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## Drug Therapy Problem and Contributing Factors among Ambulatory Hypertensive Patients in Ambo General Hospital, West Shoa, Ethiopia

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**Abstract- Background:** Hypertension is the most serious health problems in the world. Though modern medicine can improve the well-being, its benefit can be compromised by drugrelated problems (DTPs).

**Objective:** The objective of the study is to determine both type and number of drug related problems and factors affecting it in Ambo General Hospital.

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**Result and conclusion:** A total of 151 ambulatory hypertensive patients were found during data collection period in Ambo general Hospital. A maximum of 200 drug therapy problems were found. The mean DTP was  $1.32 \pm 0.47$ . The most common DTP was indication type problems. The maximum number of DTPs was three. None of the independent variable is associated with both presence and number of Drug Therapy Problem.

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## I. INTRODUCTION

Cardiovascular diseases (CVDs) remain the biggest cause of death world wide. WHO report (2011) estimated that 17.1 million people die of CVDs each year representing 30% of all deaths. By 2030, an estimated 23.6 million people will die from CVDs mainly from heart disease and stroke. These are projected to remain the single leading causes of death (1). According to the WHO, cardiovascular diseases will be the major cause for death and disability in India by 2020(2, 3, 4).

Hypertension (HTN) or high blood pressure, sometimes called arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is elevated. Blood pressure is summarized by two measurements, systolic and diastolic, which depend on whether the heart muscle is contracting (systole) or relaxed between beats (diastole). This equals the

blood pressure at rest is within the range of 100-140mmHg systolic (top reading) and 60-90mmHg diastolic (bottom reading). High blood pressure is said to be present if it is often at or above 140/90 mmHg.

The Prevalence of hypertension was 19.04%. Given that the burden of CVD morbidity and mortality is projected to increase in developing countries, therefore it is essential to provide current reliable data on the epidemiology of hypertension.

The first lines of treatment for hypertension are preventive lifestyle changes include: dietary changes, physical exercise, and weight loss. These have all been shown to significantly reduce blood pressure in people with hypertension. If hypertension is high enough to justify immediate use of medications, lifestyle changes are still recommended in conjunction with medication. Therefore, more than one anti-hypertensives might be used. The most common class of anti-hypertensives are calcium channel blockers, angiotensin convertase enzyme blockers, diuretics and beta blockers.

Although pharmacotherapy in cardiovascular diseases can improve the well-being, its benefit can be compromised by drug-related problems (DTPs). A drug-related problem is any event or circumstance involving drug treatment that interferes with the outcome of medical care (5). They pose significant risk, leading to significant morbidity and mortality. Here in this study, type and number of drug therapy problems (DTP) and predictors for it will be assessed.

### a) Statements of the problem

High blood pressure is widely prevalent in Addis Ababa and may represent a silent epidemic in this population. Overweight, obesity and physical inactivity are important determinants of high blood pressure. There is an urgent need for strategies and programs to prevent and control high blood pressure, and promote healthy lifestyle behaviors primarily among the urban populations of Ethiopia.

The burden of this disease is high encompassing economic, psychosocial, and, personal loss to self, family, or immediate community. The cost of illness may be reflected in absenteeism, low productivity, high cost for medical care, and low quality

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life. These resulted in negative outcome on the socioeconomic status of the country in general.

Hypertension is a risk factor for all clinical manifestations of atherosclerosis. It is also an independent predisposing factor for heart failure, coronary artery disease, stroke, renal disease, and peripheral arterial disease. It is the most important risk factor for cardiovascular morbidity and mortality, in the world.

Many studies have proven the significance of pharmacists in identifying and resolving potential DTPs through timely interventions. Studies assessing the magnitude of DTPs in hospitalized patients and contributing factors are scarce in Ethiopia.

## II. SIGNIFICANCE OF THE STUDY

It would be much better to prevent drug related problems than to correct them, but this is not always possible because of the complexity of pharmacotherapy. A more comprehensive study of DRPs in hospitalized patients should be done to provide valuable insights for the healthcare professionals to reduce the incidence of DRPs and the result can also be used as a base line information to establish, since it is an emerging concept on safe use of medication in the health care management.

## III. OBJECTIVES

### a) General Objectives

To determine presence of drug related problems among ambulatory hypertensive patient in Ambo General Hospital from April to May 2014.

### b) Specific Objective

- To determine prevalence of DTPs among ambulatory hypertensive patient in Ambo general Hospital.
- To know type of DTPs
- To know number of DTPs per patient
- To determine factors affecting DTPs

## IV. MATERIALS AND METHODS

### a) The Study area and period

This study was conducted from April to May 2014 in Ambo Hospital. This hospital is found in Ambo town Oromia regional state which is located at 114 km away from the capital city of Ethiopia Addis Abebe to the west. People around ambo zone use this general hospital. It has four major wards (internal medicine, gynecology, surgery, and pediatrics).

