%). (5)

A study on the pattern of medical mortalities in a specialist hospital in north-central Nigeria (December 2008 – May 2010) revealed that from total deaths in the study period evaluated HIV and related complications accounting for most recorded mortality (32.9%) closely followed by non-communicable cardiovascular conditions (hypertension, heart failure and CVD) 28.9%. (25)

A review of studies in Ethiopia from 1960-2011 on the epidemiology of NCDs found that cardiovascular disease accounts for 24% of deaths in Addis Ababa, cancer causes 10% of deaths in the urban settings and 2% deaths in rural setting, and diabetes causes 5% and chronic obstructive pulmonary disease causes 3% of deaths. (6)

In a study done at Gonder hospital the overall mortality rate was 217 (19.1%). When terminal patients discharged, (often against medical advice), were included it increased to 269 (23.6%). The majority of the deaths (35%) were due to tuberculosis, followed by central nervous system diseases that accounted for 18% of all deaths. (7)

Two studies conducted in JUSH reported that the in-hospital mortality rate was 12.3 and 12.6%. (9,10)

CHAPTER THREE: OBJECTIVE

3.1 General Objective

This study determined the patterns of admission from non-Communicable Diseases and their outcome among Medical Admissions in the year 2013 in Jimma University specialized hospital

3.2 Specific Objectives

- To assess the causes of medical admissions in JUSH from January 2013 to December 2013
- To describe the distribution of NCDs by demographic characteristics among patients admitted in JUSH from January 2013 to December 31, 2013
- To determine the average length of stay of those patients admitted from NCDs in JUSH from January 2013 to December 31, 2013.
- To describe the outcomes of adult medical admissions in JUSH from January 2013 to December 31, 2013.

CHAPTER FOUR: METHODS AND MATERIALS

4.1 Study Area and Period

The study was conducted at Jimma University specialized hospital (JUSH), located in Jimma town in southwest of Ethiopia, in Oromia region, 350km southwest of capital, Addis Ababa. Jimma zone comprises Jimma town and its nearby woredas with estimated population of 2,486,155. JUSH is the only referral teaching hospital in this largest region of the country. The hospital gives health service at inpatient and outpatient level as a referral Hospital with catchment area of 15 million populations in the South West of the country. The department of internal medicine has a total of 100 beds. The service is rendered by internists, medical residents, general practitioners and medical interns.

Data was extracted from September 01 to 15, 2015

4.2 Study Design

A retrospective cross-sectional study was conducted from September 1-30, 2015 on patients who were admitted to the medical wards of Jimma University Specialized Hospital from January 1 to December 31, 2013.

4.3 Study Population

4.3.1 Source population: All patients who were admitted in JUSH medical ward

4.3.2 Study Population: All patients who were admitted in JUSH medical ward during the study period (January 1 to December 31, 2013) and whose case notes are available in the hospital registration room archive

4.4 Sample Size calculation and Sampling Technique

All patients admitted in medical ward during the study period as mentioned above were included and no sampling technique was used

4.5 Study Variables

The following variables was measured

Dependent Variables	Independent Variables
➤ Clinical diagnosis at time of discharge	➤ Socio-demographic characteristics (Age, Sex and address)
➤ Outcome (Discharged, Dead, Referred, Discharge against medical advice)	➤ Duration of hospital stay ➤

4.6 Data collection procedure and measurement

Data extraction form containing individual patient characteristics was prepared before the data collection time. The data collectors were oriented on the structured data collection format prepared for the study, which contains the socio-demographics of the respondents, the reason for admission, the co-morbidities and duration of hospital stay. The format also included outcome variables like discharge with improvement, transfer to other wards, referral to other hospitals, and death. Data collectors reviewed case notes of patients admitted to the medical wards and ward registration book. The discharge diagnosis of patients was documented from the discharge summary and then sorted using International Classification of Diseases (ICD) ten.

