THE USAGE OF NON-PRESCRIPTION DRUGS BY THE RESIDENTS OF NAIROBI CITY, KENYA.

By

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university or any other award.

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Signed _____ Date 18/8/05

SUPERVISORS' APPROVAL

We confirm that the candidate under our supervision carried out the work reported in this thesis.

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DEDICATION

This thesis is dedicated to my parents, Mr. James Mugo and Mrs. Rosemary Wairimu Mugo who taught me the value of hard work, my siblings; Ng'ang'a, Wangechi and Wanjohi. Thank you for your love, sacrifice and support throughout the study. I love you all. May God bless you.

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LIST OF ABBREVIATIONS

ATR:	African Traditional Religions
NP:	Non-prescription
OTC:	Over the Counter
R:	Registered Trade Mark ®
SPSS:	Statistical Package for Social Sciences.
TRM:	Traditional medicine.
UK:	United Kingdom
USA:	United States of America
WHO:	World Health Organization
WTO:	World Trade Organization

DEFINITION OF OPERATIONAL TERMS

Analgesic: A remedy which relieves pain.

Chemist: A person with the knowledge of medical goods or a person who prepares and sells medical goods.

Chronic disease: One that continues for a relatively long time, or is so frequently recurring or relapsing, that it's effects on health are virtually continuous.

Consumer: In the context here is a person who buys and uses medicines.

Dietary Supplements: Products specifically designed and marketed as nutritional supplements or dietary enhancements.

Drug: A substance intended for use in the cure, mitigation, treatment or prevention of disease in man or other animal.

Generic: An element of a compound's proper name that is general and often lowercased.

Medicinal Product: Substances that are used to cure an ailment.

Non-prescription drugs: Pharmaceuticals available without a prescription, those drugs with a mild action and a high degree of safety if used correctly within a fixed range of directions and dosage. They can be purchased directly from a pharmacy or a drugstore and used freely in self-medication by consumers.

Pharmacist: A person who compounds and dispenses drugs.

Prescription: Written direction for the preparation, compounding and administration of a medicine

Remedy: Cure for a disease, method of something, used for putting right things that are wrong.

Self care: A decision-making process that involves observation, symptom, labeling, judgments as to severity, and choice assessment of possible treatment options.

Traditional medicine : The sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness.

ABSTRACT

Non-prescription drugs refer to pharmaceuticals available without medical prescription. Problems related to the safety and quality of drugs exists in many places around the world today, in developing and developed countries. Consumers need information and education on medicines and appropriate treatment-seeking strategies for a number of compelling public health reasons. The main objective of the study was to determine the usage of non-prescription drugs in Nairobi City by assessing the knowledge, attitude and practices of the non-prescription drug users. This study was undertaken in some sampled chemists within Nairobi Central Business District and a total of 250 respondents were interviewed. Data was collected using structured questionnaires and in-depth interviews. A sample of 10 chemists was conveniently picked on and 25 respondents were picked from each pharmacists. The sampled data was collected using pretested questionnaires for the customers and in-depth interviews with the retailing staff. The data was analysed using the SPSS program. Chi Square was performed to establish relation between variables. Fifty one point two percent of the respondents were males and 48.8% females. The study indicates that socio-economic factors such as age, level of education, gender and religion were found to have a direct influence on the choice of drugs. Painkillers were found to be the most commonly used medications (23.4%) and there was statistical relationship between education and practice (χ^2=16.437, df=12; P=0.0176). Chronic disease remedies, anti malarial drugs, stomach disease remedies, medications for reproductive health and other medications for dietary supplementation such as iron and vitamin tablets and skin and eye ointments were found to be the most commonly used medications in that order. The respondents came to know of these drugs from previous prescriptions by the doctor (43.6%), previous knowledge of the disease (30.5%), adverts in the media (16.0%), advice from friends (8.6%) and finally from other sources (1.2%) such as pamphlets, health magazines and documentaries on health. There was a significant statistical relationship between knowledge of the non-prescription drugs and gender (χ^2=16.535, df=4; P=0.002) and employment (χ^2=23.965, df= 8; P= 0.002). The consumers gave a variety of options that they would resort to if the purchased drugs did not work. These ranged from seeking medical advice to waiting for the condition to disappear on its own. The majority said they would resort to seeking medical advice (80.7%). There was a significant statistical relationship between religion and the options resorted to (χ^2 = 42.942, df=16; P = 0.000). Good services in terms of the attention given, drug prices and the personnel qualification were the major factors promoting the use of non-prescription drugs. It was a descriptive cross-sectional survey. The results will be used by policy makers in empowering communities on rational use of the non-prescription drugs.

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Self- medication in both industrialised and developing countries is the most common reaction to perceived symptoms. Global sales of products that are traditionally considered as OTC (over-the-counter), non-prescription drugs accounted for about 17% of the world pharmaceutical market in 1993. Three quarters of these were in Europe, Japan and the United States of America (WHO, 1997a).

However, these figures do not reflect the full picture on the usage of non-prescription drugs. Over -the-counter medicines are generally less expensive than prescription medications so that the relative volume consumed is greater than 17% of total sales. More significantly, self-medication has many manifestations that are not reflected in the OTC data. Household survey and other community-based studies in Africa, Asia, and Latin America have found that up to 80% of illness episodes are self-treated with modern pharmaceuticals (WHO, 1997b).

Even when consumers use formal healthcare channels, their decision-making and not that of the health care provider, is the ultimate determinant of drug use. These decisions are influenced by the beliefs of family or friends or the larger community. Physicians and other prescribers may have an indirect impact on consumer decisions, particularly if a patient was initially introduced to a product through a prescription. The promotional material of drug manufacturers is intended to influence consumer choice (WHO, 1987).

With non-prescription drugs, the process and responsibilities centre on the patient. Self-medication begins with self-diagnosis or self-recognition of a condition by the patient. This is followed by the decision to treat or ignore the condition. When the patient decides to treat the condition with a non-prescription (NP) drug, he or she has the primary responsibility for the selection of that drug with or without the advice of a professional (WHO, 2003).

This study was intended to establish the usage of non-prescription drugs in Nairobi. It was to contribute to the body of knowledge in what is an under-reported and neglected field, so that countries, organisations and individuals embarking on public education can maximise their chances of success, and contribute to community empowerment on rational use of drugs.

1.2 Statement of the Problem

Irrational drug use has both medical and economic consequences. In medical terms, inappropriate self-diagnosis may lead to unnecessary suffering and death, to iatrogenic disease and hospital admissions, and to increased antimicrobial resistance. For example, people can self-diagnose themselves for malaria, and buy anti-malarial tablets while suffering from typhoid because of the similarity in signs and symptoms of the two diseases (Nsimba et al., 1999).

Besides, irrational drug use also decreases public confidence in the health-care system and attendance rates of curative and preventive services. These lead to an enormous waste of resources and to unavailability of essential drugs in other areas where they may be needed (Dapne, 1997).

The Erice Declaration (1997) challenges all the players in public health administration, health professionals, the pharmaceutical industry, government, drug regulators, the media and consumers to strive towards the highest ethical, professional and scientific standards in protecting and promoting safe use of medicines. The declaration urges governments and others involved in determining policies relating to the benefit, harm, effectiveness and risk of medicines to account for what they communicate to the public and patients. It calls for honesty when communicating drug safety information, even when such information may be incomplete and investigations still underway. It further proposes that patients be openly informed of the facts, assumptions and uncertainties of the safety profiles of the medicines they use (WHO, 2002).

The study will therefore assess the magnitude of usage of non-prescription drugs by the residents of Nairobi.

1.3 Hypothesis

1.3.1 There are no factors influencing the usage of non-prescription drugs by the residents of the City of Nairobi.

1.4 Research Questions

The study sought to answer the following questions:

1.4.1 What types of drugs are sold as non-prescription drugs?

1.4.2 For what ailments are the non-prescription drugs used?

1.4.3 What is the source of information on NP drugs?

1.5 OBJECTIVES OF THE STUDY

1.5.1 General Objective

The general objective of the study was to determine the usage of non-prescription drugs in Nairobi.

1.5.2 Specific Objectives

1.5.2.1 To determine the types of non-prescription drugs.

15.2.2 To identify the main ailments for which the non-prescription drugs are used.

1.5.2.3 To determine the sources of information on these drugs.

1.6 Justification

Research from Ethiopia, Ghana, India, Kenya, Papua New Guinea, and the Philippines shows that consumers in general know very little about the drugs they use, their effects and their basic mechanisms. Other studies show that although modern pharmaceuticals are based on a rational-scientific model, in practice, they are distributed, prescribed and used in ways that frequently do not accord with that model (WHO, 1997).

This study therefore embarked on examining the population's knowledge on the rational use of drugs by attempting to identify the factors promoting the use of non-prescription drugs, the commonly used non-prescription drugs and the ailments for which they are used, the options resorted to if the drugs do not work and the sources of information on these drugs. It will contribute to the body of knowledge in what is an under reported and neglected field so that countries, organizations and individuals embarking on public education initiatives can maximize their chances of success, draw on the work and experience of others, and truly contribute to community empowerment. There is a well-evidenced and compelling need for public education in the appropriate use of drugs, with potential benefits to the individual, the community, and policy-makers (WHO, 1997).

CHAPTER TWO: LITERATURE REVIEW

2.1 THE USE OF NON-PRESCRIPTION DRUGS IN THE GLOBAL PERSPECTIVE

National drug expenditure as a proportion of total health expenditure currently ranges from 7%-66% worldwide. The proportion is higher in developing countries (24%-66%) than in developed countries (7%-30%). In the developing countries, at the individual and household level, drugs represent a major out-of-pocket health care cost (WHO, 2002).

Readily available non-prescription drug products can be placed in various groups such as medications for pain and fever remedies, nasal preparations, cough remedies, skin preparations, antiseptics, lozenges, vitamins, decongestants, laxatives etc. In the private sector, strong economic pressures may exacerbate these problems, lack of information or lack of training. Private drug outlets may try to maximise their income with more costly recommendations and dispensing. For consumers, high drug prices and lack of information lead to ineffective or harmful self-medication or the purchase of insufficient quantities of antibiotics and other necessary drugs (Dua *et al.*, 1994).

In many parts of the world, up to 80% of illness episodes are self-treated with modern pharmaceuticals. Even when consumers use formal health-care channels, their decision-making is the ultimate determinant of drug use. These decisions are influenced by the beliefs of family and friends or the larger community and promotional materials.

How medicines are obtained and used therefore reflects a matrix of societal, economic, and health factors, which influence these decisions (WHO, 2000).

In Canada, the use of herbs, vitamins, minerals, and other dietary supplements is

becoming very popular. As more people use dietary supplements, more interactions are reported. Some of those interactions may be very harmful; others may only be reported in animals or in the laboratory trials at this time. Canada's "top ten" minor ailments are headaches (76%), coughs or colds (70%), sore throat (47%), myalgia (38%), sinus congestion (37%), indigestion (20%), arthritis (16%), insomnia (14%), menstrual cramps (13%) and lastly, allergy or hay fever at a rate of 12% (Nielsen, 1996).

Headache and myalgia sufferers are the most likely to self-medicate. The second most active group is the cough/cold sufferers (70%), who are more likely to take an OTC after consultation with a health professional (Consumer Usage & Attitude study, 1991). Many individuals reporting other ailments did not consider the condition serious enough to warrant professional intervention. Allergy sufferers often recognise their condition as seasonal and begin a self-medication routine to relieve symptoms, consulting a physician only if problems persist (Nielsen, 1996).

