AVAILABILITY AND USAGE OF MEDICINAL DRUGS AT HOUSEHOLD LEVELS IN KINONDONI DISTRICT, DAR ES SALAAM, TANZANIA.

BY

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ABSTRACT

Although there is an increasing concern about rational drug use and how to improve prescribing habits, little research has been done on the extent to which drugs are kept at household level and instances for their acquisition and use. A cross sectional survey of 400 households was conducted in ten administrative wards of Kinondoni district from February to March 1994.

The aim of the study was to determine the factors associated with use and misuse of medicinal drugs at household level. House to house interview was conducted, and a questionnaire was used for data collection.

The findings showed that, 73.3% of the sampled households store drugs at home. Moreover 761 different drug preparations were found stored. The drug groups mostly found were, analgesic/antipyretic (19.8%), antimalarials (19.6%), antibacterials (16.4%), and cough expectorants/sedative (6.2%). Apart from modern medicines, 1.2% were traditional medicines.

The main source of these drugs were pharmacy shops (35.2%), private hosp/disp (29.6%) and govt hosp/disp (19.3%) others were relatives/friends (8.3%), ordinary shops (5.3%) and medical store (2.3%).

Two thirds of the drugs were in open storage facilities while one third were under lock. Additionally almost (30%) were stored for more than two weeks.

It was also observed that 83.3% of respondents agreed that they practice self medication with numerous instances of inappropriate self medication and indiscriminate use of antibiotics and injections. Nearly 50% of the households were sharing drugs within and across the households.

In view of shortages of among other things drugs at government health sectors, a majority of households accept the cost sharing policy, but they suggest that the quality of government health facilities should be improved, with the availability of all prescribed drugs.

It is recommended that, the Drug Information Unit of the Pharmacy Board, together with the Health Education Unit (MOH) should educate the population on drug storage, proper source of prescribed drugs, and the effects of misuse of drugs. Further more it is suggested that more studies should be conducted all over the country to ascertain the pattern of drug use at households level.

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ACRONYMS

Asa	Aspirin
Ant-inf	Ant-infectives
Caps	Capsules
CNS	Central Nervous System
Disp	Dispensaries
DSM	Dar-es-Salaam
Gvt	Government
ED'S	Essential drugs
EDP	Essential Drug Programme
ext	External
Hosp	Hospital
Inj	Injections
Int	Internal
Liq	Liquid
MOH	Ministry of Health
NEDLIT	National Essential Drug List for Tanzania
NGOs	Non-Government Organizations
Nutr	Nutrition
OTC	Over the Counter Products
PM	Prescription Medicine
PHC	Primary Health Care
Prep	Preparation
PPF	Procaine Penicillin Fortified
RST	Respiratory System
SPSS	Statistical Package for Social Sciences
STD	Standard Deviation

Syr	Syrups
Sq.km	Square Kilometer
Tabs	Tablets
Unident	Unidentified
WHO	World Health Organization

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DECLARATION

I hereby solemnly declare, that this dissertation is my original work and has never been submitted for a diploma or degree in any other University.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND INFORMATION.

The United Republic of Tanzania has a total area of 945,000 sq. km which include the Mainland and Islands of Unguja and Pemba. It is located just to the south of the equator and is bordered by the Indian Ocean to the East, Kenya and Uganda to the North, Rwanda, Burundi and Zaire to the West and Zambia, Malawi and Mozambique to the South.

The country has 25 administrative regions out of which 20 are in the Mainland and 5 in Zanzibar. It has a population of 27.4 million[1] with an average annual growth rate of 2.8%. Nearly 90% of the population is rural. There are 174 hospitals in the country, 276 health centres and 3014 dispensaries providing both curative and preventive health services[2].

In Dar-es-Salaam region this study was conducted where there are 3 districts (i.e. Kinondoni, Ilala and Temeke) with 13 hospitals, 6 health centres and 146 dispensaries[2]. There are 110 registered pharmacy shops and 110 medical stores.

The region is located in the east coast of the country. The population size for Dar-es-Salaam was 1,360,865 which constitutes 5.9 percent of the total population of Tanzania Mainland and has an annual growth rate of 4.8 percent[3]. According to 1988 census report the regional population density was 944 people per sq. km and the dependency ratio was about 40 percent (37.6% being under 15 years and 2.2% being 65 years and above)[2]. This suggests a high dependency ratio. The situation indicates that those who are able to work are overburdened by those who are unemployed.

Due to economic hardships, some changes took place in the government such as an increase in the budget required in running ministries especially that of health sector. This was among the reasons which contributed to the chronic drug shortage in government health facilities. The shortage of drugs forced many patients to visit the government hospitals only when they knew that there are drugs. Sometimes the patient would tell prescribers what types of drugs they wanted and the health worker would comply with such request. Some of the drugs so obtained would be used and some would be stored for use in another illness episode.

The government trade liberalization resulted in wide proliferation of commercial goods in and outside the formal system including importation of pharmaceutical products. This made many people to be able to obtain drugs on the market for use or keeping them for future use. The above mentioned factors plus others not mentioned indicate some of the hardships faced by people living in Tanzania.

1.2 REVIEW OF LITERATURE

Drugs are consumed for the management or prevention of an ailment. The quality of health care has many dimensions, one indisputable fact is that modern curative and preventive care depend heavily on adequate supply of pharmaceuticals[4]. But the concern in most countries in sub-Saharan Africa is that pharmaceuticals are only sporadically available[4]. Empirical observation shows that non-governmental facilities are much more likely to possess an adequate supply of pharmaceuticals than government facilities. A large part of the private sector consists of pharmacy shops, dispensaries, drug shops and other pharmaceutical outlets. In many developing countries these outlets constitute the primary distributor of the major share of drugs. In Bangladesh and North Yemen it amounts up to 90%[5]. In Tanzania the pharmacy shops are scarce in rural areas and more available in towns and cities where they are easily accessible. In these facilities drugs are sometimes dispensed without prescriptions. Therefore the problems of non availability of pharmaceuticals in the government health facilities has promoted the extensive use of drugs from these sources (that is non-governmental sources of health care) and from traditional healers. This seems to be a common problem in most developing countries[6].

Problems of non availability of medicinal drugs in government health facilities tend to let the community lose

confidence in government drug sources and find elsewhere to buy whatever commercial drugs are available. In some cases these drugs may be of sub-standard and likely to be dispensed by unqualified personnel[7].

Correct use of drugs depends on drug availability at the right time, safe storage, proper instruction on their use and good compliance with treatment on the part of the patient[8]. Lack of any of the above will result in irrational use or misuse of drugs. Drug advertisements in developing countries are frequently criticized for carrying inaccurate and contradictory information compared to that available in industrialized countries[9]. In many cases side-effects of advertised drugs are not mentioned at all while good effects of untested products are sometimes dramatised in mass media.

In the event of an illness a household member has a variety on a lay referal systems who influence the cause of action to take including doing nothing about the health problems[10]. This indicates that a patient is likely to use more than one provider; which provider he will approach will depend on the type of illness and the preferred health service outlet and the social-economical and cultural factors, hence the likelihood of an irrational use or misuse of medicinal drugs.

The importance and popularity of pharmaceuticals have led many governments in developing countries to adopt a policy of providing free drugs. Unfortunately, few countries have the resources to fully implement such a policy, probably because of high demand, limited funds and high drug prices, all of which contribute to frequent drug shortages[11]. Tanzania like any other developing country faces similar problems of inadequate funding in the health sector resulting in inadequate health services including scarcity of drugs in many government health facilities. This is another factor contributing to irrational use or misuse of drugs.

The extent to which health care workers are able to communicate with patients determines the extent to which patients will comply with a prescribed treatment.

A study which was conducted in the city of Dar-es-Salaam revealed that a substantial proportion of people (84%) stored drugs at home and over 70% admitted non-compliance in using prescribed drugs[12].

The use of brand names as opposed to generic names in the private sector is one of the constraints to rational drug use as consumers continue to buy relatively expensive and sometimes unsafe and ineffective drugs[8]. Many drugs on the market contain multiple ingredients which is contrary to

the scientifically sound WHO recommendations that most drugs should contain only a single ingredient[13]. Use of polypharmacy for a single illness episode is a phenomenon which has been noted especially in health care settings which are run as business ventures. In this case the sale of drugs is dependent mostly on profit motives rather than on services to health problems of a given community. The little literature available suggests that the amount of drugs on the market in the private sector is enormous. There are about 5,000 preparations available in Kenya, 2,900 in Zimbabwe, and it was estimated that there are 400 varieties in Tanzania and 1,200 in Uganda[13] as compared to approximately 250 on Tanzania NEDLIT and approximately the 270 on the WHO recommended EDL.

Misuse of medicinal drugs may also be due to limited distribution or non-availability of standard treatment guidelines, which is a more problem in the private health sector[11].

When the only drugs that are available are unsuitable for a particular illness, factors such as social, psychological and economic pressure may force the health workers, (pharmacists included) to dispense them anyway[13]. This sort of problem leads to irrational use or misuse of drugs, and patients stocking drugs at home for feature use in fear of drug shortages.