4.7 Data collectors

Data collection was undertaken by total of two BSC nurses after they were oriented about objective of the study, variables on the questionnaire and its implication. Then, they were assigned to fill the data collection format. All data collection activities were supervised by the principal investigator.

4.8 Data Analysis, Processing, and Interpretation

The data collected was first checked for its' cleanness and completeness. Then each date collecting formats were categorized with ICD 10 categories and the data was entered and analyzed using software program SPSS-20 for windows.

Descriptive analyses was carried out using measures of central tendency (mean, median, and mode) and measures of dispersions (variance, standard deviation, ranges and inter-quartile ranges) for continuous variables. Categorical variables were summarized using frequencies and percentages. Chi-square analysis of association were done at a significance level of 0.05 wherever appropriate.

4.9 Data Quality Assurance

To ensure data quality pre-testing of data collection tools was made. Adequate training was provided for data collectors, and the compilation format was prepared in simple English to maintain clarity and easier understanding by those data collectors. The collected data was checked for completeness and consistency on the day of collection by the principal investigator.

4.10 Ethical Consideration

Ethical clearance to conduct the study was obtained from the ethical Review Board of Jimma University, before official commencement of the data collection process. A letter of recommendation was obtained from the above responsible office to the hospital administration. Moreover, confidentiality of personal information was maintained during data collection, analysis, and interpretation. This study involves the collection of demographic and medical data from the notes of patients admitted to the hospital and it doesn't need any consent from patients.

4.11 Definition Operational of Terms

The following operational definitions were used in the study:

- Reason for admission: is the primary diagnosis given to the illness of the patient by the physician when the patient was admitted.
- Co-morbidity: is an illness which had occurred with the primary diagnosis during the time of admission
- Season of admission: the particular time (month) of the year during which the patient was admitted.
- Chronic diseases will be classified according to ICD 10 disease classification (39)
- Outcome of admission: Discharged, died, referred, and discharge against medical advice
- Secondary Diagnosis: Any comorbid diseases other than the primary reason for admission

CHAPTER FIVE: RESULTS

5.1 Demographic characteristics of admitted patients

A total of 817 patients were admitted to the medical wards during the study period. Of these, 306 (37.5%) patient cards were available for review. Among these 156 (51.0%) were female and the male to female ratio was 1:1.04. The age of the patients ranged from 15 to 85. The mean age of the patients was 40.7 years (SD \pm 18.91). The highest number of admissions came from the age group of 21 to 30 years, 88 (28.8%). The patients were predominantly, 219 (71.6%) from the rural areas (Table 1).

Table 1. Socio-demographic characteristics of the patients admitted to JUSH, Southwest Ethiopia, from Jan. 1 to Dec. 31, 2013

Sociodemographic Characteristics	Category	Frequency	Percentage
Age	14-20	44	14.4
	21-30	88	28.8
	31-40	52	17
	41-50	35	11.4
	51-60	38	12.4
	Above 60	49	16
Sex of the patient	Male	150	49
	Female	156	51
Place of residence	Urban	87	28.4
	Rural	219	71.6

5.2 Morbidity Pattern in admitted patients

Based on ICD-10, the most common reasons for admission to the medical wards of JUSH were Certain infectious and parasitic diseases accounts for 128 (41.8%) followed by Diseases of the circulatory system and Disease of the blood and blood-forming organs and certain disorders involving the immune mechanism each accounting 85(27.8%) & 29(9.5%) respectively. In the category of certain infectious and parasitic diseases the major subcategory were all forms of TB 30(9.8%) followed by HIV and community acquired

pneumonia, each accounting for 23 (7.5%). From Diseases of the circulatory system the major subcategory were cerebrovascular diseases 26 (8.5%) and valvular diseases accounting for 18 (5.9%). In the same category all ischemic heart diseases and hypertension diseases were the reasons for admission in 18(5.9%) of cases. (Table 2)