Of the broad group of minor conditions, skin irritations or rashes appeared to raise the most concern; sufferers tend to perceive them as the precursor of something higher. A number of individuals consult physicians and follow a course of treatment, which includes the application of prescription remedies. Overall, those seeking treatment advice are far more likely to visit a physician than to consult a pharmacist; only in the cough or cold and foot odour categories did the two professional groups indicate similar consultation rates (Canadian Facts, 1991)

2.1.1 The Situation in the use of Complementary Medicine

Herbal and traditional medicines form part of non-prescription medicines. Their use raises concern in relation to their safety. This is because there is wide misconception that 'natural' means 'safe' and that continued use of a medicine assures both its efficacy and safety (Melanie, 2000).

In some regions, complementary medicine is more accessible than the conventional ones. About 1/3 of the world's population and over half of the populations of the poorest parts of Asia and Africa do not have regular access to essential drugs. However, the most commonly reported reasons for using traditional medicine are that it is more affordable; more closely corresponds to the patient's ideology because the consumers do already know what to expect and is less paternalistic than allopathic medicine. Regardless of why an individual uses it, traditional medicine provides an important healthcare service to persons both with and without geographic or financial access to allopathic medicine (WHO, 2000).

Traditional and herbal medicines are usually known by their local names, which often vary from country to country. Several national and regional pharmacopoeias include monographs on medicinal plant materials and herbal medicines (National Drug Policies, 2001).

However, there is no well-recognised convention regarding nomenclature, except official names for medicinal plant materials based on the legitimate Latin binomial name of plant of origin (genus, species, authority and family). A committee including traditional health practitioners, healers, and experts in pharmacognosy, toxicology and related fields should

establish the criteria for selection of traditional and herbal medicines for health care systems (National Drug Policies, 2001).

Many traditional medicines are manufactured for global use and they have moved beyond their traditional cultural framework for which they were originally intended. Self-medication further aggravates the risk to patients. When traditional and herbal medicines are used in conjunction with other medicines, there is potential of serious adverse drug interactions (WHO, 2000).

2.1.2 Consumer Knowledge on non-prescription drugs

Patients are more informed today about medical matters in general and drugs in particular, than in the past. There can be little doubt about the effect of publicity on patients. Whether the patient takes his own choice, across the counter drug or one, which has been professionally prescribed, he is personally concerned about the results of treatment. However, patients vary in intellect, education, enquiry of mind, specific need to be involved with drugs or drug treatment, aptitude to become involved, interest economic means, personality and many other characteristics.

2.1.3 Reading the label

Label information is deemed vitally important to OTC users. It is read and followed with the same frequency as the label information of prescription products. In addition, OTC label information is a consideration for many individuals when choosing products (Palmer, 1996).

Canadians say advertising helps them understand what OTC products are available for different ailments (58%), but only 38% of those surveyed agreed strongly that advertising

plays a large role in the selection of an appropriate product. The relationship between advertising and product selection reveals some rather extreme regional differences. Very few British Columbians and French Quebeckers say advertising influences them while Anglophones in Quebec report the highest influence (Canada Health Monitor, 1995).

Since 1950s, pharmaceutical medication in the United Kingdom has fallen into 2 broad categories; those requiring a doctor's prescription and those available over-the-counter pharmacies. Drugs available without prescription are generally for minor or self-limiting conditions, although some can be retailed in the presence of a qualified pharmacist. The selection of drugs for retail without prescription has largely been determined by evidence on safety, tempered by economic and political factors, such as restraining prescribing costs or encouraging self-medication for short illnesses. Currently therefore, the availability of most drugs is at the discretion of health-care professionals (WHO, 2001).

2.1.4 The Non-prescription Drug Market

Unethical marketing of drugs is widespread in developing countries and although standards have improved in developed countries, studies have found continuing problems such as false and misleading claims, switch campaigns and commercial promotion disguised as scientific trials pharmaceutical marketing to prescribers, dispensers and consumers may contribute to irrational use (Fernandez *et al.*, 1997).

In Atlantic Canada, 93% of the population reported some OTC use. Out of the ones used, an equal number of 47% fell into the low and medium user categories, while only 6% reported high usage. Westerners show a similar consumption rate (94%) but have a

higher incidence of high users (10%) and the lowest number of low users (4%). Francophones who do not take prescription drugs were concentrated in the low usage category (65%) (Canadian Facts, 1991).

Overall, city dwellers use non prescription products more than their rural counterparts, but the suburban population reports the greatest OTC use. These differences could be the combined result of cultural, environmental and lifestyle variations in the different geographic regions and different patterns of ailment incidence (Inman, 2003). For example, rural Canadians suffer fewer headaches and eye irritations while French Quebeckers report fewer incidents of allergies, colds, upset stomach and muscular pain (Canadian Facts, 1991).

The Indian pharmaceutical sector in the new millennium has seen an increased market for non-prescription medicines. It is growing at a phenomenal rate, over 25 percent with over 3000 non-prescription drugs. All major drug companies in the Indian Pharmaceutical industry have come up with non-prescription divisions to switch their prescription brands to non-prescription (Express Pharma Pulse, 2002).

During the 20th century, the non-prescription medicines in the pharmaceutical market have fluctuated a great deal. Data from the US market reflect that from 75% share in 1920, non-prescription drugs decreased in terms of value to 51% in 1939 and 25% in 1972. During the past 20 years, the non-prescription medicines in the US increased gain to 35% (George et al., 1991). The Indian drug and cosmetic Act specifies two classes of

drugs-prescription drugs and non-prescription drugs (Express Pharma Pulse, 2002).

The cost of consultation and drug procurement has become a major consideration in the making of medicine availability to a common man. In the era of information technology, an average individual is becoming more conscious of health and this has put an extra burden on the healthcare system. A number of prescription drugs are available which can be procured over-the-counter by the patient for minor ailments such as occasional post-meal dyspepsia, headaches, heart-bun and common cold (Sauwakon *et al.*, 2002). Patients prefer getting them over the counter because of the ease of access, availability of medicines, no waiting is involved and there are therefore no convenient hours of work and also the drugs can be obtained by credit. There is also the option of buying drugs in small amounts (Goel *et al.*, 1996).

A study in 1999 at the US revealed that about 225 non-prescription drugs are officially available to the American population to tackle minor illnesses. In recognition of this evolution in self-care, it is felt that people of India should be given greater freedom to procure those medicines that not only have proved to be effective but also to be virtually harmless and in clinical use for a decade (Express Pharma Pulse, 2002).

During the past 20 years, a number of chemical entities have been switched from prescription to non-prescription status. This development may be explained by four factors; entities from the chemotherapeutic revolution have matured, pharmacy information has developed, chemical entities with safety patterns have been switched and

consumer knowledge and awareness has increased (Applebee *et al.*, 1983)).

In the developed countries, the short life for some pharmaceuticals (about five years in the United States) would mean that many products currently in the market were not present when most pharmacy staff were in training. Workload in a pharmacy may vary because of the location and time. For example, pharmacies located in urban central business districts may have greater workloads than those in rural areas (Goel *et al.*, 1996).

2.2 USE OF NON-PRESCRIPTION DRUGS IN KENYA.

Kenya's position on pharmaceutical patents changed dramatically in June 2001 when it passed its Industrial Property Bill permitting the purchase from abroad and local manufacturers of generic drugs, as well as making provisions from parallel importing. Kenya was only the second country in the world after South Africa to pass such legislation and was expected to precipitate a domino effect among other developing nations. But this never occurred and when the Act finally came into operation, in June 2002, the most controversial clause allowing the parallel importing of cheaper brand – name drugs from abroad had been omitted. After a huge controversy over how this occurred-despite pleas of ignorance from everyone within the government- the clause was subsequently restored to the Act and is now law (Kenya Medical Suppliers, 2003).

Kenya has the largest manufacturing base for pharmaceuticals in East Africa with both local and foreign companies in operation. Players in the sector cite growing insecurity and a deluge of cheap imports, mainly from Asia, as well as poor infrastructure and

depressed purchasing power as the reasons for the industry's depression. While Kenya has no import duties on essential drugs, it does levy other taxes and tariffs totaling about 10% on drugs as they arrive (Kenya Medical Suppliers, 2003).

2.2.1 Control of Information on Pharmaceuticals including Labeling and Advertising

There are a number of restrictions on advertising pharmaceuticals in Kenya. All advertisements must be approved by the Poisons and Pharmacy Board and must be strictly factual. Only non - prescription drugs can be advertised. Advertisements pertaining to venereal disease, tuberculosis, cancer, diabetes, epilepsy, paralysis, cataracts, parasitic diseases and senility are banned. In addition, advertisements concerning treatment of psychiatric conditions, alleviation of fatigue, prevention of aging, enhancement of sexual potency, sedation and general anesthesia are prohibited (Kenya Medical Suppliers, 2003)

2.2.2 Generic Names and Generic Drugs

Competitive bulk procurement by generic name is a central feature of most essential drugs programme. In the private market, price competition can be encouraged through prescription and dispensing by the generic name (Dukes, 1995). Price differentials will vary considerably from market to market depending on a variety of factors. Generic drug prices are often 50% or less of the price of the leading brand. This compares to the well-developed European markets where they are more typically 60-70% of brand prices (Ballace *et al.*, 1992).

The non-prescription drug market is dominated by generics from China and India.

Despite the dangers in using unregistered drugs, their low cost will ensure they remain attractive to consumers (Kenya Medical Suppliers, 2003).

2.2.3 The Use of Complementary Medicine in Kenya.

Domestic demand for herbal remedies is huge, largely as they come cheaper than orthodox medicines and because traditional doctors are easier to find in the bush where the majority of the population lives than orthodox medical practitioners (Charles, 1984). Traditional medicine in Kenya is entering a significant phase. In late 2001, the government mooted the idea of allowing traditional treatments to be used in public hospitals. This could lead to the development of a sector capable of selling pharmaceuticals to the export market, although what was a cost-saving measure on the part of the government was received with scorn by the conventional medical community (Kenya Medical Suppliers, 2003).

2.2.4 Regulation of Non-prescription drug use in Kenya.

Regulation of non-prescription drugs in Kenya is not stringent. Many shops and informal dispensaries sell counterfeit or banned products. Chloroquine, for example –made prescription only by the government in 2000, as malaria control has developed immunity in populations in East Africa and is widely sold OTC (WHO, 2000).

Pharmacies in developing countries are increasingly reported as an important source of health advice. Among the reasons given by clients are availability of drugs, quality of service (no waiting and convenient hours of operation, cheaper products, availability of credit, or the option to buy drugs in small amounts (Goel *et al.,* 1996). In developing countries in contrast to developed countries, the primary source of information available

to prescribers appears to be drug company salesmen (Dennis et al., 1996).

Economic incentives are another factor whereby; profit is likely to be an important motivating factor in product recommendations. Unlike other health professionals who either are not physically part of the community they serve or are psychologically distant from clients, pharmacy staff may be more integrated into the community they serve (Goel *et al.*, 1996).

CHAPTER THREE: MATERIALS AND METHODS

3.1 Study Area

The study was carried out in the central division of the city of Nairobi, which is a Province in the central part of Kenya (Appendix 5). Nairobi extends between 36° 4' and 37 °10' in the North and between 1 °9' and 1 °28' to the South. It covers an area of 696.1 km^2. It lies at a height of 1,670m; the longitude is 36 °50' east (3 hours ahead of GMT), and latitude 1°17' south, just 140km south of the Equator. It shares common borders with Kiambu District to the North, Machakos District to the East and Kajiado District to the South. Administratively, it is both a Province and a district.

The city is cosmopolitan, and was chosen purposively due to the presence of many people with varied social, cultural, economic and even religious background. According to the 1999 population census, the city has a population of 2,143,254 million people. The Central Business District (CBD) occupies the original triangular site contained between Nairobi River, Uhuru Highway and the railway station (Moss, 1999).

