

## **PRESCRIPTION PATTERN OF ANALGESIC DRUGS IN 13 RURAL & REGIONAL HOSPITALS OF ETHIOPIA**

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**ABSTRACT:** Analgesics are among the most prescribed categories of drugs. They are mostly prescribed in combination with other classes of drugs and rarely alone. A study covering 13 hospitals in 7 regions (50% of the total Ministry of Health hospitals in those regions) was conducted to assess the pattern, extent and type of analgesics prescribed and to suggest the possible ways by which drugs could be used more rationally. The study showed that of all patients seen in out-patient departments, (in one day) 34.2% received analgesics. Little variation in prescribing patterns was seen among the hospitals. In the majority of cases there was only one analgesic per prescription and 6.3% with 2 analgesics. On the other hand, more than 90% of analgesics were prescribed in combination with other classes of drugs. The four popular analgesics prescribed were dipyron 34.2% , acetylsalicylic acid (Aspirin) 28%, paracetamol 19.1% and avafortan (camylofin and dipyron) 17.7%. Analgesics (pain killers) in most cases should only be used when the cause of pain can not be removed. Further, as most of them are toxic and potentially dangerous for use, it is an area in which improvement could and should occur.

### **INTRODUCTION**

Drugs play a major role in the delivery of health care and in the patient-doctor-disease relationship. Their widely increased use (in the present world) has drawn the attention of medical personnel and health authorities throughout the world. In the last 50 years there has been a remarkable increase in their use in medical practice (1). Too many countries are being affected by the steady increase in drug consumption (2).

The number of drugs per-prescription ranges from 2 to 8 in different parts of the world and varies by level of health institutions (2). On the other hand, the extent of some specific category of drugs and their rational use have not been given due concern. Though antibiotics are believed to be widely used and misused, analgesics are also equally used and misused. Analgesics are prescribed in almost all existing levels of health institutions. Among the great number of analgesics on the market the majority are considered to be dangerous, ineffective, irrational or needlessly expensive (3). Therefore they are supposed to be used rationally and prescribed only when necessary.

Some of the commonly occurring types of pain to which analgesics are prescribed or used can be relieved by alternative mechanisms, such as cold water applied to skin burns, heat or massage to relieve muscle pain and alkali mixtures to relieve the pain of peptic ulcer (3). The purpose of this paper was to analyze the extent and type of analgesics prescribed among hospitals in Ethiopia. Along with the above main objectives the following were also assessed; the number of drugs prescribed per patient among hospitals, the trend of prescribing drugs in generic or brand name among prescribers, and the type and number of drugs prescribed by therapeutic category.

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**BACKGROUND**

The 13 hospitals in seven regions covered in this study have more or less the same level of health services. Except one which serves as a national referral the rest are regional or district hospitals. In most of the hospitals surveyed, general practitioners, nurses and health officers are authorized to diagnose and prescribe drugs. In one hospital health assistants are also engaged in such activities. However, the extent to which the latter are exercising such activity is not well known.

Each of the hospitals renders the following kinds of health services polyclinic, maternal and child health care, Expanded Programme on Immunization, delivery service etc. The number of patients attending out-patient departments daily ranges from 55 to 147. The number could be high if special programmes and follow ups are included.

The pharmacy section responsible for drug purchase, storage, and dispensing is under the control of pharmacist in 11 of the hospitals. Drugs are sold at the cost price in 50% of the hospitals. Six hospitals mark up a profit: 25% mark up 3 hospitals and 2% mark up at the other three. No hospitals dispense drugs free of charge unless a patient has an exemption paper.

**METHOD**

A study was carried out in 13 hospitals located in seven regions. These were selected randomly out of hospitals found in 14 administrative regions excluding Eritreia and Tigrai. One hospital from each of two regions (Arsi & Bale), two from each of the other four regions (Sidamo, Illubabor, Gojjam & Wollo), and 3 from the remaining one region (Hararghe) (Table 1). The regions are considered to be representative of the geographical location and cover the eastern, southern, south-west and north-west zones of the country. In regions where there is only one hospital it is directly included in the study. From regions where two or more hospitals are available priority was given to one regional and one or two rural hospitals.