Table 2. Reasons for admission of patients to the medical wards of JUSH, South west Ethiopia, from Jan. 1 to Dec. 31, 2013

ICD category	Reasons for admission	Number	Percent
A or B	Certain infectious and parasitic diseases	128	41.8
	Tuberculosis	30	9.8
	community acquired pneumonia	23	7.5
	Human immunodeficiency virus (HIV) disease	23	7.5
	Malaria	19	6.2
	Others	33	10.8
C	Malignant Neoplasms	2	0.7
D	Disease of the blood and blood-forming organs and certain disorders involving the immune mechanism	29	9.5
	Anemia	27	8.8
	Others	2	0.7
E	Endocrine, nutritional and metabolic disease	10	3.3
	Diabetes Mellitus	6	2.0
	Others‡	4	1.3
G	Diseases of the Nervous system	3	1.0
I	Diseases of the circulatory system	85	27.8
	Cerebrovascular diseases	26	8.5
	Valvular heart diseases and cardiomyopathies	18	5.9
	Hypertensive diseases	9	2.9
	Ischaemic heart diseases	9	2.9
	Others †	23	7.5
J	Diseases of the respiratory system	9	2.9
	Chronic obstructive pulmonary disease	7	2.2
	Asthma	2	0.7
K	Diseases of the Digestive system	17	5.6
	Chronic liver disease	13	4.2
	Upper GI bleeding	2	0.7
	Obstructive Jaundice	2	0.7

N	Diseases of the genitourinary system	22	7.2
	Chronic Renal failure	12	4
	Glomerular diseases	5	1.6
	Nephrotic Syndrom	5	1.6
S	Injury, poisoning, and certain other consequences of external causes	1	0.3

* ICD= International Classification of Diseases and related health problems

‡ Congestive heart failure from unspecified cause and 2 cases were DVT

5.3 The average length of stay of those patients admitted from NCDs

The mean duration of hospital stay was 11days (SD \pm 10.68). The minimum duration was 1 day and the maximum was 90 days. 107 (35.0%) patients stayed in the hospital for five to ten days, 109 (35.6%) for more than ten days, while the remaining 90 (29.4%) had a hospital stay less than five days.

5.4 Outcomes of adult medical admissions

With regard to the outcome of admissions to the medical wards, 247 (80.7%) patients were discharged with improvement. 27 (8.8%) patients died in the hospital and 12(3.9%) were referred to other hospitals. The remaining patients 20(6.5%) were those who had been discharged with the outcome of the same and worsened; and those who had been discharged against medical advice.

5.5 factors related with discharge outcome

The association of gender and age groups with the reason for admission and the association of total length of stay with the outcome of patients were assessed using a chi-square test at a significance of <0.05. There were a strong association between gender of patients and reasons for admission (p value=0.001); and also between the age group of patients and reasons for admission (p value=0.000). However there was no significant association ($p=0.164$) between reasons of admission and place of residence. There was a strong association between the duration of hospital stay and patient outcome (p value=0.000).Table 3, 4 & 5

Table 3. Association of the sex of the patients with the reasons for admission to the medical wards of JUSH, South west Ethiopia, from Jan. 1 to Dec. 31, 2013

			gender		Total	p value
			male	female		
ICD_catagory	Certain infectious and parasitic diseases	Count	56	72	128	0.001
		% within gender	37.3%	46.2%	41.8%	
Malignant Neoplasms	Count	0	2	2		
	% within gender	0.0%	1.3%	.7%		
Disease of the blood and blood-forming organs and certain disorders involving the immune mechanism	Count	13	16	29		
	% within gender	8.7%	10.3%	9.5%		
Endocrine, nutritional and metabolic disease	Count	2	8	10		
	% within gender	1.3%	5.1%	3.3%		
Diseases of the Nervous system	Count	0	3	3		
	% within gender	0.0%	1.9%	1.0%		
Diseases of the circulatory system	Count	52	33	85		
	% within gender	34.7%	21.2%	27.8%		
Diseases of the respiratory system	Count	8	1	9		
	% within gender	5.3%	.6%	2.9%		
Diseases of the Digestive system	Count	12	5	17		
	% within gender	8.0%	3.2%	5.6%		
Diseases of the genitourinary system	Count	6	16	22		
	% within gender	4.0%	10.3%	7.2%		
Injury, poisoning, and certain other consequences of external causes	Count	1	0	1		
	% within gender	.7%	0.0%	.3%		
Total		Count	150	156	306	
		% within gender	100.0%	100.0%	100.0%	