Over-the-counter drugs are also available in kiosks, supermarkets and even in restraunts within the city of Nairobi. However, the majority of the non-prescription drug users are more inclined to buying from the chemists because of the availability of prescription and non-prescription drugs, wide variety of drugs and for psychological satisfaction. This was indicated by the pilot study. The presence of pharmacists and chemists for consultation is another factor resulting to the preference of chemists to kiosks, supermarkets or the supermarkets. It is for this reason therefore that only chemists were sampled for the study.

3.2 STUDY SUBJECTS

These consisted of individuals at the sampled pharmacies who were buying medicines without prescriptions and who gave an informed consent.

3.2.1 Inclusion Criteria

(a) Drug consumers without a clinician's prescriptions

(b) Drug consumers who gave an informed consent.

3.2.2 Exclusion Criteria

(a) Drug consumers who had a prescription

(b) Drug consumers who had no prescription but did not consent.

3.2.3 Ethical Consideration

Before the research began, permission was sought from Kenyatta University, the Ministry of Education, Science and Technology and the Provincial Medical Officer of Health. Informed consent was sought from the subjects and confidentiality was guaranteed by the use of numbers instead of the respondents names on the questionnaires.

3.3 STUDY DESIGN

The study was done in two phases. Phase one involved data collection using interviews and questionnaires administered to consumers. Phase two involved in-depth interviews with one retailer of sampled pharmacies by the principal investigator in order to get the opinion of the drug retailers on the usage of non-prescription drugs by their customers.

3.3.1 Sample size determination

The minimum sample size was obtained using the formula as used by Fisher *et al.*, (1998) as shown below:

$$N = \frac{Z^2 pqD}{d^2}$$

Where:

N= is the desired sample size

Z= normal deviate 1.96 which corresponds to 95% confidence interval

P= proportion of the target population estimated to have desired characteristics

Q= 1 – p

d= degrees of freedom =0.5

D= design effect=1

Thus $$N = \frac{1.96^2 x0.8x0.2x1}{0.05^2}$$

$$= 246$$

A sample size of 250 was taken to cater for any attrition rates. A *p* value of 0.8 was used in calculating the sample size because 80% of individuals who buy drugs over the counter do so without a prescription (WHO, 1997). Having conveniently and systematically sampled 10 chemists, 25 customers were interviewed from each. It was not possible to systematically sample the customers who were to be interviewed because not all the customers were consenting to the study.

3.3.2 Sampling procedure

The study mainly employed two sampling techniques. Systematic sampling and convenience sampling design in determining the chemists that were sampled and the

customers who were interviewed. Ten chemists were conveniently and purposively sampled because not all chemists were willing to have the researcher in their business premise. Two chemists were sampled from each of the following streets; Kenyatta Avenue, River Road, Racecourse Road, Moi Avenue and Harambee Avenue. These chemists were representative of the triangular Central Business District. Twenty-five respondents were interviewed in each of the sampled chemist shops. The chemist administrators allowed the researcher to pose as a retailing staff so as to win the confidence of the respodents. The attendants would then introduce the researcher to their customers after selling the drugs to them. Systematic sampling was employed in determining the street to be sampled in order to cover the entire town and at the same time cater for the different classes of people in the city of Nairobi.

3.4 DATA COLLECTION

Pre-testing of the data collection tool was done in Thika town before the actual survey was carried out. Both questionnaires were then restructured after pre-testing because it was realized that all objectives had not been covered. The questionnaires were self-administered for those who could read and write and interviewer administered for those consumers who could not read and write. In-depth interviews were conducted in two chemist shops to verify the information given by the respondents.

3.4.2 Data management

Data from the study was coded and entered using the SPSS version 10 program. Analysis of the structured data began with descriptive statistics of variable and proceeded to analysis of relationship between the variables and proceeded to analysis of relationship between the variables. Independent and dependent variables were compared. Independent

variables such as age, sex, education level and occupation were marched with dependent variables measuring knowledge, attitude and practices. Differences between the various variables were compared using chi-square test at 0.005 level of significance.

CHAPTER FOUR: RESULTS

4.1 Socio-economic characteristics of the NP drug buyers

The socio economic characteristics assessed in the study included, gender, level of education, marital status, religion, occupation, and medical cover.

4.1.1 Age

The mean age of the respondents was 26.97 years ± 8.02 (Table 4.1). The median age was 25. Variance was 63.31, with the range of 45.

Table 4.1: Age Categories

Age Categories	Percent
20 years and below	5.2
21-25 years	52.8
26-30 years	19.3
31-35 years	13.7
≥ 41 years	9.0
Total	100.0

4.1.2. Gender

The results in Figure 4.1 indicate that there were more males (51.2%) than females (48.8%) buying non-prescription drugs.

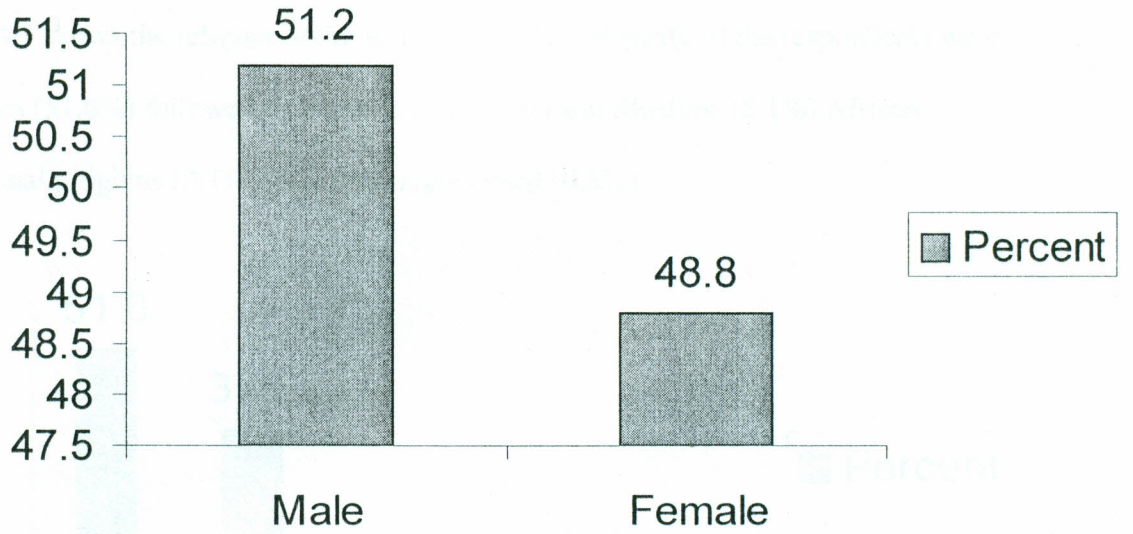

Figure 4.1 Gender of those buying the NP drugs

4.1.3 Marital Status

Figure 4.2 shows the marital status of those buying drugs. The majority of the respondents (single), comprised of 65.1%. The married came second (28.5%), followed by those who were either separated or divorced (6.4%) who were the least in this category. The separated and the divorced were grouped together because they were, at the time living singly, having been married at one time.

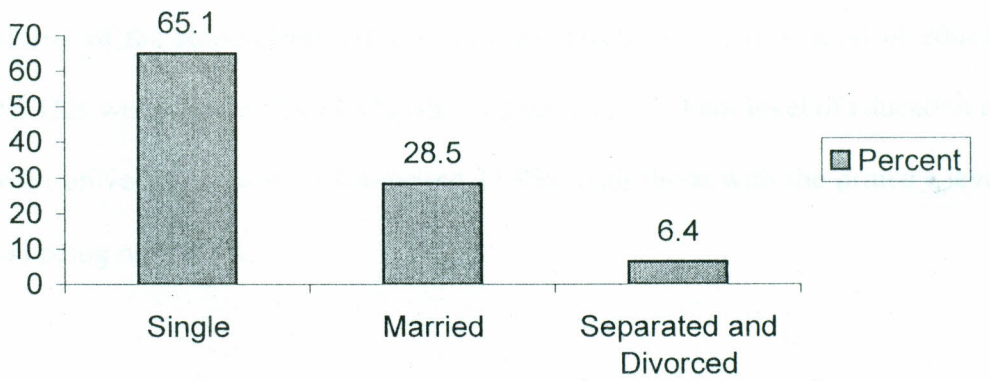

Figure 4.2 Marital status of the non-prescription drug buyers

4.1.4 Religion

Figure 4.3 shows the religion of the respondents. The majority of the respondents were Catholics (51.6%) followed by Protestants (37.5%) and Muslims (8.1%) African Traditional religions (ATR) were least represented (0.8%).

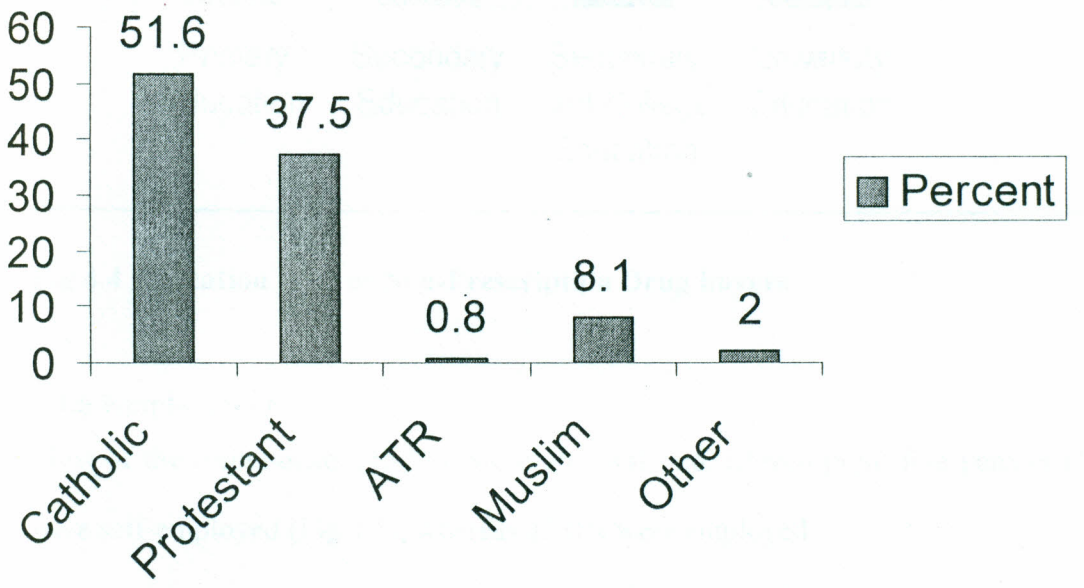

Figure 4.3 Religion of the non-prescription drug buyers

4.1.5 Level of Education

The majority of the respondents (70.2%) had secondary and college level of education (Fig 4.4). This was followed by 17.1% who had secondary school level of education only. Those with university education comprised 11.9%, with those with the primary level of education being only 0.8%.