Data was collected from the medical records of out-patients treated for one day. For each patient the following information was recorded: patient's name or card number, age, sex, diagnosis, name, strength and quantity of drug prescribed. A total of 1284 patient records were collected. Of all patients those who received analgesic drugs were recorded on a separate format irrespective of the diagnosis. The information recorded for analgesics prescribed were: type of analgesics (brand & generic name), strength, dosage form, quantity, number of analgesics in combination with other classes of drugs, and analgesic injections. Brand name products, for certain drugs, were recorded under their generic name. Few combination analgesics were taken as they appeared in the original record. In addition to the above information drugs prescribed in that particular day in all the 13 hospitals were categorized therapeutically.

**RESULTS**

A total of 1284 patients were treated in one day in the 13 hospitals covered under the study. To these patients 2610 drugs were prescribed. This makes the average number of drugs per-patient to be 2.0. There is almost no significant difference among the hospitals in the average number of drugs prescribed per-patient (Table 2). On the other hand, the trend in prescribing drugs in generic name seems to be encouraging; 70% (1837 of 2610) of drugs were written in generic name.(Figure 1 & 2).

Table 1. Name and location of the 13 hospitals.

Ser. No.	Name of hospital	Region
1	Asella Hospital	Arsi
2	Asebe Teferi Hospital	Harraghe
3	Debre Markos Hospital	Gojjam
4	Dessie Hospital	Wollo
5	Dilla Hospital	Sidamo
6	Felege Hiwot Hospital	Gojjam
7	Gambela Hospital	Illubabor
8	Hiwot Fana Hospital	Hararghe
9	Jijiga Hospital	Hararghe
10	Metu Hospital	Illubabor
11	Thasas 11 Hospital	Bale
12	Woldia Hospital	Wollo
13	Wolayita Hospital	Sidamo

The analysis of the recorded data showed that 34.2% (439 of 1284) of patients were given analgesics.

More than 90% of these prescriptions had only one analgesic. The number of analgesics per-prescription revealed the existence of a similar trend in all the hospitals (Figure 3).

The tendency to prescribe analgesics in combination with other classes of drugs was also similar among the hospitals surveyed. 90.4% (397 of 439) of patients were given an analgesic in combination with other classes of drugs. In two hospitals the percent is as high as 100 i.e. all who were given an analgesic had also taken other classes of drugs (Figure 4).

When looked into the kind of dosage forms prescribed tablets were found to be prescribed in the majority of cases. The use of injection is limited. 10% (44 of 439) of patients were only given analgesic injection. However, in some cases both the tablet and the injection dosage forms had been prescribed for a single patient.

Table 2. Average number of drugs per patient in 13 surveyed hospitals.

Hospital	Region	No.out patient seen/day presc.	Total no. of drugs	Average of drugs/pt
Dessie	Wollo	95	176	1.9
Woldia	Wollo	102	218	2.1
Ass.Tef.	Hararghe	55	80	1.5
Hiw.Fana	Hararghe	90	214	2.4
Jijiga	Hararghe	90	194	2.2
Thasas 11	Bale	127	301	2.4
Assela	Arsi	100	181	1.8
Dilla	Sidamo	147	336	2.3
Wolayita	Sidamo	120	246	2.1
Metu	Illubabor	70	126	1.8
Gambella	Illubabor	90	170	1.9
Deb.Markos	Gojjam	84	151	1.8
F.Hiwot	Gojjam	114	217	1.9
Total		1284	2610	2.0

The four popular analgesics prescribed were: dipyron 34.2%, acetylsalicylic acid (asprin) 28%, paracetamol 19.1% and avafortan (camylofin and dipyron) 17.7% (Figure 6).

Drugs prescribed in one day in the 13 hospitals were categorized therapeutically into analgesics, GIT, CVS, respiratory, vitamins, antibiotics and antimicrobials, antihelmenties and other like drugs for eye, ear, throat, skin and hormones.

