

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

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8 **Abstract**

9 Background: Hypertension is the most serious health problems in the world. Though modern  
10 medicine can improve the well-being, its benefit can be compromised by drugrelated problems  
11 (DTPs).Objective: The objective of the study is to determine both type and number of drug  
12 related problems and factors affecting it in Ambo General Hospital.Methods: A hospital based  
13 cross -sectional study was conducted. All patients who had contact time during the data  
14 collection were included. Trained data collectors collected the data. Result and conclusion:A  
15 total of 151 ambulatory hypertensive patients were found during data collection period in  
16 Ambo general Hospital. A maximum of 200 drug therapy problems were found. The mean  
17 DTP was  $1.32 + 0.47$ . The most common DTP was indication type problems. The maximum  
18 number of DTPs was three. None of the independent variable is associated with both presence  
19 and number of Drug Therapy Problem.

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21 **Index terms**— drug therapy problem, hypertension, indication.

22 **1 I. Introduction**

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

28 Hypertension (HTN) or high blood pressure, sometimes called arterial hypertension, is a chronic medical  
29 condition in which the blood pressure in the arteries is elevated. Blood pressure is summarized by two  
30 measurements, systolic and diastolic, which depend on whether the heart muscle is contracting (systole) or  
31 relaxed between beats (diastole). This equals the blood pressure at rest is within the range of 100-140mmHg  
32 systolic (top reading) and 60-90mmHg diastolic (bottom reading). High blood pressure is said to be present if it  
33 is often at or above 140/90 mmHg.

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

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

## **9 G) OPERATIONAL DEFINITION**

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

### **48 2 a) Statements of the problem**

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

53 The burden of this disease is high encompassing economic, psychosocial, and, personal loss to self, family,  
54 or immediate community. The cost of illness may be reflected in absenteeism, low productivity, high cost for  
55 medical care, and low quality life. These resulted in negative outcome on the socioeconomic status of the country  
56 in general.

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

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

### **63 3 II. Significance of the Study**

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

### **69 4 III. Objectives a) General Objectives**

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

### **72 5 a) The Study area and period**

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

### **77 6 b) Study design**

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

### **79 7 c) Study Population**

80 All patients receiving anti-hypertensive drugs were included in the study.  
81 i The structured questionnaires were used. It contains socio-demographic characteristics, medical and drug  
82 condition. The trained data collectors were used to collect the data from patient card and patient him/herself  
83 during data collection period.  
84 i. Data Analysis All data were cleaned, coded and entered in SPSS version 20. Descriptive, logistic and leaner  
85 regressions were used.  $P < 0.05$  is considered to be significant.

### **86 8 f) Ethical consideration**

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

### **90 9 g) Operational definition**

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

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92 **10 V. Results**

93 **11 a) Socio demographic characteristics**

94 A total of 151 patients were encountered during data collection period. 63 (41.7%) of them were males.  
95 82(54.3%) and 41(27.15%) were treated by double and triple therapy respectively. From the recommended  
96 drugs Hydrchlothiazid (108(71.5%)), Nifidipne (87(57%)), and Enalapril (66(43.7%)) were the commonly used  
97 drugs.

98 **12 d) Drug therapy problems**

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

101 **13 VI. Discussion**

102 Most hypertensive patients had DTP, which is consistent with the study done on Felege Hiwot referral Hospital.  
103 There were 200 numbers of DTPs, on the other hand relatively lesser number of DTPs (105) was found in the  
104 study done in Felege Hiwot referral Hospital. [6,9] The number of DTP per patient was  $1.32 + 0.47$ , while study  
105 in Jimma showed it was  $1.8 + 0.8$ , relatively higher. This might be due to the fact that the study in JUSH  
106 includes all medical patients. [9] The most common DTP was indication problem, which is similar to study done  
107 in Felege Hiwot referral Hospital while different from study done in India [7,9,10,11]. Of the total type of Drug  
108 therapy problems, most frequently found was unnecessary drug therapy (24.5%) and need for additional (31,  
109 20.53%). On the other hand the study done in India showed, doserelated problems (35.1%) followed by need for  
110 additional drugs (19.7%), and unnecessary drugs (16.7%) were the common DTP. [7,9] In this study, age ( $p =$   
111 0.231), sex ( $p=0.395$ ), and number of medication ( $p=0.085$ ) were not associated with presence of Drug Therapy  
112 Problem. Sex ( $p=0.232$ ), age ( $p=0.45$ ), and number of medication ( $p= 0.724$ ) were not associated with number  
113 of DTPs. On the other hand the study done in India showed age and number of DTP had significant association,  
114 these might be due to here in this study there were lesser number of patients with co-morbidities. [7]

115 **14 VII. Conclusion**

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

120 **15 VIII. Recommendation**

121 The following recommendations are forwarded: Ambo general hospital: to develop team work among health care  
122 professionals.

123 Ambo general hospital pharmacists: to strengthen pharmaceutical care Ambo general hospital physician: to  
124 stick them selves to the current guideline IX.

125 We are very grateful to our college staff members for their constructive suggestions starting from the stage of  
126 proposal development. Finally our deepest gratitude goes to Ambo General Hospital staff workers who helped  
127 and allowed us in collecting and gathering data from the hospital. Finally we thank all hypertensive patients in  
128 Ambo General Hospital.

129 **16 Conflict of interest**

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



Figure 1:

- 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

Figure 2:

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- b) Blood pressure measurement  
The mean systolic and diastolic blood pressure was  $134.67 + 18.24$  and  $85.56 + 10.75$  mm Hg respectively.

Figure 3: Table 1 :

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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.

Figure 4: Table 2 :



131 .1 Acknowledgement

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