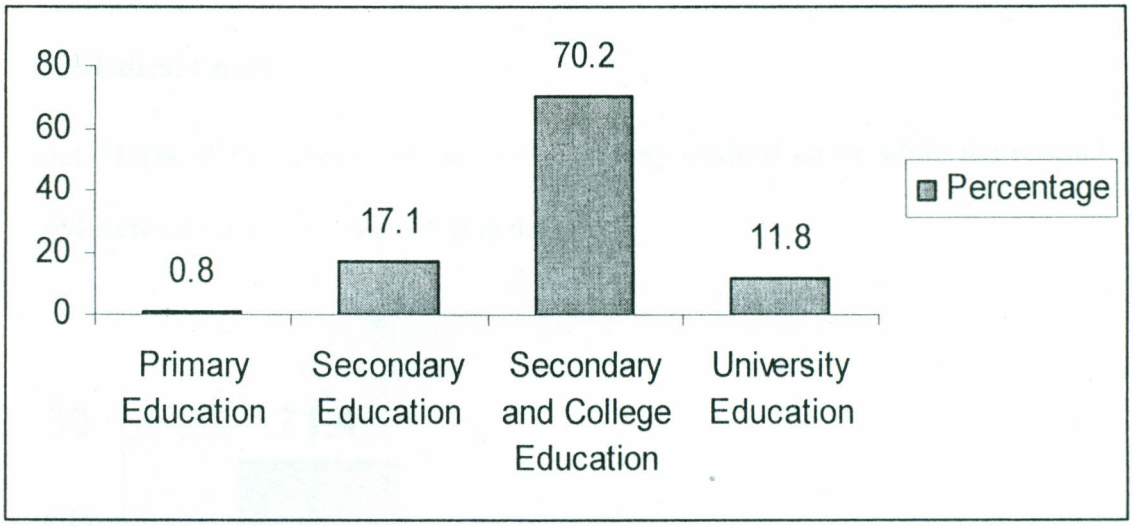

Fig 4.4 Education level of Non-Prescription Drug buyers

4.1.6 Employment

Most of the respondents (45.5%) were un-employed. Eleven point five percent (11.5%) were self-employed (Fig 4.5), whereas 43.0% were employed.

Figure 4.5 Employment/ Occupation of the NP drug buyers

4.1.7 Medical Cover

About 71.4% of the respondents did not have any medical cover while the remaining 28.6% were under a medical cover (Fig 4.6).

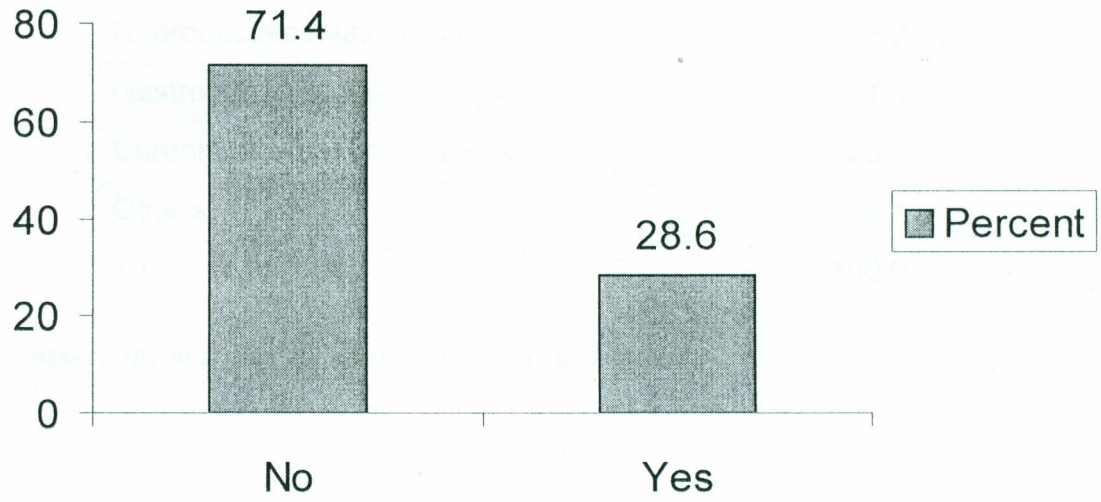

Figure 4.6 The number of NP drug buyers under medical cover

4.2 The Types of Drugs Purchased

Painkillers were most demanded (23.4%) (Table 4.2). Chronic disease remedies came second (20.9%) with antibiotics or anti-infectives coming third (18%). Antimalarials were ranked fourth (12.3%), drugs for the alimentary and general metabolism fifth (11.1%), reproductive health drugs sixth (8.2%) and others such as anti-depressants nutritional supplements came seventh (6.1%).

Table 4.2: Showing the types of non-prescription drugs bought

Type of drug	Percent
Painkillers	23.4
Anti malarial drugs	12.3
Antibiotics/Respiratory medications	18.0
Reproductive health drugs	8.2
Gastrointestinal Medications	11.1
Chronic disease Medications	20.9
Others	6.1
Total	100.0

4.2.1 Factors influencing the choice of NP drugs bought

4.2.1.2 Age and its influence on the choice of NP drugs

Age was an influencing factor in the choices that consumers make on drugs (Table 4.3) Respondents who fell under the age categories of 21-25 years and 31-35 years had quite a range of non-prescription drugs whereas the other age categories mentioned just but a few types of drugs. Individuals of age 20 and below did not go for anti malarials, reproductive health drugs and chronic disease remedies. A contingency coefficient indicated that age accounted for 53.2% of the variations on the type of drugs purchased. Age was significantly related to the type of drugs purchased ($\chi^2 = 90.183$, df = 24; P = 0.0001).

Table 4.3: Relationship between age and the types of drugs purchased

Type of Drugs	20 years And below	21-25 Years	26-30 Years	31-35 Years	≥41Years	Total
Painkillers	1.7%	12.7%	1.7%	2.2%	3.1%	21.4%
Anti malarial	0	5.7%	5.7%	1.7%	0	13.1%
Antibiotics /Respiratory medications	0.9%	5.7%	7.0%	2.6%	0.9%	17.0%
Reproductive Health drugs	0	7.9%	0	0.9%	0	8.7%
Gastrointestinal Medications	0.9%	4.8%	2.6%	3.5%	0	11.8%
Chronic Diseases Medications	0	12.2%	1.7%	3.1%	5.2%	22.3%
Others	1.7%	3.1%	0.9%	0	0	5.7%
Total	5.2%	52.0%	19.7%	14.0%	9.2%	100.0%

4.2.1.3. Marital Status and its influence on the types of drugs purchased

Individuals of different marital status reported a variation in the drugs that they purchased (Table 4.4). The single comprised the largest percentage (65%). The most demanded for were painkillers (23.0%), which were followed by antibiotics (18.1%). The married on the other hand went for chronic disease remedies. A contingency coefficient indicated that marital status accounted for 42.6% of the variations on the choices of drugs that

consumers made. Marital status was significantly related to the type of drugs purchased ($\chi^2 = 53.893$, df = 12; P = 0.0001).

Table 4.4: Relationship between marital status and the types of drugs purchased

Type of drug	Single	Married	Divorced	Total
Painkillers	16.0%	6.2%	0.8%	23.0%
Anti malarial	8.2%	4.1%	0	12.3%
Antibiotics /Respiratory Medications	10.3%	7.8%	0	18.1%
Reproductive	7.4%	0.8%	0	8.2%
Gastrointestinal Medications	6.2%	1.2%	3.7%	11.1%
Chronic disease Medications	11.5%	7.4%	2.1%	21.0%
Others	5.3%	0.8%	0	6.2%
Total	65.0%	28.4%	6.6%	100.0%

4.2.1.4 The influence of occupation on the types of drugs purchased

Occupation as an economic factor was a source of variation on the choices of drugs made (Table 4.5). The un-employed formed the majority, comprising 45.5% of the total number of respondents. The majority in this category went for painkillers. The employed came second and they mostly demanded for chronic disease remedies. The self-employed did not indicate other drugs such as multi-vitamins, ear and eye ointments. A contingency

coefficient indicated that occupation accounted for 39.6% of the types of drugs that consumers demanded for. There was a significant relationship between occupation and the types of drugs purchased ($\chi^2 = 45.426$, df = 12; P = 0.0001).

Table 4.5: Influence of Occupation on the types of NP drugs purchased.

Type of Drugs	Employed	Self-employed	Unemployed	Total
Painkillers	9.8%	3.3%	10.2%	23.4%
Anti malarial	4.5%	0.8%	7.0%	12.3%
Antibiotics /Respiratory Medications	8.2%	0.8%	9.0%	18.0%
Reproductive health medications	6.6%	0	1.6%	8.2%
Gastrointestinal Medications	1.2%	1.6%	8.2%	11.1%
Chronic disease Medications	11.1%	4.9%	4.9%	20.9%
Others	1.6%	0	4.5%	6.1%
Total	43.0%	11.5%	45.5%	100.0%

4.2.1.5 Influence of education level on the types of NP drugs purchased

The four categories of educational level indicated different choices of drugs (Table 4.6). Those with secondary school education and college education reported the largest number (70.3%). Those who hold primary school education purchased painkillers only. Those with university education did not go for anti malarial and reproductive health

drugs. Education accounted for 50.5% of the source of variation in the type of NP drugs used. Education did influence the type of drugs that consumers go for ($\chi^2 = 81.704$, df = 18; P = 0.0001).

Table 4.6: Influence of education on the type of NP drugs purchased.

Type of Drugs	Primary education only	Secondary level of education only	Secondary with some training	University level of education	Total
Painkillers	0.8%	8.8%	12.6%	1.7%	23.8%
Anti malarial Drugs	0	0.8%	11.7%	0	12.6%
Antibiotics /Respiratory Medications	0	0.8%	14.6%	0.8%	16.3%
Reproductive health medications	0	0.8%	7.5%	0	8.4%
Gastrointestinal Medications	0	0.4%	5.4%	5.4%	11.3%
Chronic disease Medications	0	5.0%	13.0%	3.3%	21.3%
Others	0	0	5.4%	0.8%	6.3%
Total	0.8%	16.7%	70.3%	12.1%	100.0%

4.2.1.6 Religion and its influence on the types of drugs purchased

The Protestants were the largest consumers of the painkillers (14.9%). The Catholics were the majority consumers of chronic disease remedies (Table 4.7). Respondents belonging to African traditional religions only bought anti malarials. The Muslims bought anti malarials, antibiotics, antacids and chronic disease remedies. A contingency coefficient indicated that religion accounted for 51.2% of the variations on the types of

drugs purchased. There was a significant relationship between religion and the types of drugs purchased (χ^2 =85.862, df = 24; P = 0.0001).

Table 4.7: Influence of religion on the source of information on drugs

Type of Drugs	Catholic	Protestant	ATR	Muslim	Other	Total
Painkillers	7.9%	14.9%	0	0	0.8%	23.6%
Anti malaria Drugs	6.6%	3.7%	0.8%	1.2%	0	12.4%
Antibiotics /Respiratory Medications	9.1%	7.0%	0	0.8%	1.2%	18.2%
Reproductive Heath Medications	5.0%	3.3%	0	0	0	8.3%
Gastrointestinal Medications	5.8%	1.7%	0	3.7%	0	11.2%
Chronic disease Medications	15.7%	2.9%	0	2.5%	0	21.1%
Others	2.1%	3.3%	0	0	0	5.4%
Total	52.1%	36.8%	0.8%	8.3%	2.1%	100.0%

4.2.1.7 Medical Cover and its influence on the types of drugs purchased

Respondents who were not under any medical cover reported a great demand of chronic disease remedies (17.6%), whereas those who were under a medical cover demanded antibiotics (7.1%) and other fever remedies (Table 4.8). A contingency coefficient indicated that medical cover accounted for 23.6% of the types of drugs that consumers

demand for. There was no significant relationship between medical cover and the types of drugs purchased ($\chi^2 = 14.149$, df = 6; P = 0.28).

Table 4.8: Influence of medical cover on the types of drugs purchased.