X^2 test value=28.923

Table 4. Association of the Age of the patients with the reasons for admission to the medical wards of JUSH, South west Ethiopia, from Jan. 1 to Dec. 31, 2013

ICD_catagory	age categories						Total	p value
	14-20	21-30	31-40	41-50	51-60	above 60		
Certain infectious and parasitic diseases	25	48	25	17	4	9	128	0.000
	56.8%	54.5%	48.1%	48.6%	10.5%	18.4%	41.8%	
Malignant Neoplasms	1	0	0	1	0	0	2	
	2.3%	0.0%	0.0%	2.9%	0.0%	0.0%	.7%	
Disease of the blood and blood-forming organs and certain disorders involving the immune mechanism	10	13	2	1	3	0	29	
	22.7%	14.8%	3.8%	2.9%	7.9%	0.0%	9.5%	
Endocrine, nutritional and metabolic disease	0	0	6	0	2	2	10	
	0.0%	0.0%	11.5%	0.0%	5.3%	4.1%	3.3%	
Diseases of the Nervous system	0	2	1	0	0	0	3	
	0.0%	2.3%	1.9%	0.0%	0.0%	0.0%	1.0%	
Diseases of the circulatory system	5	12	10	9	22	27	85	
	11.4%	13.6%	19.2%	25.7%	57.9%	55.1%	27.8%	
Diseases of the respiratory system	0	1	0	0	4	4	9	
	0.0%	1.1%	0.0%	0.0%	10.5%	8.2%	2.9%	
Diseases of the Digestive system	0	0	6	5	2	4	17	
	0.0%	0.0%	11.5%	14.3%	5.3%	8.2%	5.6%	
Diseases of the genitourinary system	3	11	2	2	1	3	22	
	6.8%	12.5%	3.8%	5.7%	2.6%	6.1%	7.2%	
Injury, poisoning, and certain other consequences	0	1	0	0	0	0	1	
	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	.3%	

of external causes								
	44	88	52	35	38	49	306	
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

χ^2 test value=145.714

There was a strong association between the duration of hospital stay and patient outcome (p value=0.000). also the study revealed that there was a significant association between the length of stay and disease category (p value=0.003). Table 5 & 6

Table 5. Association of duration of hospital stay with outcome of patients admitted to the medical wards of JUSH, South west Ethiopia, from Jan. 1 to Dec. 31, 2013

		Total length of stay			Total	p-value
		<5 days	5-10days	>10days		
outcome	Discharged	59	95	93	247	0.000
	Dead	17	4	6	27	
	Referred	2	4	6	12	
	Discharge against medical advice	12	4	4	20	
Total		90	107	109	306	

χ^2 test value=28.925

Table 6. Association of duration of hospital stay with disease category in patients admitted to the medical wards of JUSH, South west Ethiopia, from Jan. 1 to Dec. 31, 2013

ICD_catagory	Total length of stay			Total	p-value
	<5 days	5-10days	>10days		
Certain infectious and parasitic diseases	43	39	46	128	0.003
	47.8%	36.4%	42.2%	41.8%	
Malignant Neoplasms	0	0	2	2	
	0.0%	0.0%	1.8%	.7%	
Disease of the blood and blood-forming organs and certain disorders involving the immune mechanism	10	12	7	29	
	11.1%	11.2%	6.4%	9.5%	
Endocrine, nutritional and metabolic disease	0	4	6	10	
	0.0%	3.7%	5.5%	3.3%	
	0	2	1	3	