Table 3. Abbreviations used for the name of hospitals.

Ser No	Abbreviations	Name of hospitals
1	A	Assela Hospital
2	AT	Asebe Teferi Hospital
3	DM	Debre Markos Hospital
4	D	Dessie Hospital
5	DI	Dilla Hospital
6	FH	Felege Hiwot Hospital
7	G	Gambela Hospital
8	HF	Hiwot Fana Hospital
9	J	Jijiga Hospital
10	M	Metu Hospital
11	T	Thasas 11 Hospital
12	W	Woldia Hospital
13	WO	Wolayita Hospital

The analysis showed that antibiotics were prescribed in high frequency and stood first 27% (711 of 2610) followed by analgesics 19% (498 of 2610). Antihelmintics and anti-parasites taken as one, vitamins, respiratory and CVS drugs were the fourth, fifth and sixth respectively (Figure 7).

## DISCUSSION

Prescriptions these days are seen to be the necessary outcome of a patient-doctor relationship. It remains important factor where improvement should be made in the rationalization of health care delivery. The practice of "poly pharmacy" or multiple prescribing is an additional problem of rational drug therapy. Nowadays few patients are observed returning home without receiving one or more drugs as a result of a visit to a hospital or other health care institution. This survey revealed that the average number of drugs prescribed per patient was 2.0. No marked difference was observed among hospitals surveyed.

The result was found to be more or less similar and or less when compared with the practices seen in other countries. The number of drugs per-prescription is around two in Switzerland, in hospitals of South Brazil it is 8.6, three as a minimum in Tunisia and Kenya and five in most health centers in Cameroon (2). The dangers and negative effects of multiple prescribing include exposing a patient to the side-effects of many drugs and being as main factor in minimizing patient compliance to drugs prescribed. Under the essential drug policy prescriptions are recommended to be written in generic name to the benefit of patients and realization of the policy. The fact that generic drugs are less costly than but as active as their brand counter parts is sufficient enough to force one to use the generic name in prescribing. The results obtained in this aspect are quiet encouraging. However, further orientation and education is still required as 30% adhere to brand names.

Antibiotics were the first (27%) and Analgesics (19%) were the second most frequently prescribed category of drugs. Because infectious diseases are the major causes of illness and death in Ethiopia, there is some justification in the extensive use of antibiotics. However, studies indicate that they are misused and indiscriminately prescribed, resulting in the development of bacterial resistance and abnormal consumption. Analgesics are also believed to be drug where misuse and over-consumption are observed.

Although pain is the major concern of patients in most clinical situations, the rational use of analgesics (pain killers) in hospitals and other health care institutions could be improved and calls for the attention of prescribers. A significant percent of patients seen in one day were given analgesics, i.e. 34.2% (439 of 1284). Of those given analgesics, 93.6% were given one and 6.3% were given two analgesics. On the other hand, more than 90% of such patients received an analgesic in combination with other class of drugs. In two hospitals, 100% of such patients were given an analgesic in combination with other class of drugs. One can conclude that one third of the patients who came to the hospital are likely to get one or more analgesics irrespective of the illness or complaint. The indiscriminate use of these drugs, besides exposing patients to

their side-effects, also uses up a significant amount of the drug budget of health institutions. In the assessment of drug use of all health institutions in one region of the country it was reported that the actual expenditure on analgesics was two times greater than the expected expenditure (4). The situation calls for the development of a standard treatment schedule to which prescribers should adhere, thereby managing properly the small drug budget available.

Unless the condition of the patient calls for an injection because it is an emergency case, tablets are recommended due to their advantages over injections. Tablets are less costly and easy for the patient to self administer. In this respect, the results obtained in the survey are quite satisfactory and should be encouraged. Only 6 of the 13 hospitals used analgesic injections and although in one hospital injections accounted for about 50% of the analgesics (Figure 5).