Type of Drugs	No	Yes	Total
Painkillers	15.1%	6.7%	21.8%
Anti malarial	10.0%	2.5%	12.6%
Antibiotics /Respiratory Medications	11.3%	7.1%	18.4%
Reproductive Health Medications	7.5%	0.8%	8.4%
Gastrointestinal Medications	6.7%	4.6%	11.3%
Chronic disease Medications	17.6%	3.8%	21.3%
Others	3.3%	2.9%	6.3%
Total	71.5%	28.5%	100.0%

4.2.1.8. The drug users and their influence on the type of drugs purchased

The majority of the respondents were buying drugs for their own use (78%). None was acquiring an antacid for use by a friend (Table 4.9). Children had antibiotics and other remedies such as gripe water bought for them. Spouses reported having bought all types of drugs for each other with the exception of reproductive health drugs. A contingency coefficient indicated that the end user of the drug accounted for 48% of the variations in

the types of drugs purchased. There was a significant relationship between the type of drug purchased and the end user of the drug ($\chi^2 = 74.284$, df = 24; P = 0.0001).

Table 4.9: Influence of the end user of the drug on the type of drug purchased.

Type of Drugs	Myself	A friend	My child	Spouse	Other	Total
Painkillers	22.0%	1.7%	0	0	0	23.7%
Anti malarial	10.4%	0.4%	0	0.8%	0.8%	12.4%
Antibiotics /Respiratory Medications	13.3%	0.8%	2.1%	0.8%	0	17.0%
Reproductive Health Medications	5.4%	1.2%	0	0	1.7%	8.3%
Gastrointestinal Medications	10.0%	0	0	1.2%	0	11.2%
Chronic disease Medications	12.4%	5.8%	0.4%	1.2%	1.2%	21.2%
Others	4.6%	0	0.8%	0	0.8%	6.2%
Total	78.0%	10.0%	3.3%	4.1%	4.6%	100.0%

4.2.1.9. Sex and its influence on the types of drugs bought

More women (54.4%) than men (45.6%) were the end consumers of the NP drugs (Table 4.10). The majority of the men went for antibiotics (11.2%), whereas the majority of the women went for painkillers (15.8%). More men requested for reproductive health drugs (5.4%). There was a significant relationship between the sex of the end user and the type of drugs purchased ($\chi^2 = 18.965$, df =6; P = 0.004). A contingency coefficient indicated

that the sex of the end user accounted for 27% of the variations on the type of drug purchased.

Table 4.10: Influence of the sex of the end user on the type of drugs purchased.

Type of Drugs	Male	Female	Total
Painkillers	7.9%	15.8%	23.7%
Anti malarial Drugs	7.1%	5.4%	12.4%
Antibiotics /Respiratory Medications	11.2%	5.8%	17.0%
Reproductive Health Medications	5.4%	2.9%	8.3%
Gastrointestinal Medications	3.3%	7.9%	11.2%
Chronic disease Medications	7.9%	13.3%	21.2%
Others	2.9%	3.3%	6.2%
Total	45.6%	54.4%	100.0%

4.2.1.10. Frequency of drug usage and the types of drugs purchased

The majority of the respondents (82.4%) indicated that it was not their first time to purchase the NP drugs (Table 4.11). The rest (17.6%) indicated that it was the first time for them to purchase the drugs. None of the first time users bought reproductive health drugs. A contingency coefficient indicated that this variable accounted for 28.6% of the variations on the type of drug purchased. There was a significant relationship between the frequency in purchasing drug and the types of drugs bought ($\chi^2 = 21.290$, df = 6; P = 0.002).

Table 4.11: Influence of frequency in drug use on the type of drug purchased.

Type of drugs	No	Yes	Total
Painkillers	19.7%	3.3%	23.0%
Anti malarial Drugs	11.7%	0.8%	12.6%
Antibiotics /Respiratory Medications	14.2%	2.9%	17.2%
Reproductive Health Mediations	8.4%	0	8.4%
Gastrointestinal Medications	8.8%	2.5%	11.3%
Chronic Medications	16.7%	4.6%	21.3%
Others	2.9%	3.3%	6.3%
Total	82.4%	17.6%	100.0%

4.3.0 The ailments for which the NP drugs were bought

The majority of the respondents were acquiring the drugs for pain alleviation (23.4%). This was followed closely by chronic diseases (20.9%) and fever and general infections (18%) in that order (Table 4.12). Malaria accounted for 12.3%, with gastrointestinal infections such as stomach acidity and amoeba infections accounting for 11.1% and reproductive health drugs for 8.2%. The least accounted for ailments included those associated with nutrient deficiencies.

Table 4.12: The ailments for which the NP drugs were bought

Ailment	Percent
Pain	23.4
Malaria	12.3
Fever and Respiratory infections	18.0
Reproductive health	8.2
Gastrointestinal complications	11.1
Chronic diseases	20.9
Others	6.1
Total	100.0

4.3.1.1 Options resorted to when the drugs fail to be effective

When asked what action they would take if the drug failed to alleviate the ailment, 80.7% said that they would seek medical advice (Table 4.13) Two point five percent said that they would pick on another drug, whereas 13.2% said that they would go back to the chemist and get advised by the pharmacy staff. Only 2.1% however said that they would

then try out some herbal medicine. The other option received suggestions of faith healing and waiting till the disease goes away on its own.

Table 4.13: The options resorted to if the drugs were not effective

Options that the NP drug users resorted to	Frequency	Percent
Seek medical advice	196	80.7
Pick on another drug	6	2.5
Get advice from pharmacy staff	32	13.2
Try out some herbal medicine	5	2.1
Other	11	1.6
Total	250	100

4.3.1.2. Influence of Gender on the options resorted to if the drugs were not effective

Most males were of the opinion that if the drug turned out to be ineffective, they would seek medical advice (Table 4.14). Females were also of the same opinion, and their second and only other option would be to get advice from the pharmacy staff (5.3%). None of the female respondents thought of picking on another drug or trying out some herbal medicine. A contingency coefficient indicated that gender accounted for 24.7% of the variations on the options resorted to if the drug failed to be effective. The options that the respondents resorted to were dependent on gender (χ^2= 15.801, df= 4; P = 0.003).

Table 4.14: Influence of gender on the choice of options resorted to if drug was not effective

Gender	Seek medical advice	Pick on another drug	Get advice from pharmacy staff	Try out some herbal medicine	Other	Total
Male	38.7%	2.5%	7.8%	2.1%	1.6%	52.7%
Female	42.0%	0	5.3%	0	0	47.3%
Total	80.7%	2.5%	13.2%	2.1%	1.6%	100.0%

4.3.1.3 Influence of marital status on options resorted to

The three categories recorded seeking medical advice as the best alternative for non-prescription drugs that were not effective (Table 4.15). Eighty point six percent of the respondents know the dangers of persistently using the non-prescription drugs and any other alternatives without seeking medical advice. A contingency coefficient indicated that marital status accounted for 23.6% of the variations on the option resorted to if the drug failed to be effective. Marital status was not significantly related to the options resorted to if the drugs failed to be effective ($\chi^2 = 14.314$, df = 8; P = 0.74).

Table 4.15: Influence of marital on the options resorted to if the drug was not effective

	Seek medical advice	Pick on another drug	Get advice from pharmacy staff	Try out some herbal medicine	Other	Total
Single	52.1%	1.7%	6.6%	2.1%	1.7%	64.0%
Married	21.9%	0.8%	6.6%	0	0	29.3%
Divorced	6.6%	0	0	0	0	6.6%
Total	80.6%	2.5%	13.2	2.1%	1.7%	100.0%

4.3.1.4 The influence of Employment on the options resorted to

All categories under this socio-economic factor opted for medical advice in great numbers (80.7%). The employed and the self-employed did not opt to get advice from other sources (Table 4.16). A contingency coefficient indicated that employment accounted for 31.8% of the variations on the options resorted to if the drug failed to be effective. There was a significant relationship between employment and the option resorted to if the drug failed to be effective (χ^2= 27.316, df = 8; P = 0.001).

Table 4.16: Influence of on the options resorted to if drug does not work.

Occupation	Seek medical advice	Pick on another drug	Get advice from pharmacy staff	Try out some herbal medicine	Other	Total
Employed	39.1%	1.6%	1.6%	1.2%	0	43.6%
Self-employed	9.1%	0.8%	1.6%	0	0	11.5%
Unemployed	32.5%	0	9.9%	0.8%	1.6%	44.9%
Total	80.7%	2.5%	13.2%	2.1%	1.6%	100.0%

4.3.1.5. Level of education and its influence on the options resorted to

The respondents with primary level of education suggested that they would pick on another drug if the first purchase would not be effective (Table 4.17). Those with the university level of education could only opt for seeking medical advice. Those who had secondary level of education with some training identified all the options as possible alternatives. A contingency coefficient indicated that education accounted for 53.2% of the variations on the options resorted to if the drug failed to be effective. The level of

education was an influencing factor in the options resorted to if the drug failed to be effective (χ^2= 95.189, df = 12; P = 0.0001).

Table 4.17: The influence of education on the options resorted to if the drug was not effective

Education Level	Seek medical advice	Pick on another drug	Get advice from pharmacy staff	Try out some herbal medicine	Other	Total
Primary	0	0.8%	0	0	0	0.8%
Secondary level of education only	16.6%	0	0.8%	0	0	17.4%
Secondary with some training	52.7%	1.7%	12.4%	2.1%	1.7%	70.5%
University education	11.2%	0	0	0	0	11.2%
Total	80.5%	2.5%	13.3%	2.1%	1.7%	100.0%

4.3.1.6 Religion and how it influences the options resorted to

Table 4.18 indicates the relationship between religion and the options resorted to if the drugs prove not to be effective. Eighty point four percent of all the respondents opted to seek for medical advice. Muslims did not have any other option but to seek medical advice (8.3%). Respondents from the African Traditional religions identified advice from the pharmacy staff as the only option that they would resort to if drugs failed to work (0.8%). The Protestants and Catholics had a wide range of options to pick from. They are the only groups that talked of other options such as faith healing and waiting until the disease disappeared on its own. A contingency coefficient indicated that religion accounted for 38.9% of the variations on the options resorted to if the drug failed to be

effective. There was a significant relationship between religion and the options resorted to if the drug failed to be effective (χ^2 =42.942, df = 16; P = 0.0001).

Table 4.18: Influence of religion on the options resorted to if the drug was not effective

Religion	Seek medical advice	Pick on another drug	Get advice from pharmacy staff	Try out some herbal medicine	Other	Total
Catholic	46.5%	0.8%	2.5%	0.8%	0.	51.5%
Protestant	24.9%	1.7%	10.0%	1.2%	0.8%	38.6%
ATR	0	0	0.8%	0	0	0.8%
Muslim	8.3%	0	0	0	0	8.3%
Other	0.8%	0	0	0	0	0.8%
Total	80.5%	2.5%	13.3%	2.1%	1.7%	100.0

4.3.1.7 The influence on medical cover on the options resorted to

Medical cover had a direct impact on the options resorted to if the drugs were not effective (Table 4.19). Those who were not under any medical cover went for all the other options with the majority going for the option of seeking medical advice. A contingency coefficient indicated that medical cover accounted for 33.8% of the variations on the options resorted to if the drug failed to be effective. There was a significant relationship between medical cover and the options resorted to if the drug failed to be effective (χ^2 = 30.709, df = 4; P = 0.0001).

Table 4.19: Influence of medical cover on the options resorted to if the drug fails to be effective

Medical cover	Seek medical advice	Pick on another drug	Get advice from pharmacy staff	Try out some herbal medicine	Other	Total
Yes	61.8%	0.8%	4.2%	0	1.7%	70.6%
No	19.3%	1.7%	8.4%	2.1%	0	29.4%
Total	81.1%	2.5%	12.6%	2.1%	1.7%	100.0%

4.3.1.8 The influence of the types of drugs purchased on the options resorted to if the drug does not work.

The majority of the respondents (80.5%) suggested that they came to know of these drugs from their previous knowledge of the disease (Table 4.20). A contingency coefficient suggested that the source of information on drugs accounted for 44.6% of the options resorted to if the drugs were not effective. There was a significant relationship between the source of information on drugs and the options resorted to if the drugs failed to be effective ($\chi^{2=}$ 59.842, df = 16; P = 0.0001)

Table 4.20: The influence of the types of drugs purchased on the options resorted to if the drug does not work.