Similarly unsuitable drug financing schemes can lead to over-prescribing and to patients receiving insufficient treatment when they cannot afford to buy all the drugs prescribed[13]. Available data on prescription drugs show that prescribers also contribute to drug use problems in the general population. A study done in Tanzania found that over-prescription beside causing shortages is reported to contribute towards drugs stocked in peoples homes[9,12].

Poor communication between health care professionals and patients also contributes to irrational drug use. Controlling the market, prescribing habits and types of medicines to be produced locally and imported can play a role in preventing irrational use of drugs[8].

1.3 STATEMENT OF THE PROBLEM AND RATIONALE.

The overall objective of the Tanzania National Drug Policy is to make available to a majority of Tanzanians at all times the essential pharmaceutical products which are of good quality, proven effectiveness and acceptable safety at a price that the individual and community can afford, when these are needed to prevent, cure or reduce illness and suffering[14].

Since independence in 1961, Tanzania has been trying to offer free health services to her people. But due to the steady increase in the cost of maintenance and expansion of health facilities, the government has failed not only to provide essential health services in the existing health facilities but even to maintain the infrastructure. This has forced the government to establish a cost sharing policy to assist in financing the health sector. The user charges in the health sector were introduced for a variety of reasons, including but not limited to shortage of drugs in various health units. The problem of drug shortage was first noted during the early eighties due to among other things, incorrect diagnosis and irrational prescribing habits (EDP 1987)[15].

The government policy of trade liberalization in recent years has to some extent contributed towards availability of pharmaceutical products outside the approved formal

sector. Many people buy drugs outside the formal system and nothing is known about the dosage or the extent to which those who sell them know their use, leave alone their ability to correctly explain to patients the correct use of those pharmaceutical products. Furthermore the availability of a wide range of brand names of drugs has sometimes resulted to drug misuse.

Due to chronic drug shortage even patients attending government health units are sometimes advised to buy prescribed drugs from the open market. Also not much is known about the extent to which people in the community are aware of how to use prescribed drugs and the importance of completing the dose given for a particular health problem. These have resulted into use and misuse of drugs at household level. This problem is worsened by the increasing number of pharmacy shops, medical stores, vendors and ordinary shops which easily dispense drugs to people without consultation of qualified health care workers.

Despite anecdotal evidence of poor patient compliance with treatment in both developed and developing countries[16], solid evidence is rarely reported. One study carried out in Tanzania indicates that less than 25% of the patients correctly use prescribed drug[9]. Another study in Nigeria indicates that patient failure to re-fill prescriptions increases as the number of drugs prescribed increases[17].

Little is known about the situation in Tanzania. Despite the high prices of drugs and their scarcity in many developing countries, drugs are often over-prescribed by health professionals and over-consumed by the public[11].

Traditional medicines are used in majority of the countries side by side with modern medicines, it has been reported that some 80% of the worlds inhabitants rely chiefly on traditional medicines for their primary health care needs[18].

In Tanzania traditional medicines are widely used over the whole country, from the rural to urban areas including Dar-es-Salaam Region where there are several hundred traditional healers.

The population under study has often observed the positive effect of their traditional medicines, and they have strong faith in using them[19,20]. Traditional medicines are preferred over modern medicines because they are cheap, more accessible to the population and enjoy a wider acceptability[20]. The traditional healers do not pretend to compete with orthodox doctors, but understand the social cultural realities under which illness behaviour is learned and consequently have a better understanding of patient /doctor relationships than orthodox trained prescribers. Locally constructed models of disease causation to a large degree account for the different pathways people use in

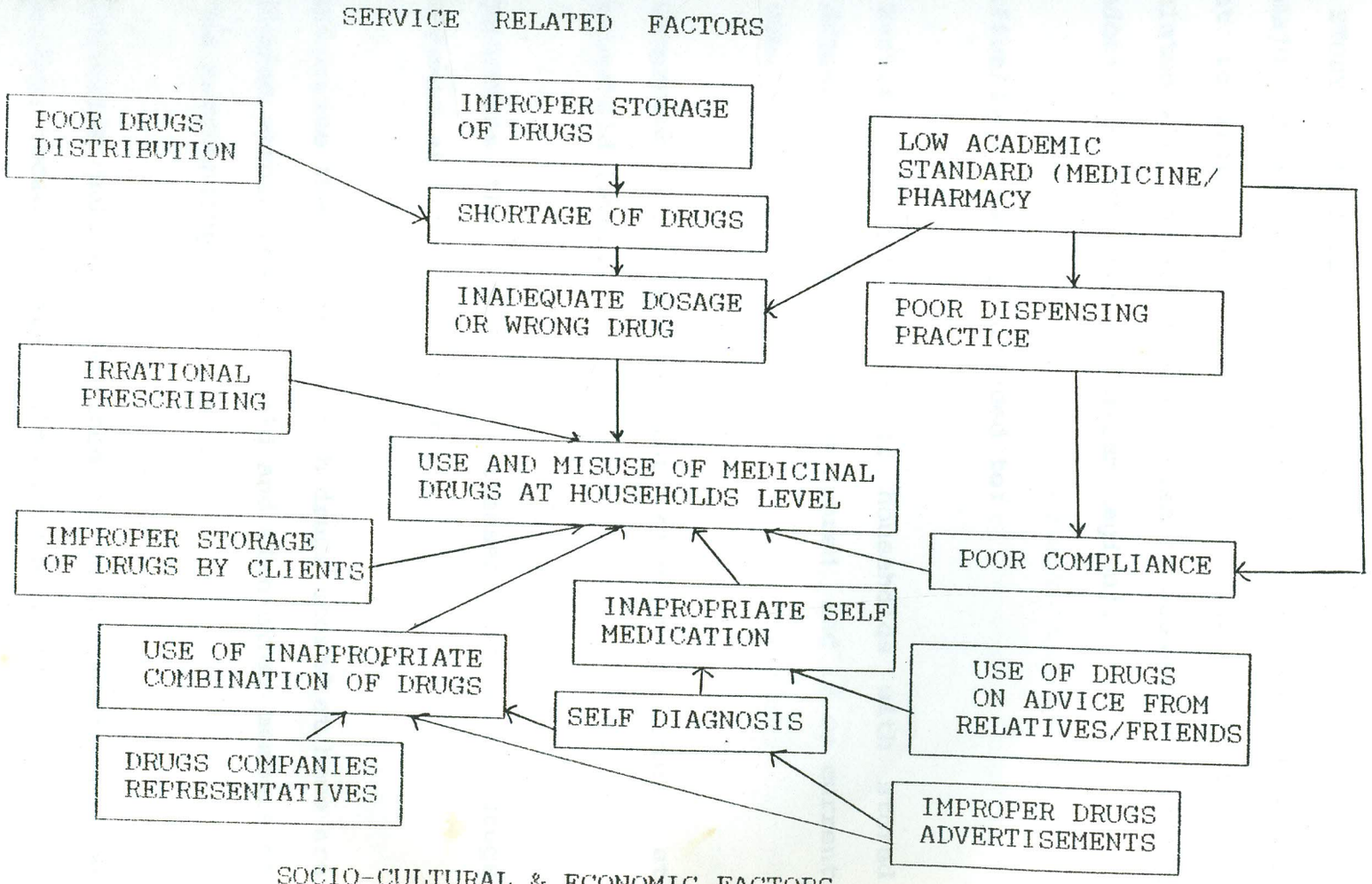
seeking care when they are sick and this to a large extent also influences the type of drugs and which remedies individuals use as medicine[21].

Given the availability of a variety of drugs in ordinary shops, pharmacy shops, and even on the street vendors, it appears that self medication is fairly common. However little is known about the extent to which people stock drugs at home, the source of such drugs and the local explanatory disease model for which the different drugs are used.

Figure 1. shows a problem analysis diagram which includes possible factors associated with use and misuse of medicinal drugs at household level. These factors are as follows: lack of proper prescription, effects of drug advertisements, drugs obtained from informal sources dispensed by unqualified personnel, use of drugs on advice from relatives or friends, patient's believe and expectation on drugs and diseases, self medication behaviour, inappropriate instruction on the proper use of drugs, and difference in causal models of people and that of health care workers. Not much is known about the stocking of left overs drugs at household level in Tanzania and the types of health problem for which they are used.

This study aims at exploring the extent to which drugs are kept in different households, the types of diseases for which they are used, and the sources from which these drugs were obtained. The information obtained will provide important potential knowledge to for health education on rational drug use as well as on the formulation of policies on importation and distribution of drugs in the country.

FIGURE 1: PROBLEM ANALYSIS DIAGRAM SHOWING SOME FACTORS ASSOCIATED WITH USE AND MISUSE OF MEDICINAL DRUGS AT THE HOUSEHOLD LEVEL.



1.4 STUDY OBJECTIVES:

The major objective of this study was to determine the extent to which drugs are kept at homes and factors associated with their use and misuse at household level in Kinondoni District (Dar-es-Salaam Region).

Specifically the study intended to:

1. Explore the proportion of households with stored drugs, their sources, where stored, and if on current use.

2. Determine the reasons for keeping medicines at household level.

3. Determine the types of illnesses for which drugs stocked at home are used for.

4. Determine the extent to which drugs stored at home are shared within the household and with other members of the surrounding community.