### b) Study design

Descriptive Cross-sectional studies were conducted in Ambo General Hospital.

### c) Study Population

All patients receiving anti-hypertensive drugs were included in the study.

#### i. Inclusion criteria

All People who receive anti-hypertensive drugs during the data collection period at the ambulatory ward

#### ii. Exclusion criteria

Patients those who are not willing to participate

### d) Sample size and sampling technique

All patients who had visit during the data collection period were included. The sampling technique used was every other patient.

#### i. Study Variable

##### a. Dependent

Drug therapy problems

##### b. Independent

- ✓ Age
- ✓ Sex
- ✓ Number of drugs
- ✓ Co morbidity

### e) Data collection procedures

The structured questionnaires were used. It contains socio-demographic characteristics, medical and drug condition. The trained data collectors were used to collect the data from patient card and patient him/herself during data collection period.

#### i. Data Analysis

All data were cleaned, coded and entered in SPSS version 20. Descriptive, logistic and leaner regressions were used.  $P < 0.05$  is considered to be significant.

### f) Ethical consideration

Formal letter was obtained from Research Ethics Committee of Ambo University and submitted to Ambo General Hospital, so the letter was given to the hospitals and they allowed us to do the research. Written consent was taken so that the patient was willing to give his/her medical information.

### g) Operational definition

*Drug therapy problem:* involves indication, safety and effectiveness related problem.

## V. RESULTS

### a) Socio demographic characteristics

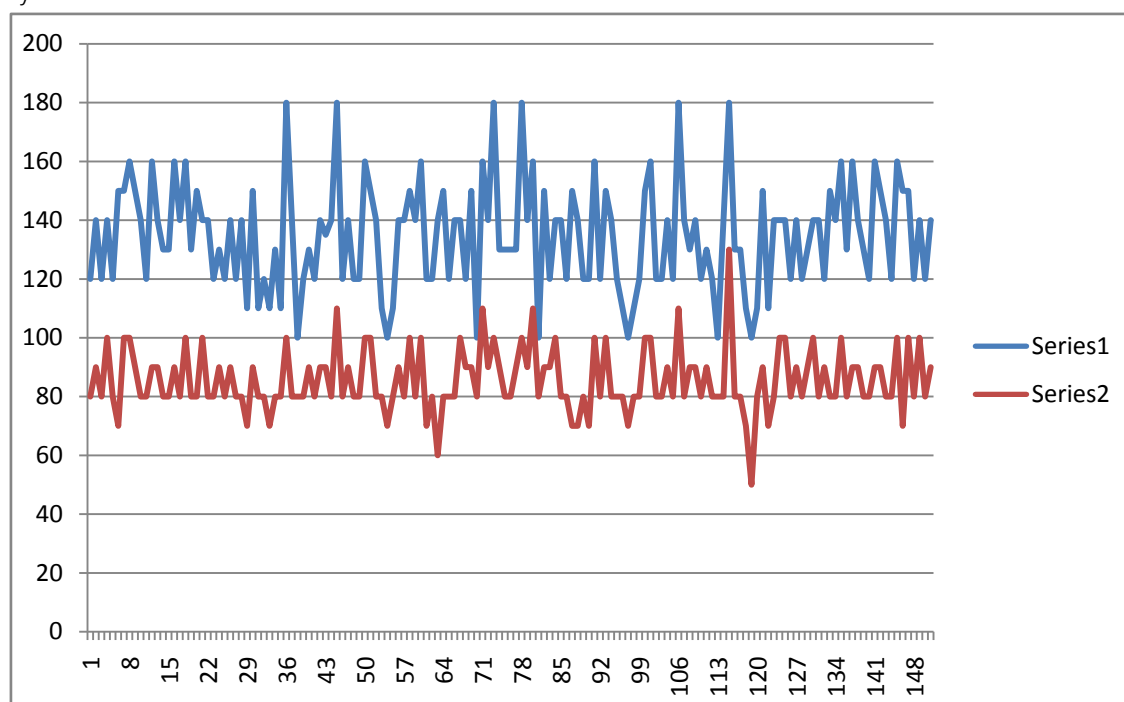
A total of 151 patients were encountered during data collection period. 63 (41.7%) of them were males. 82(54.3%) and 41(27.15%) were treated by double and triple therapy respectively.

**Table 1:** Socio demographic characteristics of ambulatory hypertensive patient in Ambo General Hospital from April to May 2014. (Logistic)

No	Variables	Frequency (%)	P	AOR	CI (95%)	
					L	U
1	Sex	M	63 (41.7)	.395	1	1
		F	88 (58.3)		1.380	2.899
2	Age	<17	0(0)	.231	.612	1.367
		<17-59	108(71.5)			
		> 60	43(28.5)			
3	Number of medication	>3	99 (65.56)	.462	.511	3.054
		<=3	52 (34.44)			
	Number of medication	1	17(11.5)	.812	1.232	6.866
		2	82(54.3)			
		3	41(27.2)			
		>3	11(7.28)			

**b) Blood pressure measurement**

The mean systolic and diastolic blood pressure was  $134.67 \pm 18.24$  and  $85.56 \pm 10.75$  mm Hg respectively.