Type of Drugs	Seek Medical Advice	Pick On Another Drug	Get advice From Pharmacy Staff	Try out Herbal medicine	Other	Total
Painkillers	17.7%	0.8%	3.8%	0.8%	0	23.2%
Anti malarial	9.7%	0.8%	1.7%	0.4%	0	12.7%
Antibiotics /Respiratory Medications	9.7%	0.8%	6.8%	0	0	17.3%
Reproductive health Medications	6.8%	0	0.8%	0	0.8%	8.4%
Gastrointestinal Medications	9.7%	0	0	0	0.8%	10.5%
Chronic Disease Medications	20.3%	0	0.4%	0.8%	0	21.5%
Others	6.3%	0	0	0	0	6.3%
Total	80.2%	2.5%	13.5%	2.1%	1.7%	100.0

4.3.1.9 Age and its influence on the options resorted to

Age as a socio-economic factor was classified into four categories that depicted a great difference in the choices made. Individuals of all ages, however, opted to seek medical advice in great numbers (Table 4.21). The greatest consumers of the NP drugs were those between the age of 21 and 25 years (52.0%). This was also the only category that quoted a wide range of options to resort to if the drugs were not effective. There was a significant relationship between age and the options resorted to when the drugs failed to

be effective (χ^2 = 41. 337, df = 16; P = 0.0001). A contingency coefficient indicated that age accounted for 39.2% of the options resorted to if the NP drugs were not effective.

Table 4.21: Influence of age on the options resorted to if drugs failed to be effective.

Age	Seek medical advice	Pick on another drug	Get advice from pharmacy staff	Try out herbal medicine	Other	Total
20 years and below	4.4%	0	0.9%	0	0	5.3%
21-25 years	43.6%	0	4.4%	2.2%	1.8%	52.0%
26-30 years	12.3%	0.9%	6.6%	0	0	19.8%
31-35 years	12.8%	0.9%	0	0	0	13.7%
≥41years	7.5%	0.9%	0.9%	0	0	9.3%
Total	80.6%	2.6%	12.8%	2.2%	1.8%	100.0%

4.3.1.10 Source and the influence of the source of information on drug on the options resorted to

The source of information on drugs was found to have direct influence on the options that would be resorted to if the drugs were not effective (Table 4.22). A contingency coefficient indicated that the source of information on drugs accounted for 44.6% of the variations on the options resorted to. There was a significant relationship between the source of information on drugs and the options resorted to ((χ^2 = 59.842, df = 16; P = 0.0001).

Table 4.22: The influence of the source of information on drugs on the options resorted to if the drug was not effective

Options resorted to	Previous knowledge of disease	Advice from a friend	Advert in the media	Previous prescription from a doctor	Others	Total
Seek medical advice	22.4%	6.2%	9.5%	41.1	1.2%	80.5%
Pick on another drug	2.5%	0	0	0	0	2.5%
Get advice from the pharmacy staff	5.0%	1.7%	5.4%	1.2%	0	13.3%
Try out herbal medicine	0	0	1.2%	0.8%	0	2.1%
Other	0.8	0.8%	0	0	0	1.7%
Total	30.7%	8.7%	16.2%	43.2%	1.2%	100.0%

4.4 The source of information for the non-prescription drug users

Thirty point five percent of those interviewed bought the drugs based on their previous knowledge of the disease and its continued use (Table 4.23). This is especially for chronic diseases such as asthma, ulcers, high blood pressure and arthritis. Eight point six percent said that they had known of the drug from friends. Adverts in the media were cited by 16% of the respondents, whereas previous prescriptions from doctors ranked first having been cited by 43.6% of all the respondents. Other sources such as health journals and health seminars were only quoted by 1.2% of the respondents.

Table 4.23: The sources of information for the non-prescription drug users.

Source of information on drugs	Frequency	Percent
Previous knowledge of disease	74	30.5
Advice from a friend	21	8.6
Advert in the media	39	16.0
Previous prescription from a doctor	106	43.6
Others	10	1.2
Total	250	100.0

The study the sought to establish where the users get the information concerning the drugs they use. The sources of information were cross-tabulated with socio-economic factors.

4.4.1.1 Influence of Gender on the sources of information on NP drugs

The study indicated that previous prescription from a doctor was the most predominant source of information for both gender (43.6%). Previous knowledge of the disease is the second most popular source of information among males and also females (Table 4.24). The third most popular source of information for the females was friends at 4.9% as opposed to adverts in the media for the men. Men did not quote other sources of information such as health documentaries as a source of information on drugs. A contingency coefficient indicated that gender accounted for 25.2% of the variations on the source of information. There was a significant relationship between gender and the source of information on the drugs purchased ($\chi^2 = 16.535$, df = 4; P = 0.002).

Table 4.24: Influence of gender on the source of information on NP drugs.

Sex	Previous knowledge of disease	Advice from a friend	Advert in the media	Previous prescription from a doctor	Others	Total
Male	12.3%	3.7%	11.9%	24.7%	0	52.7%
Female	18.1%	4.9%	4.1%	18.9%	1.2%	47.3%
Total	30.5%	8.6%	16.0%	43.6%	1.2%	100.0%

4.4.1.2 Influence of Education level on the sources of information on NP drugs

About one percent of those with the basic education (0.8%), which is the primary level of education, bought drugs out of their previous knowledge of the disease. For those at the secondary school level, 5.0% bought drugs from previous knowledge of the disease; about 1% was advised by friends, the media enlightened 2.5%. The majority, 9.1% came to know about the drugs from previous prescriptions (Table 4.25). Those who had secondary school level of education with some training had previous prescriptions from a doctor as their greatest source of information on drugs. This was followed by 17.8% who cited previous knowledge of the disease as their source of information. Media was third with a percentage of 12.9%. Advice from a friend or relative came in fourth at a percentage of 4.1%. Other sources such as magazines and health classes comprised of only 1.2% of the total.

A contingency coefficient indicated that the level of education accounted for 25.2% percent of the variations on the source of information. There was a significant

relationship between the level of education and the source of information on the drugs purchased ($\chi^2 = 16.437$, df = 12; P = 0.0176).

Table 4.25 The source of information on NP drugs for individuals of various education levels.

Level of Education	Previous knowledge of disease	Advice from a friend	Adverts in the media	Previous prescriptions from the doctor	Others	Total
Primary	0.8%	0	0	0	0	0.8%
Secondary level of education	5.0%	0.8%	2.5%	9.1%	0	17.4%
Secondary with Some training	17.8%	7.1%	12.9%	30.7%	1.2%	69.7%
University level of education	6.2%	0.8%	0.8%	4.1%	0	12.0%
Total	29.9%	8.7%	16.2%	44.0%	1.2%	100.0%

4.4.1.3 Influence of marital status on the source of information on NP drugs.

Sixty four percent of all the respondents were single (Table 4.26). Their major source of information on drugs was previous prescriptions from doctors (27.3%). This was followed by previous knowledge of the disease (18.2%), advice in the media (10.7%) and advice from friends in that order (7.9%). The married came second, taking the same order of their sources of drug information. However, this was the only group that had other sources of information (1.2%). This group cited health magazines, health seminars, and television programmes on health. The divorced received information on drugs from previous knowledge of the disease (4.5%), previous prescriptions from doctors (1.2%) and adverts in the media (0.8%). A contingency coefficient indicated that marital status

accounted for 31.1% of the variations on the source of information. There was a significant relationship between marital status and the source of information on the drugs purchased ($\chi^2 = 25.972$, df = 8; P = 0.001).

Table 4.26: Influence of marital status on the source of information on NP drugs.

Marital Status	Previous knowledge of disease	Advice from a friend	Advert in the media	Previous prescription from a doctor	Others	Total
Single	18.2%	7.9%	10.7%	27.3%	0	64.0%
Married	7.4%	0.8%	4.5%	15.3%	1.2%	29.3%
Divorced	4.5%	0	0.8%	1.2%	0	6.6%
Total	30.2%	8.7%	16.1%	43.8%	1.2%	100.0%

4.4.1.4 Influence of religion on the source of information on NP drugs

The results indicated that many Catholics (29.5%) resorted to OTC because of their previous prescription from a doctor while among the protestant the key source of information was shown to be previous knowledge of the disease (Table 4.27). For the Muslims the main source of information for non-prescription drug users was indicated as previous knowledge of the disease (4.6%). The least source of information for Catholics and Muslims was advice from a friend (2.5% and 1.2% respectively), while for the protestants they least sought information from such sources as Brochures and pamphlets (37.8%). The Contingency coefficient indicated that about 37.7% of the variation in the source of information in the study sample could be attributed to religion. There was a

significant relationship between religion and the source of information on the drug sought from the chemist ($\chi^2 = 39.953$, df=16; P = 0.01).

Table 4.27: Influence of religion on the source of information NP drugs.

Religion	Previous knowledge of disease	Advice from a friend	Advert in the media	Previous prescription from a doctor	Others	Total
Catholic	12.4%	2.5%	7.9%	29.5%	0	52.3%
Protestant	12.0%	5.0%	8.3%	11.2%	1.2%	37.8%
ATR	0.8%	0	0	0	0	0.8%
Muslim	4.6%	1.2%	0	2.5%	0	8.3%
Other	0.8%	0	0	0	0	0.8%
Total	30.7%	8.7%	16.2%	43.2%	1.2%	100.0%

4.4.1.5 Influence of Employment on the sources of information on NP drugs

The main source of information for the three groups was previous prescriptions from the doctor (Table 4.28). The employed had previous knowledge of the disease rated second (12.8%) followed by adverts in the media (8.2%). They quoted other sources of information (1.2%) such as magazines, health seminars organised by churches and even social development groups. It is the only group of people that cited other sources of information. The self-employed rated previous prescription from the doctor first (7.4%). There was a tie of previous knowledge of the disease (1.6%) and adverts in the media (1.6%) as sources of information on drugs. For the unemployed, previous knowledge of the disease came second (16.0%) after previous prescription from the doctor (16.5%).

The third source in the category was advice from friends (8.6%), followed by adverts in the media (16.0%)

A contingency coefficient indicated that employment accounted for 30% of the variations on the source of information. There was a significant relationship between employment and the source of information on the drugs purchased ($\chi^2 = 23.965$, df = 8; P = 0.002).

Table 4.28: Influence of employment on the source of information on non-prescription drugs.