5. Establish public acceptance of health cost-sharing policy, recently established by the government.

1.5 DEFINITION OF TERMS USED

1. Misuse of drugs can be defined as the use of drugs in a wrong way, or used for a wrong purpose. Misuse of drugs can be due to underdosage, overdosage, inappropriate prescription (e.g. use of tetracycline for children, antidiarrheal medication instead of oral rehydration solution) and use of improper drugs for a given disease states.

2. Essential drugs (ED'S) are defined as those drugs which can effectively treat or prevent most of the common diseases/conditions in the community at a cost which the community can afford (EDP 1987)[15]. In other words Essential drugs can also be defined as those drugs that satisfy the health care needs of the majority of the population; they should therefore be available at all times in adequate amount and in the appropriate dosage forms[22]. For this reason, essential drugs are those that are of the utmost importance and are basic, indispensable and necessary for the health needs of the population. Additionally ED'S are selected on the basis of proven efficacy and safety, well established therapeutic properties i.e. standard quality and availability as generic products.

3. Self medication is defined as the voluntary use of medicine/drugs by the patient to eliminate or reduce perceived symptoms without official prescription or consultation with qualified health personnel[23,24]. Self medication has also been seen as an aspect of illness behaviour, the way people perceive and react to symptoms. Illness behaviour is affected for example by the social network i.e. friends and family and psychological factors e.g. the benefit expected from alternative action. This expectation is often based on past experience, that is people may for example self medicate themselves because they expect or know from experience that professional care can do little for their illness or it has helped them in the past[11].

4. Medical compliance, has been defined as the extent to which the patient behaviour (in terms of taking medication, following diet or executing other life style changes) coincides with medical or health advice[25]. Compliance will be better where the instructions given to the patient are explicit and understandable and a patient who is satisfied will be more compliant[11,26].

5. Household unit is defined as a room or group of rooms occupied or vacant and intended for occupancy as a separate living quarter. Further definition of

household includes everyone who resides in a housing unit at the time the interviewers speak to a household member and learn who lives there, including those who have residence both there and elsewhere[27]. Household is also defined as a person or a group of persons living together and sharing a common source of food[28].

6. Age dependant ratio is the ratio of the number of the persons age 0 to 14 years and those aged 65 years and over divided by the number of persons age 15 to 64. It is an indicator of dependency responsibility of adults in their productive years[28].

7. Medicinal drug is defined as any substances used in diagnosis, treatment, prevention of a disease disorder or abnormal physical state and in restoring, correcting or modifying organic functioning in man[29].

CHAPTER 2

METHODOLOGY

2.1 STUDY DESIGN.

This is a cross-sectional descriptive study based on quantitative and qualitative data.

2.2 STUDY AREA.

The study was conducted in Kinondoni District in the City of Dar-es-Salaam (refer figure 1 and 2). This region was selected due to its high number of population, many government and private hospitals, a large variety of pharmacy shops, medical stores and many hawkers. The large variety of health facilities makes patients to have many alternatives whenever they fall sick.

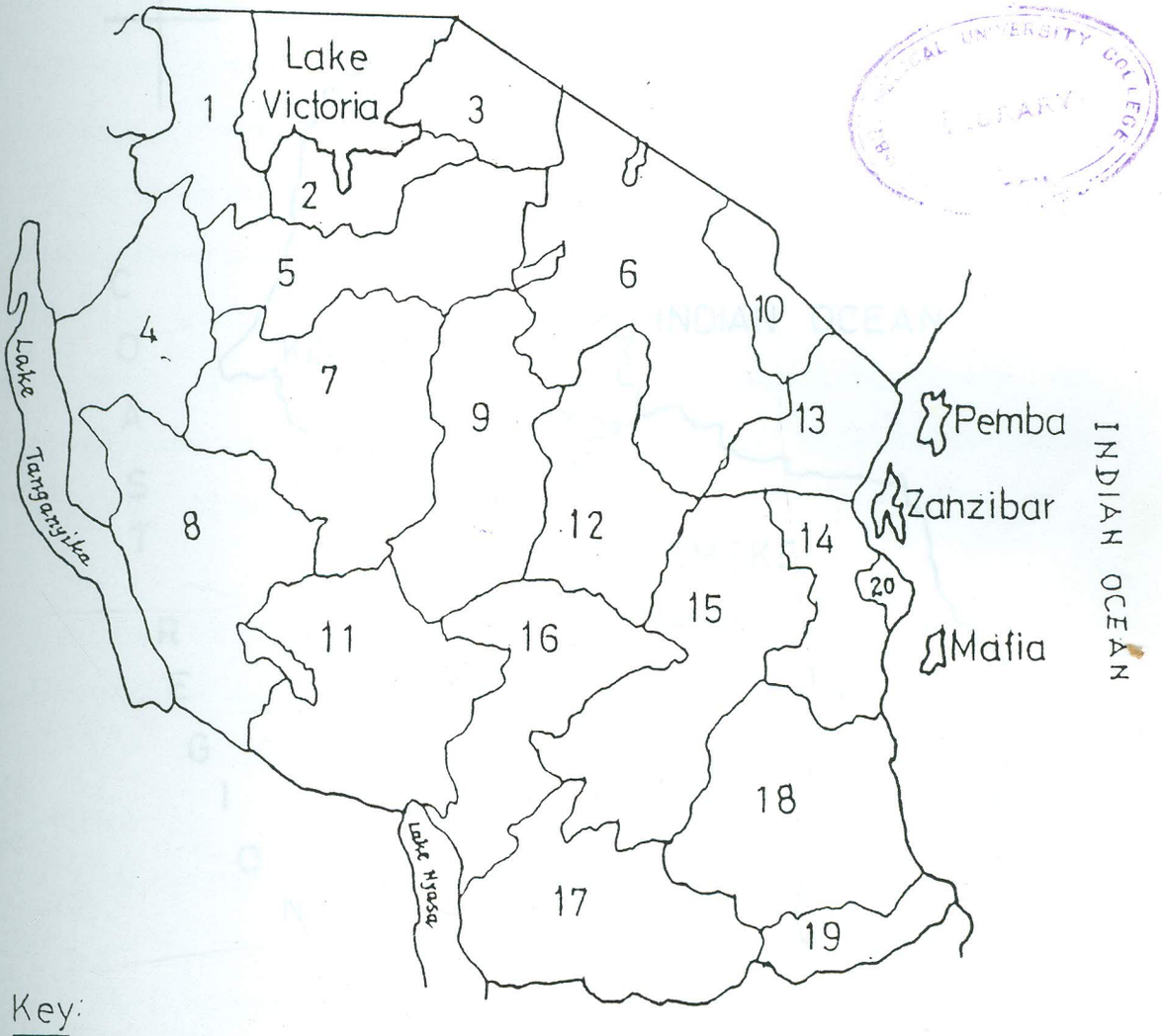
Kinondoni District is composed of four divisions, which have a total of 18 administrative wards (Appendix 1).

Traditionally the district belonged to an ethnic group of the Wazaramo tribe. But the fact that Dar-es-Salaam is the capital city of Tanzania and is the centre of business and industry, the population of the district is composed of heterogenous tribes from different parts of Tanzania. The indigenous Zaramo predominate in rural villages of the district.

The district has one government hospital (Mwananyamala), 21 government dispensaries and 90 non-governmental (NGO's) health dispensaries. It has 37 registered pharmacy shops, 48 medical stores and many ordinary shops. The government health facilities are available both in rural and urban areas while private sector health facilities are mainly located in urban areas.

FIGURE 2:

THE MAP OF TANZANIA SHOWING THE REGIONAL DIVISIONS



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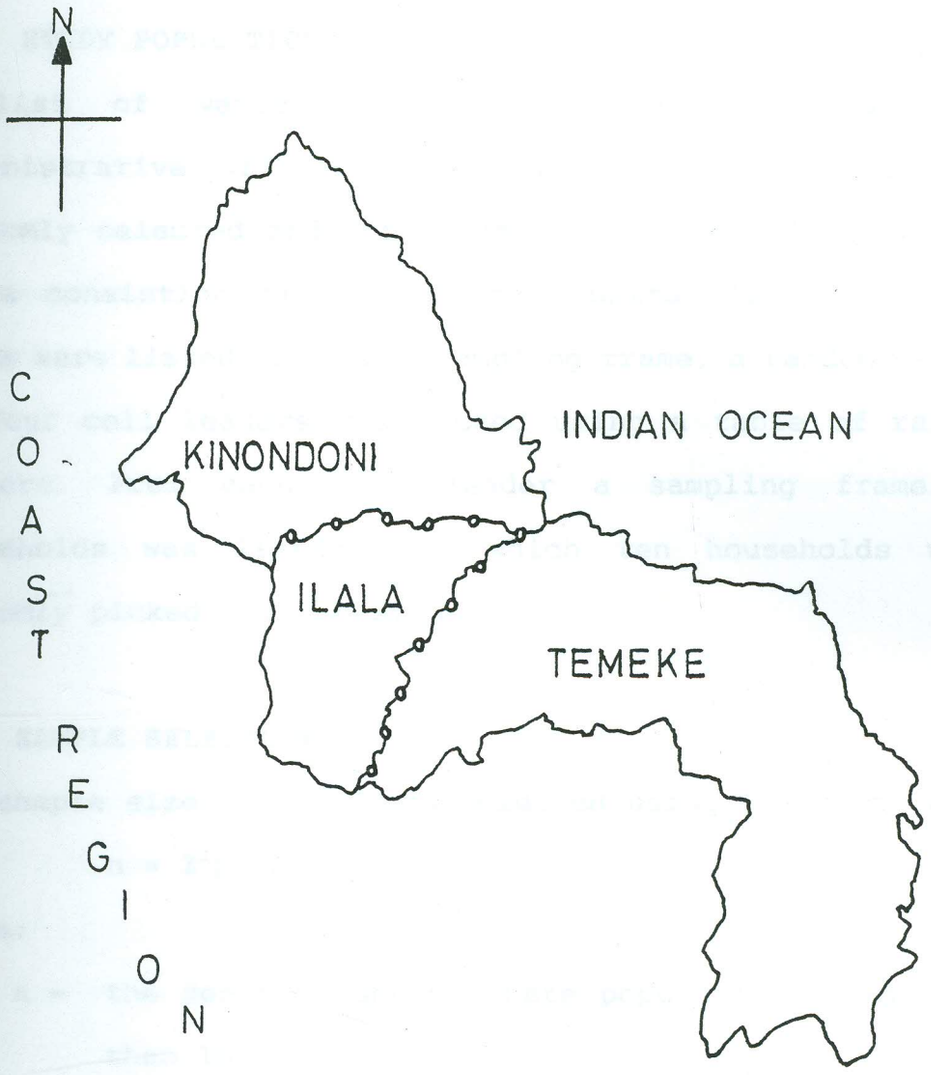
Key:

1 Kagera
2 Mwanza
3 Mara
4 Kigoma
5 Shinyanga
6 Arusha
7 Tabora
8 Rukwa
9 Singida
10 Kilimanjaro
11 Mbeya
12 Dodoma
13 Tanga
14 Coast
15 Morogoro
16 Iringa
17 Ruvuma
18 Lindi
19 Mtwara
20 Dar es Salaam

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FIGURE 3:

THE DISTRICTS OF DAR ES SALAAM REGION.



2.3 STUDY POPULATION.

A list of wards was obtained from the District Administrative Officer. From this list, 10 wards were randomly selected and from each selected ward, a sampling frame consisting of all ten cell units was listed. The wards were listed from this sampling frame, a random sample of four cell leaders was picked using a table of random numbers. From each cell leader a sampling frame of households was listed from which ten households were randomly picked for the study.

2.4 SAMPLE SELECTION.

The sample size (n)[30,31,32] was selected using the formula

$$n = Z^2 p\, q/d^2$$

where:

- n = the desired sample (where population is greater than 10,000).
- Z = Standard normal deviate, usually set at 1.96 which corresponds to a 95% confidence interval.
- p = the proportion in the target population estimated to have a particular characteristic. In this case the prevalence of misuse of drugs in Kinondoni was estimated to be 50%.
- q = 1 - p
- d = degree of accuracy desired, in this case its set at 0.05 (5%).

The minimum required sample size for valid statistical interpretation was 384 households. However, a total of 400 households was taken for this study.

The sampling procedure was done using multistage random [31,33] sampling starting from the administrative ward level down to the household level. This included 10 wards each with a cluster of four ten cell leader households. From each ten cell leaders 10 households were randomly selected for the study.

2.5 DATA COLLECTION.

A standardized questionnaire was used as instrument for data collection. This instrument had four main parts i.e. identification of interviewees, morbidity and treatment, storage of drugs and self medication, lastly demographic and socio-economic characteristics. A standardized questionnaires was designed in English and then translated in Kiswahili (appendices 2 and 3 respectively).

Three recruited staff nurses (interviewers) and the principal investigator were involved in the survey. The interviewers were trained prior to going for data collection and participated in the pre-testing of the questionnaire.

Data collection involved a visit to each household belonging to the selected ten cell leaders. The survey was done according to the work schedule planned as per appointment made. The respondents were interviewed after establishing a good rapport. Those absent were revisited twice before being regarded as non respondents.

The Principal investigator was constantly supervising interviewers during data collection; checking for consistency and completeness of data entry on daily basis.

2.6 ETHICAL CONSIDERATIONS.

(i) Each respondent was asked about her/his willingness to participate during the survey and she/he was assured that all the information would be kept confidential.

(ii) Sensitive issues particularly those related to entering and making observations in rooms where drugs might have been stored/kept were taken as confidential by the researchers. The interviewees were assured that whatever was seen could not be communicated to anybody else.

2.7 LIMITATION OF THE STUDY.

1. Due to the limited resources available it was necessary to restrict the survey to Kinondoni District, which was easily accessible.

2. The study was conducted within a short period of time which did not allow one to see the effects of seasonal variation with availability of drugs in people's homes.

3. The list of drugs obtained was directly depended on the interviewees acceptance to show them. There is a possibility that not all the drugs were shown, which might be the cause of such a small number of traditional medicines observed.

CHAPTER 3

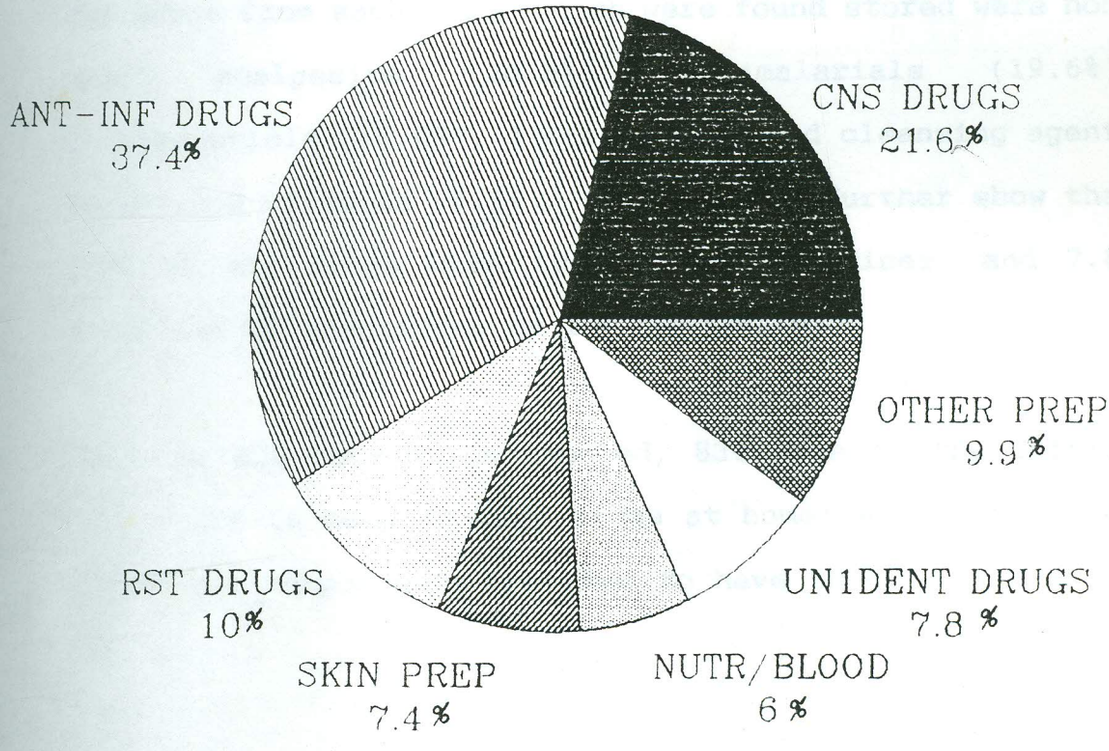
RESULTS

A total of 400 heads of households were interviewed, of whom 67.8% were females and 32.2% were males. Nearly four fifth of the study sample were married couples and only 8% were single. The rest were cohabiting, widowed or divorced. Out of 400 households interviewed, 293 (73.3%) had medicines stored in their houses and 761 different types of drug preparations were reported, with an average of 3 types of drugs per household. The types of drugs encountered were 37.4% anti-infectives, 21.6% central nervous system drugs, 10.0% drugs acting on the respiratory system, 7.4% skin preparations, 6.0% drugs affecting nutrition and blood preparations, and 9.9% other classes which include 1.2% traditional medicines. About, 7.8% were unidentified drug preparations (Figure 4).

The major sources of drug supply were hospitals or dispensaries (49%) and pharmacy shops (35%) while non-formal sources of drugs played only a little role in drugs accumulated in people's homes in the study area.

FIGURE 4:

PHARMACOLOGICAL CLASSIFICATION OF MOST FREQUENTLY FOUND DRUGS IN PEOPLE'S HOMES



3.1 DRUG AVAILABILITY.

3.1.1 CATEGORIES OF DRUGS COMMONLY KEPT AT HOME.

From the 761 drug preparations reported, an attempt was made to find out the drug groups which were most frequently kept in the households. Many of these were found to be of pharmacological group classification as shown in Table 1. The drugs from each group which were found stored were non-opiod analgesics (20.5%), antimalarials (19.6%), antibacterials (16.4%), disinfectants and cleansing agents (4.6%),and vitamins (4.3%). The results further show that 1.2% of all drugs were traditional medicines, and 7.8% could not be identified by the interviewees.