Contrary to the great number of analgesics on the market only a few are considered to be safe, effective and therapeutically useful. "Three quarters of the 356 analgesics on the market should not be recommended for use because they are dangerous, ineffective, irrational or needlessly expensive" (3). Although no drug is said to be safe there are some whose risk: benefit ratio requires that they be removed from the market. The results of the survey showed that four distinct types of analgesics were used with high frequency in all the hospitals surveyed. Dipyron (brand and generic) was the leading analgesic which accounted to 34.2%. This finding agrees with the survey carried out over a six-month period at a pharmacy in Addis Ababa, where Hoechst's brand of the pain killer dipyron was one of the "most commonly prescribed individual drug" (5). The continuance of its widespread use both in and out of health care institutions is attributed to the previous publicity and promotion performed by manufacturers.

The use of dipyron as stated in extra pharmacopeia is justified only in serious or life-threatening situations where no alternative antipyretic is available or suitable (6). Agranucytosis (loss of white blood cells due to bone marrow damage) is the main toxic effect of dipyron. Dipyron has been banned or restricted or withdrawn from the market or prohibited from importation in Australia, Singapore, Norway, Greece, Sweden, Philippines, Federal Republic of Germany, Israel, Peru, USA, Venezuela, Denmark, Saudi Arabia, Bangladesh, Egypt and Mexico (7). Can there be a kind of dipyron devoid of this side effect? If not, what justification can be given for its high use among health institutions surveyed?

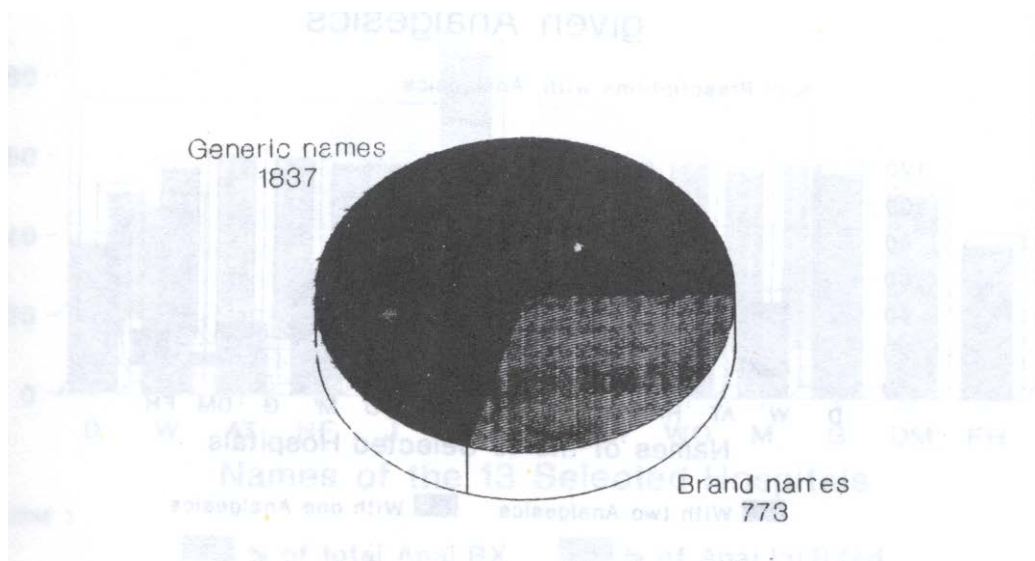
At present, warnings against the most widely used analgesics like aspirin in children under one year, due to the development of Reye's Syndrome, and paracetamol, which is believed to cause liver and kidney damage when used regularly for prolonged period, are appearing from various corners. The fact that in any drug therapy where the risk out weights the benefit, and no alternative drug is available, even the toxic ones are justified for the benefit of the patient. However, the proliferation of drugs on the market has given us the opportunity to select the least toxic ones and therapeutically advantageous drugs.

In conclusion to produce a clear picture of the pattern of drug use in different health institutions, we recommend surveys to be conducted on the following issues:

- the number of drugs per prescription or patient at different levels of health institutions,
- a survey on whether the prescriptions from any health institution would also provide information on the pattern and prevalence of disease,
- whether treatment is appropriate or there exists a mis-match between the diagnosis and the drugs prescribed, a survey on factors contributing to this irrational use of specific categories of drugs.