Occupation	Previous knowledge of the disease.	Advice from a friend.	Advert in the media.	Previous prescription from a doctor.	Others.	Total.
Employed	12.8%	0.8%	8.2%	19.8%	1.2%	42.8%
Self-Employed	1.6%	0.8%	1.6%	7.4%	0	11.5%
Unemployed	16.0%	7.0%	6.2%	16.5%	0	45.7%
Total	30.5%	8.6%	16.0%	43.6%	1.2%	100.0%

4.4.1.6 Influence of Medical Cover on the sources of information on NP drugs

The majority of the respondents (70.6%) said that they were not under any medical cover (Table 4.29). They cited previous prescriptions from the doctor (35.7%) as the main source of their information on drugs. Second was previous knowledge of the disease (16.0%), followed by adverts in the media (10.9%). Last in this category was advice from friends (8.0%). Those who were under a medical cover (29.4%) cited previous knowledge of the disease as the greatest source of drug information (13.0%). A contingency coefficient indicated that medical cover accounted for 30.4% of the

variations on the source of information. Marital status was related to the source of information on the drugs ($\chi^2 = 24.196$, df = 4; P = 0.0001)

Table 4.29: Influence of medical cover on the source of information on non-prescription drugs

Source of Information on NP drugs	No	Yes	Total
Previous Knowledge Of disease	16.0%	13.0%	29.0%
Advice From a friend	8.0%	0.8%	8.8%
Advert In the media	10.9%	5.5%	16.4%
Previous prescription from a doctor	35.70%	8.8%	44.5%
Others	0	1.3%	1.3%
Total	70.6%	29.4%	100.0%

4.4.1.7 Influence of age on the sources of information on NP drugs

Respondents from the different age categories had different sources of information on drugs (Table 4.30). Most of them (44.5%) indicated that their greatest source of information was previous prescriptions from the doctor. This was followed by previous knowledge of the disease (30%), adverts in the media (16.3%) and finally advice from friends that accounted for 8.8% of the sources of information. A contingency coefficient indicated that age accounted for 38.1% of the sources of information on drugs. There was

a significant relationship between age and the source of drug information ($\chi^2 = 38.634$, df = 12; P = 0.0001)

Table 4.30: Influence of age on the source of information on NP drugs

Age	Previous Knowledge of disease	Advice From a friend	Advert in the media	Previous Prescription From a doctor	Total
20 years and below	0.9%	0.9%	1.8%	1.8%	5.3%
21-25 years	12.8%	5.3%	8.8%	25.1%	52.0%
26-30 years	6.6%	3.1%	4.8%	5.3%	19.8%
31-35 years	7.9%	0	0.9%	4.8%	13.7%
≥41 years	1.8%	0	0	7.5%	9.3%
Total	30.0%	9.3%	16.3%	44.5%	100.0%

4.4.1.8 Influence of the type of drug on the source of information on NP drugs

Table 31 indicates the purchasing patterns of the respondents in relation to their source of information. Eleven point three percent (11.3%) of the respondents who bought painkillers came to know of them from their previous knowledge of the disease. The majority of those buying anti malarials (6.7%) came to know of them from previous knowledge of the disease. Previous prescription from the doctor was the leading source of information on drugs (42.7%) with those who were acquiring the drugs for chronic diseases citing this as their major source of NP drugs (19.2%). A contingency coefficient indicated that the type of drug accounted for 63.6% of the variations on the sources of

information on drugs. There was a significant relationship between the type of drug purchased and the source of information on the drug ($\chi^2 = 162.429$, df = 24; P = 0.0001)

Table 4.31 Influence of the type of drug purchased on the source of information on NP drugs

Type of Drugs	Previous knowledge of disease	Advice from a friend	Advert in the media	Previous prescription from a doctor	Others	Total
Painkillers	11.3%	4.2%	4.2%	3.3%	0	23.0%
Anti malarial drugs	6.7%	1.3%	0.4%	4.2%	0	12.6%
Antibiotics /Respiratory medications	5.9%	0	5.0%	5.9%	0.4%	17.2%
Reproductive health medications	0	1.7%	5.4%	1.3%	0	8.4%
Gastrointestinal complications medication	5.4%	0.8%	0.8%	4.2%	0	11.3%
Chronic disease medications	1.7%	0	.4%	19.2%	0	21.3%
Others	0	0.8%	0	4.6%	0.8%	6.3%
Total	31.0%	8.8%	16.3%	42.7%	1.3%	100.0%

4.4.2 Previous prescriptions as a source of information on NP drugs

Previous prescriptions from doctors were found to range from one week prior to the time of purchase to more than six months before. These was another source of information on drugs for the customers (Table 4.32)

Table 4.32 Time for previous prescription.

Time of previous prescriptions	Percent
Less than a week ago	5.2
One week	11.0
One month ago	14.2
2-6 months ago	19.4
More than six months ago	50.3
Total	100.0

4.5.0 Factors Promoting the Use of Non-Prescription Drugs

4.5.1 Showing how long the consumers had known and used the NP drug

For some of the respondents, it was not their first time to obtain the NP drug (Table 4.33) The majority had either been using the drug for one year or more (19.5%), for six months (7.5%), for one month (18.7%), or for one week (26.1%). Only 28.2% of the respondents were acquiring the drug for the first time.

Table 4.33 Time during which the consumers had known and used the NP drugs

Time	Percent
One day	28.2
One week	26.1
One month	18.7
Six months	7.5
One year or more	19.5
Total	100.0

4.5.2 The cost of the non-prescription drugs.

The drug prices were another factor promoting the usage of the non-prescription drugs. Most of the respondents (34.2%) felt that the prices were average and therefore affordable. Those who felt that the drugs were expensive comprised 30.5% of the total. Twenty-two point six felt that the drugs were very expensive, 10.3% that the drugs were slightly less expensive and 2.5% that they were less expensive (Table 4.34).

Table 4.34: The perceptions of the NP drug users on the prices of the NP drug users.

Ratings	Frequency	Percent
Very expensive	55	22.6
Expensive	74	30.5
Average	83	34.2
Slightly less expensive	25	10.3
Less expensive	6	2.5
Total	243	100.0

4.6 The end users of the drugs

4.6.1 Gender Of The End Users

Women were the main end users of the NP drugs (55.1%) as compared to the men who comprised only 44.9% (Fig 4.7)

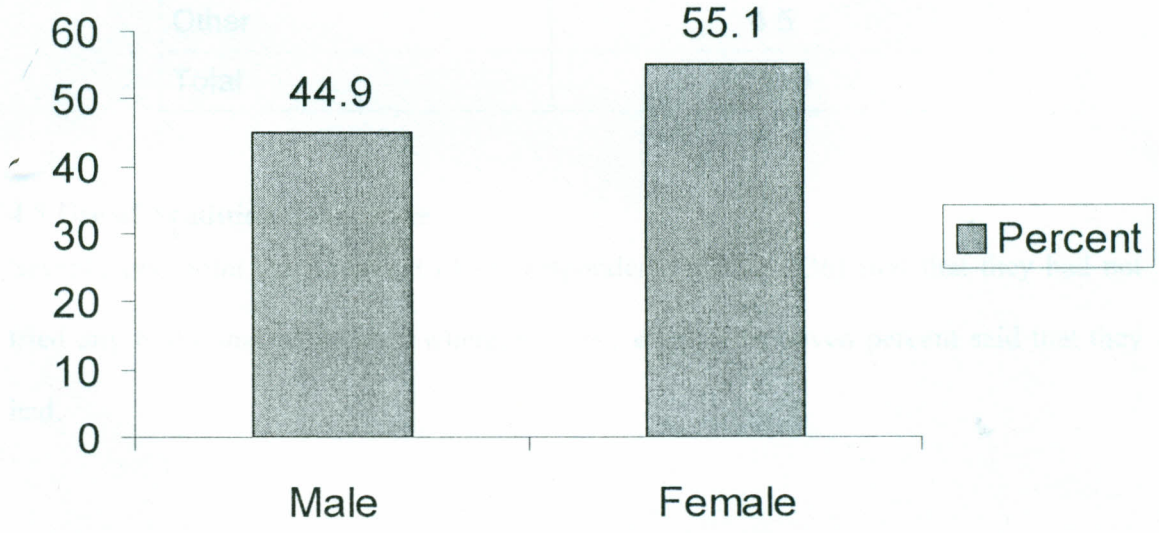

Figure 4.7: The end users of the NP drugs

4.6.2The distribution of the end users of the drugs

About 78% of those who bought the non-prescription drugs were buying the drugs for their own use (Table 4.35) Ten point six percent were to be consumed by friends, 3.3% by the children of those who bought them, whereas 4.1% was to be used by the spouses of the buyers. Other beneficiaries included employees and students in boarding schools.

Table 4.35: The distribution of the end users of the NP drugs

End user	Percent
Myself	77.6
A friend	10.6
My child	3.3
Spouse	4.1
Other	4.5
Total	100.0

4.7 Use of Traditional medicine

Seventy one point three percent of the respondents (Table 4.36) said that they had not tried any traditional medicines, whereas twenty eight point seven percent said that they had.

Table 4.36: Number of people who would opt for traditional medicine.

	Percent
No	71.3
Yes	28.7
Total	100.0

CHAPTER FIVE: DISCUSSION

5.1 General Discussion

From literature, it is reported that with NP drugs, the process of and responsibilities lie with the individual. Self-medication begins with self-diagnosis or self-recognition of a condition by the patient. This is followed by the decision to treat or ignore the condition. When the patient decides to treat the condition with a NP drug, with or without the advice of a health professional for instance the pharmacists. Pharmacists are cost-effective counselors for consumers seeking additional information and are widely available and accessible at the point of purchase. As a result, NP drug consumers have significantly greater ability to make choices regarding which NP products to use. It is against this background that this study sought to investigate the usage of NP drugs by the residents of Nairobi.

5.2 Socio-economic and demographic characteristics of the NP drug buyers

The major correspondents were aged 21-25 years. This could be attributed to the fact that this age group is in most cases not under the parent's care, which are known to take their children to hospital. This is why, only 3.3% of the NP drug buyers were buying drugs for their children. These children therefore formed the least number of NP drug consumers. The 21-25 year old age group also comprises mainly the job seekers who are therefore not in a position to afford consultation fees.

The individuals aged 26-30 years came second and this could be because it is a parenting age, who are likely to consult clinicians about their children's health and in the process get a chance to consult on their own health. Studies indicate that women, owing to their role in the family, particularly in the African family set-up are more inclined to

consulting the doctor more frequently than men because opportunities provided by coincidence attendance with children (WHO, 1998a). This explains why there were more men than women buying the NP drugs.

Individuals below the age of 20 years are still under their parents custody and are therefore not likely to consume the drugs as much as the other age groups. This group reported the least consumption rates.

The male gender dominated in buying the NP drugs. The difference in the gender could be attributed to the fact that there are more males than females in Nairobi (GOK, 2000) and in many cases it is the males who are bread winners and so are likely to purchase drugs more than the females do. Seventy seven point six percent (77.6%) of the NP drug buyers were buying the drugs for their own use. Therefore, most of the males were buying the drugs for their own use. Studies indicate that the health care system favors women, in that the nature of the doctor-patient relationship makes it harder for men to admit to certain symptoms such as sexual dysfunction or depression, and the timing of consultation hours is less likely to enable men to attend (WHO, 1998a). These findings differ with those of Rashed *et al.*, (1999) who reported that owing to their role in the family, women have been reported to be more inclined than men to buying items such as drugs.

Most of the NP drug buyers were single (65.1%). This is because most of them were between the age of 21-25 years and who therefore are just out of school or still in school and therefore the majority in the group would not be married. The married comprised 28.5% of the total number of the married couples with either or both of the partners

working. As a result, they are either under medical cover or do receive medical care at their places of work.

The community literacy level was high as evidenced by the number of respondents who had secondary level of education with some in training (70.2%). However, the misconceptions by some regarding the need for medical consultation following persistence of some conditions indicated a low literacy level in some. For example, one respondent said,

> "There is no need for consultation regarding some issues such as persistent headache because a headache is a headache and cannot be mistaken for something else".

The above statement might not only show lack of knowledge on headaches but may also suggest lack of specificity on the etiology of headaches. In such situations, aggressive health information, education and communication campaigns should be considered to clear the misconceptions.

Employment was an important determinant of the usage of NP drugs by 41.6% of the unemployed. This could be because not all employers provide medical cover and because during the consultation hours the employed are busy at their places of work, they are likely to buy NP drugs. Education level was a determinant of the occupation of the participant, which in turn determined income. Participants in occupations with seasonal variations in income, self-employment, had a lower chance of buying NP drugs compared with those in occupations with constant income. MacCormack *et al.,* (1989) have

documented the same findings, that with seasonal access to cash, households will not consider procurement of health maintaining items a main concern.