**Figure 1:** Blood Pressure of each hypertensive patient in ambulatory ward of Ambo General Hospital from April to May 2014

**Key**

Series 1 = systolic blood pressure

Series 2 = Diastolic blood pressure

**c) Types of medication**

From the recommended drugs Hydrchlorothiazid (108(71.5%)), Nifidipne (87(57%)), and Enalapril (66(43.7%)) were the commonly used drugs.

**d) Drug therapy problems**

The mean of drug therapy problems is  $1.32 \pm 0.47$  and the total numbers of drug therapy problems were 200. Most patients had one drug therapy problem. The most common DTP was indication related problem.

**Table 2 :** Type of Drug therapy problems among ambulatory hypertensive patients in Ambo General Hospital from April to May 2014

Drug therapy problems involved		Reasons	Number of patient (%)
Indication	Unnecessary drug therapy	No medical condition	-
		Duplicate therapy	37(24.5)
		Non-drug therapy indicated	-
		Treating avoidable ADR	-
		Addictive or Recreational drugs	-
	Needs additional drug therapy	Untreated indication	24(15.89)
		Preventive or prophylactic	-
		Synergistic or potentiating	-
Effectiveness	Needs different drug product	More effective drug available	7(4.64)
		Condition refractory to drugs	-
		Dosage form inappropriate	-
		Not effective for condition	11(7.23)
	Dosage too low	Wrong dose	-
		Frequency inappropriate	-
		Drug interaction	-
Safety	Adverse drug reaction	Duration inappropriate	24(15.89)
		Undesirable effect	15(9.93)
		Unsafe drug for patient	-
		Drug interaction	-
		Dosage administered or changed too rapidly	-
		Allergic reactions	-
	Dosage too high	Contraindication present	-
		Wrong dose	-
		Frequency inappropriate	-
		Dose too high	-
		Duration inappropriate	-
		Drug interaction	-
		Incorrect administration	-

#### e) Factors Affecting Drug Therapy Problems

Age ( $p = 0.231$ ), sex ( $p = 0.395$ ), and number of medication ( $p = 0.085$ ) were not associated with presence of Drug Therapy Problem.

Sex ( $p = 0.232$ ), age ( $p = 0.45$ ), and number of medication ( $p = 0.724$ ) were not associated with number of DTPs.

## VI. DISCUSSION

Most hypertensive patients had DTP, which is consistent with the study done on Felege Hiwot referral Hospital. There were 200 numbers of DTPs, on the other hand relatively lesser number of DTPs (105) was found in the study done in Felege Hiwot referral Hospital. [6, 9]

The number of DTP per patient was  $1.32 \pm 0.47$ , while study in Jimma showed it was  $1.8 \pm 0.8$ , relatively higher. This might be due to the fact that the study in JUSH includes all medical patients.[9]

The most common DTP was indication problem, which is similar to study done in Felege Hiwot referral Hospital while different from study done in India [7, 9, 10, 11]. Of the total type of Drug therapy problems,

most frequently found was unnecessary drug therapy (24.5%) and need for additional (31, 20.53%). On the other hand the study done in India showed, dose-related problems (35.1%) followed by need for additional drugs (19.7%), and unnecessary drugs (16.7%) were the common DTP.[7, 9]

In this study, age ( $p = 0.231$ ), sex ( $p = 0.395$ ), and number of medication ( $p = 0.085$ ) were not associated with presence of Drug Therapy Problem. Sex ( $p = 0.232$ ), age ( $p = 0.45$ ), and number of medication ( $p = 0.724$ ) were not associated with number of DTPs. On the other hand the study done in India showed age and number of DTP had significant association, these might be due to here in this study there were lesser number of patients with co-morbidities. [7]

## VII. CONCLUSION

High proportion of patients in Ambo General Hospital had DTPs. The most common DTP was indication type problems. The maximum number of DTPs was three. Age, sex, and number of medication were not associated with presence of Drug Therapy



Problem, as well as sex, age, and number of medication were not associated with number of DTPs.

## VIII. RECOMMENDATION

The following recommendations are forwarded:

Ambo general hospital: to develop team work among health care professionals.

Ambo general hospital pharmacists: to strengthen pharmaceutical care

Ambo general hospital physician: to stick them selves to the current guideline

## IX. ACKNOWLEDGEMENT

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### Conflict of interest

The author(s) declare(s) that there is no conflict of interests regarding the publication of this manuscript.

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