From the 400 households sampled, 83% were of the opinion that there is need to keep drugs at home; and indeed over 88% of the respondents reported to have them.

TABLE 1: PHARMACOLOGICAL CLASSIFICATION OF DRUGS FOUND STORED AT HOME

	GROUP OF DRUGS	FREQUENCY	Total
1.	DRUGS ACTING ON CNS		
	(i) Non-opiods analgesics	156	20.5
	(ii) others	8	1.1
	SUB TOTAL	164	21.6
2.	ANTI-INFECTIVES		
	a) Antibacterials	125	6.4
	b) Antimalarials	149	19.6
	c) Antihelimintics	11	1.4
	SUB TOTAL	285	37.4
3.	DRUGS ACTING ON RESPIRATORY SYSTEM		
	a) Bronchodilators	6	0.8
	b) Cough preparations & nasal decongestants	49	6.4
	c) Antihistamines & drugs for allergic emergencies	21	2.8
	SUB TOTAL	76	10.0
4.	SKIN PREPARATIONS		
	a) Disinfectants & cleansing agents	35	4.6
	b) Parasiticidal preparations	6	0.8
	c) Fungicides & Topical preparations	15	2.0
	SUB TOTAL	56	7.4
5.	DRUGS MODIFYING NUTRITION & BLOOD		
	A) Vitamins	33	4.3
	b) Anaemias	3	0.4
	c) Fluids & nutrition	10	1.3
	SUB TOTAL	46	6.0
6.	OTHER CLASSES		
	a) Cardiovascular drugs	19	2.5
	b) Gastrointestinal drugs	19	2.5
	c) Traditional medicines	9	1.2
	d) Other drugs	28	3.6
	SUB TOTAL	75	9.9
7.	UNIDENTIFIED DRUGS		
	a) Tablets	30	3.9
	b) Syrups	21	2.8
	c) Lotions	8	1.1
	GRAND TOTAL	761	100.0

3.1.2 SOURCES OF DRUGS FOUND IN DIFFERENT HOUSEHOLDS.

In view of known shortages of drugs at government health facilities, and uncontrolled sources of various drugs in Dar-es-Salaam, respondents were asked to mention where they obtained the drugs they were keeping at home. Table 2 shows the pattern of responses to this question.

Although antimalarials are easily available from ordinary shops only 13% of respondents obtained them from such sources. Almost two thirds of the respondents obtained them from private hospitals or pharmacies. These sources contributed to nearly three-quarters of antibiotics kept in households. Friends and ordinary shops counted for only 7% of antibiotics found in households contrary to what was expected given poor monitoring of different sources from which drugs can be bought by the general public.

Pain killers are easily sold over the counter in any shop in the area where the study was conducted. Interestingly however quite a substantial proportion of analgesics (55%) were obtained from hospitals which were also the source of nearly 49% of unidentified drugs reported in this study. This could be due to poor labelling and packaging.

TABLE 2: SOURCES OF DRUG GROUPS KEPT AT HOME.

DRUG GROUPS	SOURCE OF DRUG SUPPLY					
	Private hosp/disp	Govt hosp/disp	Pharmacy shop	Medical store	Ordinary shop, Friends	Total
Analgesics	56(35.9%)	29(18.6%)	39(25%)	2(1.3%)	30(19.2%)	156
Antimalarial	45(30.2%)	30(20.1%)	50(33.6%)	4(2.7%)	20(13.4%)	149
Antibiotics	41(32.8%)	21(16.8%)	50(40.0%)	4(3.2%)	9(7.2%)	125
Unidentified drugs	8(13.6%)	21(35.6%)	17(28.8%)	4(6.8%)	9(15.2%)	59
Others	75(27.6%)	46(16.9%)	112(41.1%)	4(1.5%)	35(12.9%)	272

Chi-square test = 41.1; $p < 0.001$;

When the drugs stored at home, were grouped into their respective formulation, the most frequent formulations found in different households were tablets/capsules and liquid preparations for internal use, followed by preparation for external use and injections. The drug formulations by source of supply appear in Table 3. Nearly half of liquid preparations for internal use were obtained from pharmacy shops, and the same applies to over 39% of other preparations for external use. Most tablets/capsules found in the households were obtained from hospitals or dispensaries. Pharmacy shops were mentioned as source for over 40% of injectables kept at home.

Some injectables were obtained from ordinary shops and this suggests that ordinary shops may be selling drugs and other pharmaceutical materials contrary to the existing laws and regulations.

TABLE 3: DRUG FORMULATION BY SOURCES OF SUPPLY.

DRUG FORMULATION	SOURCES OF DRUG SUPPLY					
	Private hosp/disp	Govt hosp/disp	Pharmacy shop	Medical store	Ord shop	Total
Tablets/Capsules	105(33.6%)	81(26.0%)	67(21.5%)	9(2.9%)	50(16%)	312
Liquid preparation for internal use	83(27.9%)	16(12.1%)	141(47.3%)	4(1.3%)	34(11.4%)	298
Other preparation for external use	28(26.9%)	18(17.3%)	41(39.4%)	0(0%)	17(16.4%)	104
Injectables	9(19.2%)	12(25.5%)	19(40.4%)	5(10.6%)	2(4.3%)	47

Chi-square test = 97.5; $p < 0.000$

3.1.3 BUYING MEDICINES AND THE USE OF PRESCRIPTIONS

The respondents were asked whether they obtained their medicines from government hospitals or bought elsewhere. The results show that 71.7% of the interviewees bought drugs and only 27.3% obtained them free of charge from government health facilities as shown in Table 4.

TABLE 4: FREQUENCY DISTRIBUTION OF MEDICINES ACCORDING TO WHETHER THEY WERE BOUGHT OR OBTAINED FREE OF CHARGE.

MEDICINE	FREQUENCY	%
Bought	287	71.7
Not bought	109	27.3
Don't know	4	1.0
TOTAL	400	100.0

Moreover those interviewees who bought medicines were asked whether they used prescriptions. Table 5 shows the medicines bought and the use of prescriptions, 77.4% used prescriptions while the rest did not use prescriptions.

TABLE 5: FREQUENCY DISTRIBUTION OF THE USE OF PRESCRIPTIONS IN BUYING DRUGS.

PRESCRIPTION	FREQUENCY	%
Used	222	77.4
Not used	65	22.6
TOTAL	287	100.0

Due to different priorities and economic hardships, the heads of households were asked whether they manage to buy all the prescribed drugs. The result shows that 70.4% of the respondents manage to buy all drugs and 29.6% did not manage to buy all the prescribed drugs.

3.1.4 FACILITIES USED TO STORE DRUGS AT HOME

The storage facilities were grouped into 2 categories. Firstly those in which different medicines were kept under lock and key and secondly those which were kept open and therefore easily accessible to children. The first category of storage facilities included: cupboards, drawers, suitcases or chest of drawers, first aid boxes and refrigerators. Open places in which the drugs were stored include: the top of the table/shelf/cupboards, sill of windows/doors, and plastic bag hanged against the wall. About two thirds of the drugs found in the households were kept in open areas (Table 6) and this could give rise to deterioration due to light and moisture, resulting in failure to achieve the therapeutic effect of the drug required. Furthermore, it appears storage of drugs in different households may cause potential hazards to children especially those kept in open places.

TABLE 6: DRUG FORMULATION AND STORAGE FACILITIES.

DRUG FORMULATION	STORAGE FACILITIES		TOTAL
	Locked in	Open	
Tablets/Capsules	132 (42.3%)	180 (57.7%)	312
Liquid preparations for internal use	136 (45.6%)	162 (54.4%)	298
Other preparations for external use	45 (43.35%)	59 (56.7%)	104
Injectables	16 (34.0%)	31 (66.0%)	47

3.1.5. DURATION OF STORAGE

The majority of drugs are prescribed for less than two weeks and only in a few cases especially in chronic diseases are prescribed for more than two weeks or even months.

Table 7 summarizes the statistical analysis of duration of storage of the different drugs kept at home. It generally appears that only a relatively small proportion of drugs is kept beyond a two weeks period even though little was known about the expiry date of these tablets/capsules. Liquid preparations tend to have shorter shelf lives than solid ones and once opened should be used usually within two weeks.

In this case almost one third of liquid preparations for internal use were stored for more than two weeks (mean duration storage of 87 days). About 57.4% of injectables were stored for less than 14 days (mean duration storage of 4.9 days), and 42.6% for more than 14 days (mean duration storage of 92.7 days). Lastly were other preparations for external use, about 63.5% were stored for less than 14 days (mean duration storage of 4.9 days) and 36.5% stored for more than 14 days (mean storage duration of 68.9 days).

There is statistically significant difference between the mean duration storage of drugs, stored less than 14 days and those stored more than 14 days (table 7). The mean storage time was 41 days and range was one to 480 days.