## FIGURE 1

### **Total percent of drugs prescribed in generic and brand names**



**Percent of drugs prescribed in generic and brand names**

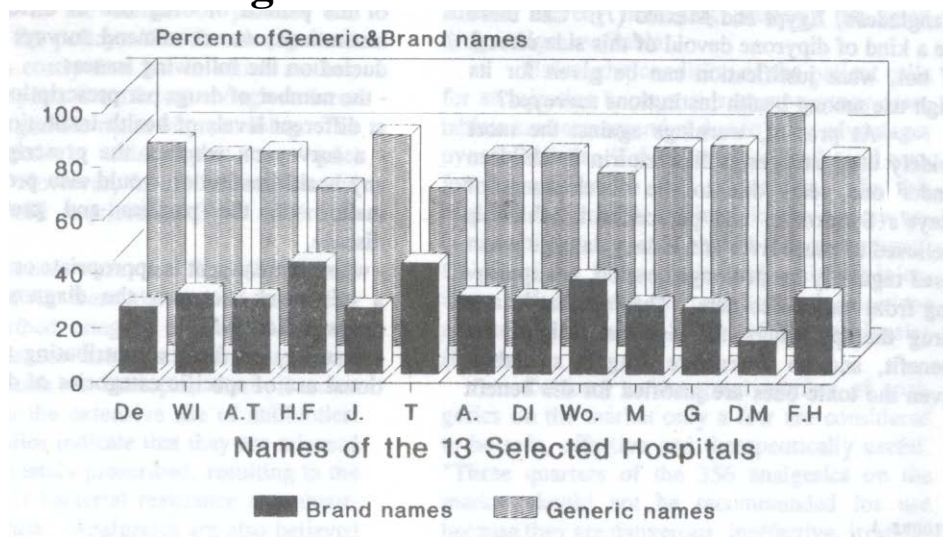
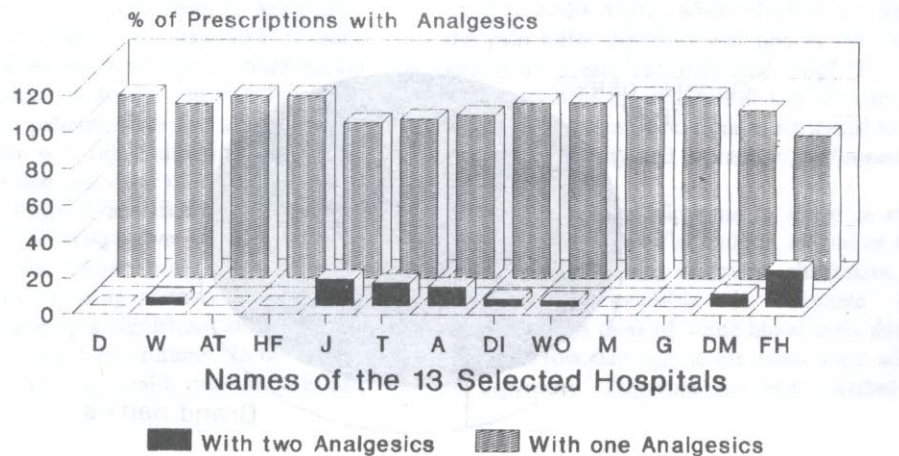