Diseases of the Nervous system	0.0%	1.9%	.9%	1.0%
Diseases of the circulatory system	17	39	29	85
	18.9%	36.4%	26.6%	27.8%
Diseases of the respiratory system	6	2	1	9
	6.7%	1.9%	.9%	2.9%
Diseases of the Digestive system	10	2	5	17
	11.1%	1.9%	4.6%	5.6%
Diseases of the genitourinary system	3	7	12	22
	3.3%	6.5%	11.0%	7.2%
Injury, poisoning, and certain other consequences of external causes	1	0	0	1
	1.1%	0.0%	0.0%	.3%
Total	90	107	109	306
	100.0%	100.0%	100.0%	100.0%

χ^2 test value=39.249

CHAPTER SIX: Discussion

The study revealed that NCDs, all together (58.2%), were the commonest cause of admission in JUSH in the study period, and infectious diseases accounting for only 41.8% of cases. When comparing the four groups of diseases covered by the *Global Strategy for the Prevention and Control of Non-communicable Diseases*: cardiovascular diseases, cancers, diabetes and chronic lung diseases, which are responsible for the majority of deaths caused by NCDs, these four disease categories were responsible for 33.4% of the total admissions, cardiovascular diseases (27.8%); cancer (0.7%); Diabetes (2%) & chronic lung diseases (2.9%). This finding, except from the category of Neoplasm which was same, were higher than the report from a study conducted 5 years back, cardiovascular disease (12.8%); cancer (0.7%); diabetes (1.2%) and chronic respiratory diseases (1.5%), together representing 16.2% of the total admission.(10) This finding was also higher than the figures reported from a review of hospital based studies in Ethiopia from 1960-2011 on the epidemiology of NCDs; cardiovascular disease (3%-12.6%); cancer (1.1%-2.8%); diabetes (0.5%-1.2%), and chronic obstructive diseases (2.7%-4.3%). (6)

Comparing this figures with other African countries, it was lower than a report of a study in Nigeria, where NCDs constitute 69% of admissions.(26) one study conducted in south Africa reported that cardiovascular diseases were responsible for 39% of male patients and 41% of female patients admitted.(40)

This can be explained by the global rise of NCDs in developing countries and overtaking the dominance of infectious diseases.(1)

The results of this study regarding the average length of hospital stay was comparable with the findings of studies done in the same facility some years back. (9, 10) Also the finding was in line with the report from one study conducted in other facility in Ethiopia and in two studies in Nigeria (7, 26,38)

The death rate from this study, 27(8.8%), is lower than that was reported from two studies done in JUSH 5 years back (12.6%) and 20 years back (12.3%). (9, 10) The finding was also much lower

than the report from Gonder hospital. (7) This could be explained by the increased quality of care in the facility.

The majority of patient (63%) who died stay for less than 5 days, which is higher than the report from the study conducted 5 years back which was 53%. This increase in early in-hospital death within few days of admission could be due to the severity of the diseases at the time of presentation to the hospital and an increase in quality of care.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The study revealed a significant change in the morbidity pattern and patient outcome from the previous studies done in JUSH.

6.2 Recommendation

Based on the finding the following recommendations are made for consideration and implementation by Health Policy-makers, institutions and all stakeholders

- ✓ Strengthening integration of chronic NCD care into Public Health Care services
- ✓ Strengthening of facilities for chronic NCD detection and management.
- ✓ Conducting community level surveillance of NCDs and their common risk factors

CHAPTER EIGHT: LIMITATIONS

The main limitation of the study were inability to include all case notes due to lose of the documents and poor data quality on the existing files

Also including only a one year data is a limitation to strongly answer the research questions.

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