TABLE 7: DURATION OF STORAGE OF DIFFERENT CATEGORIES OF DRUGS.

FORMULATION	FREQUENCY	MEAN DURATION OF STORAGE	STD	T-STATISTICS	P-VALUE
Tablets/cap. a) 1 - 14 days b) > 15 days **SUB TOTAL**	 235(73.3%) 77(24.7%) 312	 4.3 80.1	 3.6 89.2	 7.46	 0.000
Liq prep for internal use a)1-14 days b)>15 days **SUB TOTAL**	 199(66.8%) 99(33.2%) 298	 4.8 87.0	 3.9 90.4	 9.01	 0.000
Other prep for external use a)1-14 days b)>15 days **SUB TOTAL**	 66(63.5%) 38(36.5%) 104	 4.9 68.9	 3.7 63.1	 6.24	 0.000
Injectables a)1-14 days b)>15 days **SUB TOTAL**	 27(57.4%) 20(42.6%) 47	 4.9 92.7	 3.3 100.8	 3.89	 0.001

3.1.6. DRUG USE STATUS.

The respondents were asked, whether the drugs were on current use when the interview was conducted or they stored them for future use. Results generally show that most drugs (64.7%) were on use at the time of the study. The response pattern obtained is shown in Table 8A. However, almost 45% of antibiotics had been kept for future use, which also applies to one third of the antimalarials and analgesics. Over 76% of an unidentified drugs were also in use when the survey was conducted suggesting that probably dispensers of these drugs did not label them and also did not tell the patients what they were.

TABLE 8A: DISTRIBUTION OF DRUG GROUPS KEPT AT HOME FOR CURRENT USE AND FUTURE USE WHEN THE STUDY WAS CONDUCTED.

DRUG GROUPS	CURRENTLY USED	CURRENTLY NOT USED	TOTAL
Analgesics	106 (67.9%)	50 (32.1%)	156
Antimalarials	99 (66.4%)	50 (33.6%)	149
Antibiotics	69 (55.2%)	56 (44.8%)	125
Unidentified drugs	45 (76.3%)	14 (23.7%)	59
Others	174(64%)	98(36%)	272

Chi-square test=9.5; $p < 0.05$;

Table 8B, Shows the trend of drug use by the duration of storage. The result shows that about 65% of households with drugs were on current use. However it appears that about 60% of the households keeping drugs on use while the study was conducted were being stored for less than 14 days and more than half of the households which store drugs for future use kept them for more than 14 days.

TABLE 8B: DURATION OF STORAGE OF DRUGS.

STORED DRUGS	1-14 DAYS	>14 DAYS	TOTAL
On current use	114(60.3%)	75(39.7%)	189
Stored for future use	46(44.2%)	58(55.8%)	104
Total	160	133	293

3.1.7. EXPIRY DATE OF DRUGS KEPT IN HOMES.

The stored drugs were checked for expiry date. Table 9A shows the drug formulations by their expiry dates. Generally most tablets/capsules (65%) did not have any label and almost 40% of the liquid preparations for internal use had either expired or did not have their expiry date shown. Nearly 15% of injectables found had already expired and about 30% did not have expiry date shown. It is not clear what effects these injectables will have if used because it was not known why they were stored at home and who was to administer them.

TABLE 9A: DRUG FORMULATION BY EXPIRY DATE.

DRUG FORMULATION	EXPIRED			TOTAL
	YES	No	No label of expiry date	
Tablets/capsules	15(4.8%)	93(29.8%)	204(65.4%)	312
Liquid preparations for internal use	62(20.8%)	184(61.7%)	52(17.5%)	298
Other preparations for external use	8(7.7%)	60(57.7%)	36(34.6%)	104
Injectables	7(14.9%)	26(55.3%)	14(29.8%)	47

Table 9B shows the sources of drug supply at home by the expiry date of drugs. Over 61% of medicines obtained from medical stores did not have a label or date of expiry and the same applies to more than half of those obtained from government hospitals. Almost 17% of drugs obtained from ordinary shops and friends had expired and the same applies to 15% of those obtained from pharmacy shops.

TABLE 9B: EXPIRED DRUGS BY THEIR SOURCES OF SUPPLY.

SOURCE OF DRUG SUPPLY	EXPIRED YES	EXPIRED NO	NO LABEL OF EXPIRY DATE	TOTAL
Private hosp/disp	22(9.8%)	104(46.2%)	99(44%)	225
Government hosp/disp	13(8.8%)	57(38.8%)	77(52.4%)	147
Pharmacy shop	40(15%)	153(57%)	75(28%)	268
Medical store	-	7(38.9%)	11(61.1%)	18
Ordinary shops/friends	17(16.5%)	42(40.8%)	44(42.7%)	103
TOTAL	92	363	306	761

3.2 REASONS FOR STORING DRUGS AT HOME.

Table 10 shows the proportional distribution of household reasons for keeping drugs at home by the types of drugs stored. Nearly three quarters of households were keeping drugs for emergencies and this includes 60% of antibiotics, 75% of unidentified drugs and about 70% of antimalarials. Almost 10% did not have any reason for keeping the drugs at home and less than 9% reported that they were keeping them for use in case of any illness. Only few respondents kept the drugs due to perceived potential shortage, or other reasons.

TABLE 10: PROPORTIONAL DISTRIBUTION OF RESPONDENTS ACCORDING TO REASONS FOR STORING DRUGS AT HOME BY THE TYPE OF DRUG GROUP STORED.

REASONS FOR THE DRUG LEFT OVERS	ANALGESIC	ANTIBACTE-RIALS	ANTIMALA-RIALS	UNIDENT-IFIED DRUG	OTHERS	TOTAL
First aid and for emergencies	54	26	44	21	68	213 (72.7%)
Inaccessibility and unavailability of health facilities/supply	-	-	1	1	2	4 (1.4%)
Storage for use in another illness episode	6	7	4	2	6	25 (8.5%)
Storage for treating minor ailment eg fever, headache	-	2	1	-	1	4 (1.4%)
No reason given	5	7	5	4	8	29 (9.9%)
Other reasons	3	1	7		7	18 (6.1%)
TOTAL	68	43	62	28	92	293 (100%)

When reasons behind lack of compliance with drug prescribed or bought were explored (Table 11) a third of the respondents left them because they perceived to be cured or more relieved of symptoms. One third of antibiotics and about 30% of antimalarials were left due to such reasons. One of every five patients stopped using the drugs apparently because too many drugs were given. Although little is known about the correct dose required for the diseases for which these drug were bought or prescribed, it appears the patients perception of the drug required is what is important and not the completion of dosage regimen as expected in the biological model. Almost a third of antibiotics and about 10% of antimalarials were left overs due to perceived over prescription.

TABLE 11: REASONS GIVEN FOR DRUG LEFTOVERS BY TYPE OF DRUG GROUPS STORED.

REASONS FOR DRUG LEFTOVERS	TYPES OF DRUGS STORED					TOTAL
	ANALGESIC	ANTIBACTE-RIALS	ANTIMALA-RIALS	UNIDENTI-FIED DRUG	OTHERS	
Patients cured/relieved	18	10	12	7	14	61(31.8%)
Too many drugs dispensed	8	9	11	3	10	41(21.4%)
Patients using drug	2	4	3	1	10	20(10.4%)
Changed drug before completion of previous dosage	4	1	2	1	2	10(5.2%)
Other reasons	2	1	3	-	1	7(3.6%)
No reason given	12	5	10	10	16	53(27.6%)
TOTAL	46	30	41	22	53	192(100%)

3.3. SELF MEDICATION.

Out of 400 interviewees (households) 332 (83%) agreed that they practice self medication. The most frequently mentioned symptoms for which self medication is used were: fever (69%), headache (55%), stomach pain (22%), diarrhoea (17%), coughing (16%), fresh wounds (13%), malaria (13%), flu (10%), septic wounds (10%), chest pain (4%), and lastly scabies 3% and eye problems 3%.

Fever was a symptom for which households self medicate most, where 34.4% use analgesics and 14.6% antimalarials, while 45.2% use both of them. It was also observed that 2% of the households use antibiotics for treating fever. Those with headache, 87.6% use analgesics (Panadol, Hedex, ASA) and about 20% use a combination of analgesics and antimalarials.

In treating stomach pain, 30% of the households use antibiotics (tetracycline, septrin, sulphadimidine, chloramphenicol) for self medication. In a few households antacids, analgesics and antispasmodics were used. Only about 10% of the households, use traditional medicines like "muarubaini" (*Azadirachta indica*) .

Diarrhoea is another symptom where 45% of the households self medicate by antibiotics (chloramphenicol, tetracycline, septrin). A good number of households (30%) use ORS and (8%) use ORS plus antibiotics while 5% treat themselves with traditional medicines (majani ya mpera and muarubaini). More than 50% of the households use cough expectorants or sedatives (MES, Kofylin) to relieve cough and only less than 10% self medicate with antibiotics.

For malaria, which is the major cause of morbidity and mortality in Tanzania was treated by[43], a combination of analgesics and antimalarials (44%), antimalarials(32%), and analgesics only (8%). A very small proportion of households used metakelfin, Fansidar and Halfan for treating malaria. The traditional herb" Muarubaini" (*Azadirchta indica)* was used by 5% of the households for a similar purpose.