Figure 3

**Percent of Prescriptions with on or two Analgesic (s) Pf all patients given Analgesics**



### Anagesics RXed in combination with other classes of Drugs

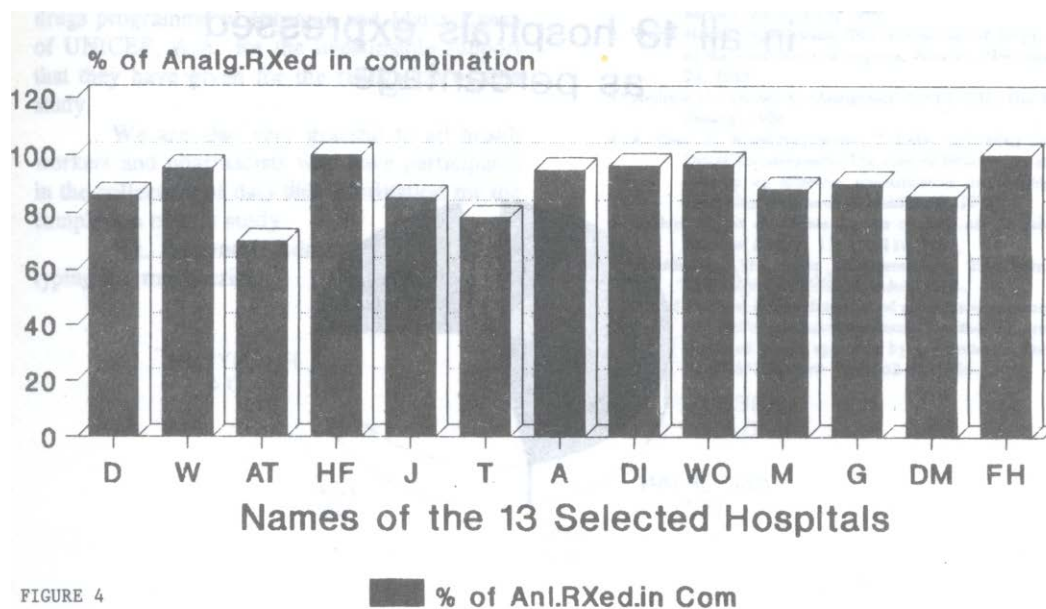
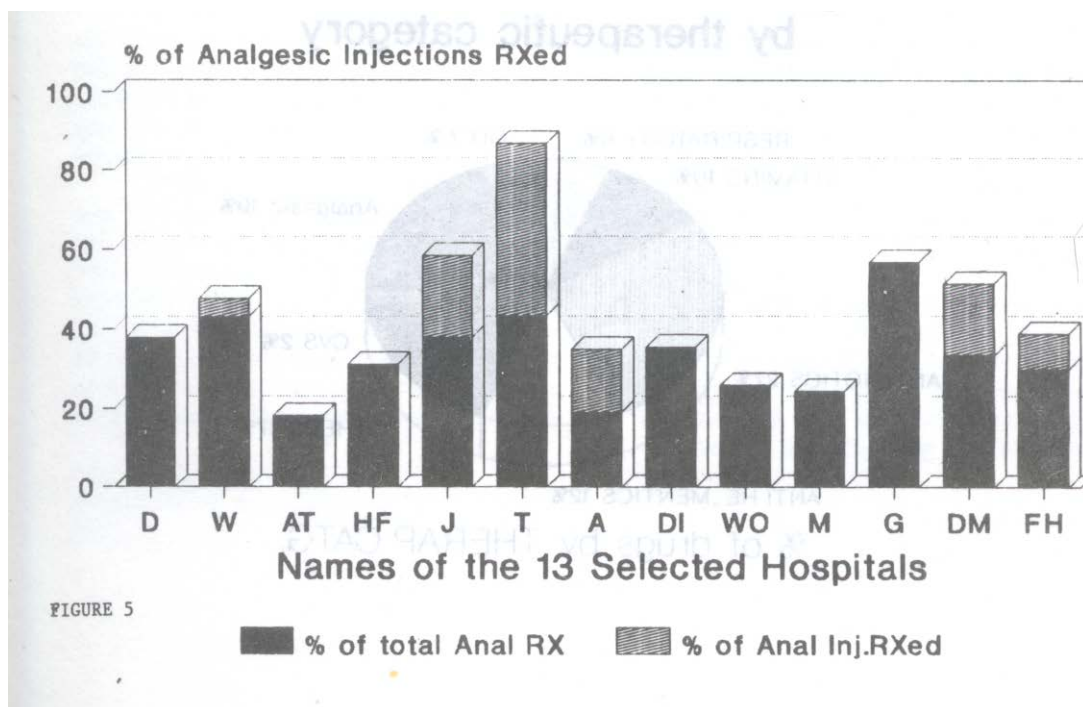