About 65% of the households treat fresh wounds by disinfectants that is methylated spirit, gentian violet and iodine, while 7% treat by using kerosine. Septic wounds were treated using antiseptic cleansing agents (Eusol, Dettol, hydrogen peroxide, Savlon). Surprisingly 20% of the households apply antibiotic powders (Tetracycline, PPF, Ampicillin) topically to the wounds. This is probably due to the belief that because antibiotics can effectively treat

bacterial infection in other route of administration it may do the same when used topically.

However, more than 60% of the households treat scabies by using benzyl benzoate emulsion and a popular traditional medicines known as "mchunga", while (3%) eye diseases were treated using tetracycline and chloramphenicol eye ointments/drops.

3.5 SHARING OF DRUGS

Sharing of resources is one of the most common characteristics in Africa cultures. In this study an attempt was made to determine the extent to which drugs stored in the households are shared within the household as well as with the neighbouring community. Data from this study generally show that most sharing involves relatives and less than 10% of drug sharing involves neighbours and the community. About 50% of antibiotics were shared. Households sharing of drugs is presented in Tables 12.

TABLE 12: SHARING OF DRUGS WITHIN AND ACROSS HOUSEHOLDS BY TYPES OF DRUG GROUP STORED.

SHARED WITH	ANAL-GESICS	ANTIBAC-TERIALS	ANTIMA-LARIALS	UNIDENT-DRUGS	OTHER DRUGS	TOTAL
Relati-ves	38	22	37	12	53	162
Neigh-bours	4	2	1	0	2	9
Others	3	1	3	0	5	12
None	23	18	21	16	32	110
Total	68	43	62	28	92	293

3.6. COST SHARING IN PROVISION OF HEALTH SERVICES.

The government has introduced a cost sharing policy that require the public to contribute towards the costs of running the health sectors in the country.

In this study an attempt was made to determine people's views on this policy by asking the heads of households. About 7% of the households did not respond to this item and many of those who responded only 56% were in favour of it. Furthermore, the interviewees were asked to give the average cost incurred in buying drugs per illness episode. 366 responded to the question. The average cost incurred in buying drugs per illness episode was found to be Tsh 1457.20 (Table 13).

TABLE 13: VIEWS GIVEN BY THE HEADS OF HOUSEHOLDS CONCERNING COST SHARING POLICY IN GOVERNMENT HEALTH FACILITIES BY THE COST INCURRED IN BUYING DRUGS PER ILLNESS EPISODE.

VIEWS CONCERNING COST SHARING POLICY	FREQUENCY	AVERAGE COST IN Tsh.
In favour of the policy	205(56%)	1423.60
Against the policy	136(37.2%)	1449.55
No response	25(6.8%)	1230.40
TOTAL POPULATION	*366(100%)	1457.20

*Missing data=34

Suggestions on Cost Sharing Policy in the Health Sector.

Respondents were asked to give their suggestions concerning the introduction of the cost sharing policy in the health sector. The results appear in table 14, about 27.8% of suggestions were to improve the quality of health facilities, 21.5% suggest that the government should deliver the health services free of charge as before, 15.5% thought that there was a need for everybody to contribute according to his/her income, and 8.5% of the respondents suggests that money obtained should be strictly used for the purposes intended for. Generally it appears that there is no strong support for this policy.

TABLE 14: SUGGESTIONS CONCERNING THE ESTABLISHMENT OF COST SHARING POLICY IN THE GOVERNMENT HEALTH SECTOR.

SUGGESTIONS	FREQUENCY	%
Improve quality of health services	111	27.8
Health services should be free of charge as before	85	21.2
Contribute according to income	62	15.5
The money obtained should be used only for the purposes intended for	34	8.5
Other suggestions	44	11.0
No suggestions	64	16.0
TOTAL	400	100.0

CHAPTER 4

DISCUSSION

The study looked at the extent to which drugs are kept at home, sources of supply, storage facilities and duration of storage. The assumption behind it was that the sources of drug supply, storage facilities and duration of storage contribute much to rational or irrational use of drugs. The results have shown that the majority of respondents (73.3%) keep drugs at home. These results are in agreement with those found by Ombaka et al (1987)[12] who showed that 84.3% of the individuals stored drugs at home. In a study done in Papua New Guinea it was found out that out of 139 households visited 73 (52.5%) had at least one orally taken drug preparation at home[35]. Both studies reveal that more than 50% of individuals or households keep drugs at home.

In this study it has been found that the drugs stored at home were of different types, including non-opiods analgesics (20.5%), antimalarials (19.6%), antibacterials (16.4%), cough preparations and nasal decongestants (6.4%), disinfectants and cleansing agents (4.6%) and vitamins (4.3%). About 7.8% types of drugs either their name were not indicated or not known by the interviewees. These unknown drugs may cause undesirable health effects if consumed on assumptions, without any identification. The high frequency of analgesics and antimalarials correlates

with the endemicity of malarial diseases in coastal regions. This is in order with what Ombaka et al found in Dar-es-Salaam region[12]. The high frequency of other drug groups could be due to problems related to disease conditions in that area. However, the high frequency of antibacterials could be due to the fact that people have got faith in such drugs that they could be used in treating any type of disease condition.

This belief was confirmed by Kabati C.I.A, who found that an antibacterial known as "rangi mbili" (two coloured antibiotic capsules) was sold over the counter without prescription because of its popularity originating from such beliefs[36].

This survey has shown that the variety of drugs kept at home were not only those easily administered but also those which are not easily administered like injectables which were (6.2%).The most frequently found were chloroquine and PPF injections. Similarly, a study done in Zaire reported that injectables are popular in the Third World[37].

Apart from modern medicines, 1.2% were traditional medicines. The percentage observed was lower than was anticipated. This was so because the World Health Forum (1993) pointed out that about 80% of the worlds inhabitants rely chiefly on traditional medicines for their primary

health care (PHC) need[18]. Abel-Smith B et al had encountered the same problem in his study conducted in Tanzania[38]. Other studies done in Tanzania showed that people have got strong faith in traditional medicines[19,20]. The study by Chhabra et al[39] had listed 223 plants species used by traditional healers in five regions of Eastern Tanzania.

Sources of drugs stored at home.

When asked where they obtained these drugs, respondents indicated that, about 65% of drugs were from private sector (pharmacy shops, private hospitals/dispensaries and medical stores), 20% from government hospitals/ dispensaries, and 13% from ordinary shops/relatives and traditional healers. The higher percentage observed from private sector is in agreement with the one reported by Sterky G et al [5] that in many developing countries private sector are distributing the majority of drugs stored at home with or without prescription.

In another report from the proceedings of Harare Seminar in November 1991[13] indicated that in many developing countries the value of drugs sold on the private market are more than the value of drug supplied in the public sectors. For example in Yemen Arab Republic 92% of drugs are sold in the private sector, while in Kenya and in Tanzania these constitute 68%, 35% respectively.

This study further found that, about 40% antibiotics were obtained from pharmacy shops, about 30% from private hospitals/dispensaries, and only 16.8% were from government hospitals/dispensaries. However about 10% were from medical stores, ordinary shops and relatives.This 10% is very small compared to the authorized sources (legal). That is to say, the majority of the stored drugs were obtained from non-governmental health facilities, with a minority of them obtained from an unauthorized (illegal) sources, whereby they can be dispensed without proper information regarding their use.

Storage facilities used at home.

The storage facility has got its magnitude to the therapeutic value of the drug. The storage conditions are important from the manufacturer's point of view towards the consumer (patient). Deterioration of drugs can be caused by heat, moisture, and light. Many drugs are destroyed by direct light and require protection [15].

In this study two thirds of the drugs encountered were stored in open air storage facilities while one third were stored in locked storage facilities. 54.4% of liquid preparations for internal use were stored in open storage facilities while 45.6% were stored in locked storage facilities. As stated earlier those drugs stored in open air storage facilities, had a higher chance of

deteriorating by light and moisture, and thus causing more harm than relief to a patient.

Keeping drugs for more time than it is required could result into production of toxic degradation products, reduced therapeutic potency and development of resistance to pathogens (Kiyingi et al)[35].

The duration of storage mainly affect the liquid preparations, which tend to have shorter shelf lives than solid ones, and once opened should be used within 14 days if not stored in refrigerators.

Almost 30% of liquid preparations for internal use were stored for more than 14 days (mean storage duration of 87 days). Similar study by Kiyingi et al (1993)[35] found that out of the 68 liquid formulations encountered, 15 had been stored for less than two weeks, 26 had been stored for more than two weeks, while 26 had been stored for an average of 9.5 weeks and were either on current use or intended for future use. The use of such stored drugs by patients could result to a failure to achieve the required therapeutic effects because liquid preparations deteriorare fast.

In addition it was found that 14% of injectables and 20% of liquid preparations for internal use had expired. Expired drugs are not allowed to be consumed, since they can be

poisonous to the consumers and may produce health problems rather than a beneficial effect.

Thus rational drug use can be achieved by educating the people on the proper source of obtaining drugs, proper administration, proper way of storing those drugs, required storage facilities and not to use drugs beyond its expiry date.

Reasons for storing drugs at home.

The major reason for storing drugs at home was that the households use them for self medication in first aid and in emergencies. The drugs stored include prescription medicines (PM) as well as over the counter drugs (OTC). In a study done in Ethiopia, in 1981 it was reported that self medication is a big problem[40].

Other reasons given were treating other illness episodes together with minor ailments. This indicates that self diagnosis and treatment in household is commonly practiced. Trostle J.A.[10] reported that in the event of an illness the household members treat themselves in their homes.

Two thirds of the households had left over drugs. Some of the reasons given for left over drugs were, 19.2% users were cured or got relief. Incomplete treatment especially antibiotics thus resistance building, 11% said too many

drugs were dispensed. Dispensers not counting the tablets carefully or over prescribing which has been observed in government hospitals. The reasons given by the household showed that there is a big problem of non-compliance and may be of drug resistance and misuse. Hence the prescriber as well as the dispenser should tell the patient about the importance of finishing the dosage regimen, and the side effects of the drugs. The dispenser should dispense accurately the drugs needed.

Symptoms for which the drugs are used in self medication. The result obtained showed that a high proportion of respondents about 83% practice self medication. Similar findings was observed in a study done in Ethiopia which found that self medication was a big problem [37]. Likewise a study carried out[24] in Riyadh found that more than 58% of all interviewed patients practiced self medication. The Self medications observed were based on disease symptoms. The most common symptom was fever of which 34.6% of households treated themselves with analgesics, 14.6% used antimalarials and 2% used antibiotics.

This type of treatment behavior is probably a result of the belief that any fever is malaria or bacterial infection. It is not uncommon for the majority of the people treating fever as malaria, as it is one of the top five causes of morbidity in Tanzania[34], which is accompanied with fever,

body malaise, headache vomiting and anorexia. As mentioned earlier about (44%) of respondents self medicate malaria with a combination of analgesics and antimalarials while only 32% use antimalarials alone. Since the disease is associated with fever, the use of analgesics or antipyretics is in order.

A study done in Bagamoyo reported that about 63.8% of respondents knew three signs of malaria that is periodic fever, headache and weakness[41]. Another report observed that 79% of parents would treat their children for "fever" without first consulting a health professional[26].

87.6% of respondents use analgesics to treat headache which is a symptom that is associated with more than one disease. Some use a combination of analgesics (Panadol, Hedex, Asa) which may result to a misuse and wastage of resources. Improper use of drug combination has a high chance of leading to drug interactions, increased adverse reaction and toxicity. It is against WHO Essential Drug Concept, which advices that in most disease conditions only one drug should be used[15]. People have been found treating common cold by a combination of drugs in sub-therapeutic doses of one or more active ingredients[24].

In this study 40% of respondents used antibiotics in treating stomach pain and diarrhoea. The misuse of antibiotics could be due to the practice of polypharmacy or mistreatment. This was observed by Quick J D et al[17] that there was habitual over-prescribing of antibiotics by clinicians in both public and private health facilities. In addition he found that in parts of Indonesia, virtually every patient with simple diarrhoea or common upper respiratory infections was treated with one or more antibiotics. In some occasions ORS or ORS plus antibiotics were used for diarrhoea.

Fresh wounds were treated and dressed using disinfectants (methylated spirit, gentian violet, iodine) by 65% of respondents, while 7% use kerosine. Obviously, kerosine as a medicine is dangerously misused. Similarly, 20% of respondents had been dressing septic wounds by applying antibiotic powder of PPF, tetracycline, and ampicillin topically.

However, there are septic wounds which are properly treated using antiseptic cleansing agents such as Eusol, Savlon, Dettol, and hydrogen peroxide for self medication. The improper use of antibiotics seem to be a common problem.

In a study done by Kabati C.I.A. revealed indiscriminate topical use of various antibiotic powders for septic wounds[36]. Scabies was treated by benzyl benzoate emulsion. Tetracycline and a chloramphenicol eye ointment/drops were commonly used in eye problems.

It was also observed that, traditional medicines were used in self medication, in treating stomach pain, malaria, and diarrhoea; they commonly use "Muarubaini" (*Azadirachta indica*). Fagoose I. has reported that in Mauritius a variety of diseases (malaria, diarrhoea, fungus, diabetes, cardiovascular etc) were treated using "muarubaini". This plant is known as "village doctor" in Mauritius[42]. They also use other drugs in treating diarrhoea, and one of them is mpera (*Psidium guajava.L*). Chhabra S.C. et al 1990[39] in his study reported that the fresh leaves of this plant when pounded with water the liquid extracted, can be used in treating abdominal pain, bloody diarrhoea, vomiting and convulsions.

Another traditional medicine used was "mchunga" (*Launaea cornuta*) which was used in the treatment of scabies and measles. The plant is boiled with water and the extract used in washing the whole body in the treatment of measles[43].

Sharing of drugs.

In treating these symptoms, it has been observed that 55% of the households were sharing drugs within the house and about 7.2% across the households. The commonly shared drugs were analgesics and antimalarials (65%) followed by antibiotics (60%). Sharing of drugs in households is most likely associated with drug misuse because it may lead to under-dosage, overdosage, poisoning or drug resistance.

Proper use of drugs includes completion of dosage regimen. Furthermore keeping injectables at home and also shared like other formulations i.e. tablets, capsules and liquids casts suspicion on misuse of drugs. Apart from the above mentioned hazards, sharing of injectable might lead to the spread of AIDS within and across households.

Cost sharing policy in health sector.

Cost sharing policy was introduced in order to improve the health services at the health facility. The direct participation of the community through user fees is aimed at reducing the underfunding of the health sector, which include poor maintenance of buildings, inadequate drug supply and essential medical equipment, shortage of health personnel, high dependency on donor aids etc. The revenue collected from patients will be retained in the health facility and utilized to improve the health services.

The views given by respondents in the households were both in favour and against the cost-sharing policy, (55.5%) supported the policy, 37.5% were against the policy while the rest gave no response (Table 11). Abel-Smith B et al reported that in Tanzania people are used to pay some amount of money for health services in mission or private hospitals[38]. Therefore, this idea of paying for the treatment is not new to Tanzanians. Furthermore, it has shown that people believe on paid services than free services as they think are of better quality[44].

Apart from the willingness to pay for the health services this study has shown that the respondents were able to pay for medical services. An average of TSh. 1457/= was found to be incurred in buying drugs per illness episode by the household. Similarly a study of conducted by Abel-Smith et al (1992)[38] revealed that people would pay an average of TSh. 671/= for buying drugs at government health facilities.

However, a number of suggestions were given by the respondents who were in favour of the cost sharing policy in government health facilities. For instance 27.8% said there is a need to improve the quality of health facilities, 15.5% suggested that everybody should contribute according to his/her income and 8.5% of the households (respondents) suggested that the money obtained

should be strictly used for the purpose intended for. These recommendations were in agreement with those of Abel Smith[38] whereby the majority (62%) thought that everyone should not pay the same amount and that services should be improved.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

In this survey it was found that, some of the factors which are associated with the use and misuse of drugs at household level might be related to the extent of drug storage at home, sources of drug supply, duration of storage, and storage facilities. Others include self medication behaviour and the extent of sharing medicinal drugs within and across the household level.

Another important observation seen in this study was that the majority of the people store/keep drugs at home, so that they can be used in first aid and in emergencies, for the treatment of minor ailments and in another illness episodes. Apart from drugs used by the patient alone, the extent of sharing medicinal drugs within and across the households was common. The shared drugs include over the counter drugs as well as prescription medicines.

This study has shown self medication to be a common practice associated with misuse of drugs.

The study further found out that, traditional medicines though at a low rate, were used side by side with modern medicines.

Additionally the survey has shown that the majority of respondents support the government cost sharing policy in the health sector provided that services and quality are improved. By far the most important improvement they are seeking is the ready availability of drugs.

RECOMMENDATIONS.

In view of the findings of this study, the following recommendations are pertinent:

1. The mass media, together with the Drug Information Unit of the Pharmacy Board, should educate the community on issues concerning drug storage, proper source of obtaining prescribed and OTC drugs, and the importance of proper administration which includes finishing the prescribed dosage regimens.

2. The use and storage of injectables at household level should be discouraged. The community should be enlightened on the effects of using injectables at home, not forgetting that injectables if shared can be a source of spreading AIDS.

3. The law governing the selling of injections and antibiotics should be stricter than it is.

4. The Ministry of Health together with the Institute of Traditional Medicine of Muhimbili University College of Health Sciences, should identify the most prevalent diseases which they consider susceptible to treatment by traditional medicines, and the most important plants which they believe to be efficacious in treating these diseases.

5. With the scarcity of resources, patients should be educated that, use of non-proprietary (generic) drugs is the appropriate choice rather than using an expensive proprietary one (brand) which also may lead them to use inappropriate combination of drug products.

6. Since this study is the first of its kind in the country, it can be used as baseline, and other big studies should be conducted in other parts of the country to find out what people are doing with drugs at home, and also to find out about urban-rural community differences.

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