FIGURE 4

FIGURE 4

### Percent of Analgesic Injections RXed out of total Analgesics





**Type of Analgesics Prescribed  
in all hospitals expressed  
as percentage**

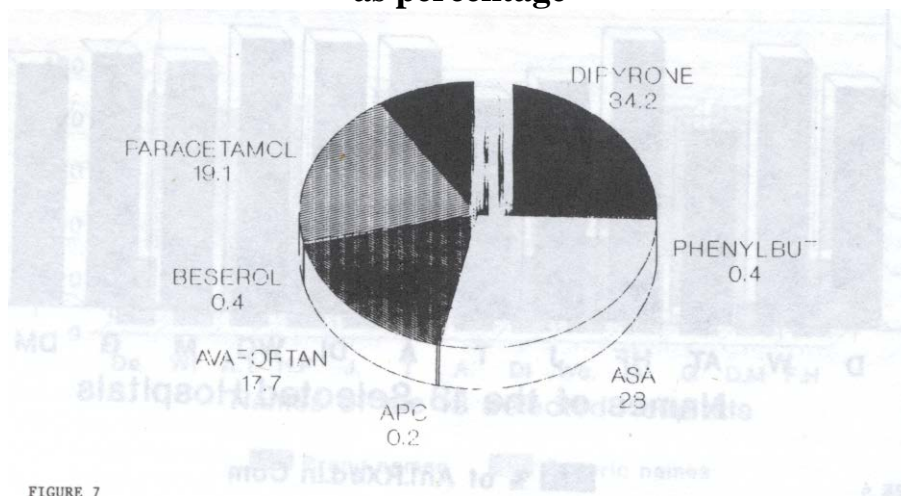
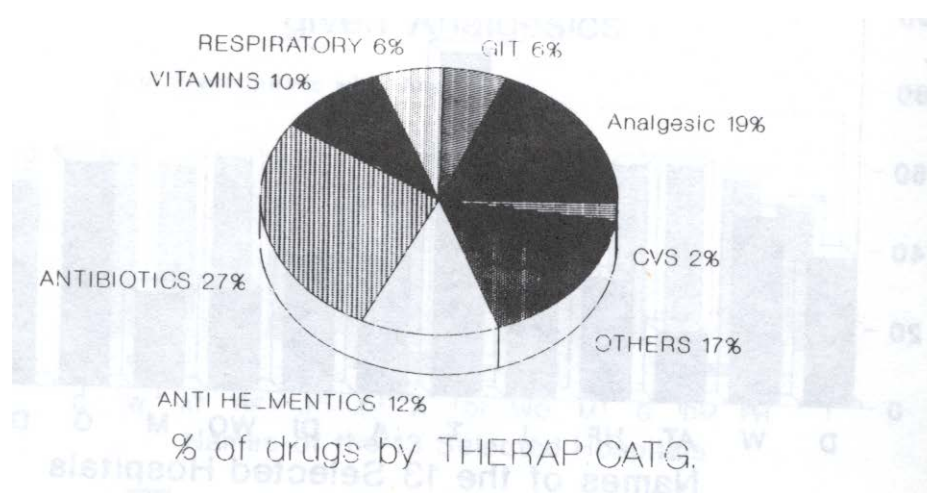


FIGURE 7

**Drugs Prescribed in one day  
by therapeutic category**





### ACKNOWLEDGEMENTS

We are very grateful to Dr.A.Pinto, former WHO technical officer for the essential drugs programme of Ethiopia and Maria Zanca of UNICEF, A.A. for the unestimable support that they have given for the realization of this study.

We are also very grateful to all health workers and pharmacists who have participated in the collection of data and information for the completion of this study.

Wt. Belaynesh Admassu is thanked for typing the manuscript.

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