The majority of the respondents (71.4%) were not under any medical cover. This explains why they bought the NP drugs because if they were, they would get the service from their insurance agencies. As for the 28.6% of the participants who were under medical cover, their insurance cover may have been partial and therefore could not receive all the necessary health services.

5.3 The types of drugs bought

Painkillers (analgesics) were most demanded with such examples as panadols®, hedex®, indocil® and aspirin®. This could be because in most ailments, what one first experiences is pain, which then persists and translates into something else. In the case of injuries one also needs to get painkillers before getting the appropriate medication in order to ease up the pain. These results match those obtained in Canada where Myalgia and headache sufferers are most likely to self-medicate (Consumer Usage and Attitude study, 1991). However, care should be taken because Non-prescription drugs, such as aspirin and paracetamol (Tylenol® panadol®), if abused, can lead to serious health problems. Over 2000 people worldwide die each year as a result of misusing paracetamols (Awake, 2001).

Chronic disease remedies were second most demanded and consisted of such diseases as ulcers, asthma, diabetes, high blood pressure and arthritis. This can be attributed to the fact that chronic diseases need to be managed using particular medication. Due to

repeated use of these drugs, the patient opts to acquire them over-the-counter, instead of making frequent visits to the doctor.

Antibiotics, Antihistamines and fever remedies were ranked third with some antibiotics being taken alongside the cough remedies to control colds and coughs. Examples were celestamine®, piritons®, tablets and syrup and cough mixtures. These results concur with those from studies carried out by the World Health Organization on developing countries, which stated that antibiotics are commonly used in developing countries due to the high load of infection. Most countries tend to lie in the range of 25-40%, though some are considerably higher (WHO, 1993). In the US, antibiotics now account for nearly 20% of all prescriptions. In some third world countries, they account for more than 45%. They have been among the most widely mispromoted, misprescribed, and misused of all NP drugs. They are administered irrationally: the wrong drug for the wrong patient, in the wrong amounts or at the wrong time, or when no drug was required in the first place (Lydecker *et al.*, 1982). In this category were also antimycotics and antifungals.

Anti malarial drugs were ranked fourth in the list probably because Nairobi is not a malaria endemic area and therefore not many cases of malaria are expected. These drugs consisted of such drugs as Malaraquin®, Metakelfin®, Fancidar® (a combination of pyrimethamine and sulfadoxine), chloroquine, mefloquine (Lariam®), Malarone®, Quinidine, Artemisin®, and dawaquin®.

Medications for general gastrointestinal conditions such as antacids and antihelminths were fifth in the list of the drugs on demand. This included Pepcid®, Zantac®, Actal®, Eno® and Beechams hot lemons® Antihelminths such as Olworm® and ABZ® tablets

were purchased. This could be because not many people are aware of such information as that of the need to deworm.

More men were found to purchase the reproductive drugs such as stamina ® probably because for the women, the family planning drugs are available in many other places such as family planning clinics. According to Blair *et al.*, (2003), women are known to consult the doctor more on reproductive and contraceptive issues, even during opportunities provided by coincident attendance with children.

Dietary supplements came last in the list. This comprised of dietary supplements such as vitamin and iron tablets. However, due to advancement in Science and Technology, people have now become more aware of the need to supplement their diets especially for the elderly to whom some nutrients may not be bio-available. Results by Nielsen, (1996), indicated that in Canada, the use of herbs, vitamins, minerals and other dietary supplements is becoming very popular. As more people used dietary supplements, more interactions were reported.

5.4 The ailments for which the NP drugs were bought

Self-medication practices seem to change with passing years. This is why a contingency coefficient indicated that age explained 53.2% of the variations on the type of drugs purchased. There was also a significant relationship ($p=0.0001$) between age and the type of drugs purchased, and therefore also with the ailments suffered by individuals of different age groups.

However individuals from all ages most demanded painkillers (analgesics) (21.4%). The painkillers were to alleviate headaches, abdominal pains, muscular aches and pains, menstrual pain, ear and even eye pains.

Medications for chronic diseases and infections were ranked second. It accounted for 20.9% of all the drugs that were purchased. This is because the respondents seem to develop a certain comfort level in self-treating chronic conditions of a minor nature. This results match with those of a research carried out in Canada and which indicated that the elderly have lower consumption rates overall, but are heavier users of chronic disease remedies. This could indicate that some ailments become less prominent over time, while others become more bothersome. It also suggests that the elderly are more inclined to seek professional advice, perhaps because they are more likely to be under medical supervision (Palmer *et al.,* 1996). Diabetes is common among the elderly (Carmen, 1991). The age related increase in the prevalence of clinical diabetes and the rapid growth of the elderly population offer challenges to health care providers (Carmen, 1991).

Coughs, colds, ear and eye infections, skin infections, boils, wounds, flu and even tonsillitis were treated using antibiotics and other fever remedies. Antibiotics were ranked third. Coughs and colds are taken as not so serious conditions to warrant visits to the doctor and it is for this reason that these ailments are ranked among the first three. These results differ with those that were tabulated in Canada in 1991, where coughs and cold sufferers were ranked second among other ailments (Canadian Facts, 1991).

Malaria was ranked fourth with the males recording the least number of consumers (7.9%) and then females (15.8%). Nairobi is not a malaria endemic area and therefore, not many cases of the disease are expected. This is why only 12.3% of the total number of respondents bought anti malarial drugs. Sex of the end user was found to account for 27% of the variations on the types of drugs purchased. There was a significant relationship between the sex of the end user and the type of drug purchased ($p = 0.004$). In this case of malaria, this could be attributed to the fact that women are likely to get treatment in hospitals and where in cases of pregnancy, no untoward effects have been demonstrated, but treatment is best deferred, when possible until after the first trimester of pregnancy (WHO, 1990).

Gastrointestinal conditions ranked fifth of the drugs bought. Antacids and medications for general metabolism were purchased by a good number of the respondents (11.1%) to alleviate such conditions as acid reflux, heartbun, for deworming and even Irritable Bowel Syndrome. The stresses in the everyday life of residents of Nairobi could be classified as one among many other causes of acidity that prompt one to go for antacids. Seven percent (7%) of them were women, whereas 3.3% were men. These results concur with some data obtained in the UK which suggests that ulcer perforation rates have risen recently in elderly women whilst they have fallen steeply in younger men (Walter *et al.*, 1991).

The majority of the respondents with gastrointestinal complications fell under the 21-25 years age group. This being an active age group, with a lot of stresses in life as they try to settle and secure employment, it is expected that they would develop a lot of

complications and even ulcers. Similar trends in mortality data may be taking place in Europe, in Holland and Germany. US data, in contrast, suggests that gastric and duodenal ulcer death rates have remained constant since 1979 with a preceding fall, and that age-specific mortality has only risen at extreme old age in women (Walter *et al.*, 1991).

Reproductive health problems accounted for 8.2% of the total number of drugs consumed and were ranked sixth on the list of drugs in demand. The age 21-25 groups accounted for 7.9% drug consumption out of the total 8.2%. Only 0.9% of those aged between 31-35 years bought the reproductive health drugs. This could be attributed to the fact that the 21-25 age groups are more sexually active and not many of them are expected to be parenting at the time because those at the parenting age are expected to be visiting family planning clinics for the same and more services. This can qualify the reason as to why only 0.9% of the respondents purchased the drugs from the family planning clinics. Drugs meant to prevent conception (the morning after pills), to correct erectile dysfunctions, low libido drugs, family planning drugs and those meant to cure infections in the reproductive systems appeared in this list with men demanding for them more than the women. This results match those of Oliech (1984) who indicated that 35% of reproductive failures affect both male and female couples and 49% of the total failures are due to male factors (Oliech, 1984).

Nutritional deficiencies were last in the list of the ailments for which the residents of Nairobi acquire NP drugs. They accounted for 6.1% of the total number of drugs purchased. Individuals with secondary level of education and some training recorded the

highest number of purchases (5.4%) followed only by the degree holders who recorded 0.8% of the total purchases made. Education can be attributed to the above results because only individuals from the two uppermost levels of education purchased these drugs. Education has sensitised individuals on the importance of diet supplementation especially in cases of disease and aging. Females reported more consumption of drugs (3.3%) than their male counterparts (2.9%) because the nutritional supplements are also taken as part of beauty therapy, a practice that is more common with women. An exception to this rule is when poverty comes in as a factor and where even with the knowledge, one is not able to purchase the drugs. Individuals have now become aware the need to supplement their diet particularly in the event of nutritional deficiencies. Most demanded were iron and vitamin tablets which were to be used with other drugs under consumption in order to boost immunity, to raise iron levels in the body and even to promote normal growth and replacement of cells in the body.

5.5 Medical Options

Most of the respondents said that they would resort to seeking medical advice if the drugs turned out not to be effective (80.7%). This is because they have been prompted to visit a health professional. This is information from the media and drug labels, which indicate that if symptoms persist, seek medical advice. Canadians gave a similar response in a research carried out in 1996 (Nielsen, 1996).

Respondents from all kinds of occupations said that they would seek medical advice if the drugs proved to be ineffective (80.7%). There was a significant relationship between

employment and the option resorted to if the drugs failed to be effective. Employment accounted for 31.8% of the variations on the options resorted to if the drugs failed to be effective. This was despite their income levels. Employment therefore has a great impact on the options that customers opted for.

Nineteen percent (19%) of the respondents had used the particular drug that they purchased for one year and more. This indicated that the respondents had received some satisfaction out of utilising the drugs may by eliminating the disease. Seven point five percent had used it for six months whereas 18.7% had used it for one month.

5.6 Sources of information on NP drugs

There was a significant relationship between gender and the source of information on the NP drugs ($p = 0.002$). This is because men do have different interests from those of their female counterparts, and therefore the variations in the source of information on drugs.

Age explained the greatest variation in the sources of information on drugs with a contingency coefficient of 38.1% of the sources of information on drugs. This could be explained by the fact that different age groups have different interests and sources of information. For example, parents are bound to access wider source of materials on health both for themselves and for their families than their children (Justin *et al.*, 2001). The youths are on the other hand more likely to go for materials that look interesting and exciting. The largest number of respondents (43.6%) in the study however quoted previous prescriptions from doctors as their source of information on drugs. These results

match those from a research carried out in Canada, which indicated that doctors are overwhelmingly identified (78%) as the main influence or source of advice for Canadians making the choices about treatment and medical options. While pharmacists and other health professionals round up the list, self-knowledge and recommendations from family and friends play a more important role (Nielsen, 1996).

Thirty point five percent (30.5%) of those interviewed bought the drugs based on their previous knowledge of the disease and its continued use. This is especially for chronic diseases such as asthma, ulcers, high blood pressure, and arthritis. Eight point six percent (8.6%) said that they had known of the disease from friends and relatives whereby drugs sometimes get transferred from one user to the other especially after attaining the desired effect. This is very typical of the ordinary families where individuals exhibiting similar characteristics are made to share or transfer the particular drug in question. Adverts in the media were cited by 16% of the respondents. Previous prescription from doctors was most mentioned having been cited by 43.6% of all the respondents and finally other sources (1.2%) such as pamphlets and brochures.

Twelve point three percent (12.3%) of the men said that they came to know of the drugs through previous knowledge of the disease in which case it was not their first time to buy the drug. This was particularly for those suffering from chronic diseases. Three percent (3%) said that a friend advised them. The largest number of males (46.9%), said that they came to know of the drug from previous prescriptions and 11.9% talked of the media as their source of information. Eighteen point nine percent (18.9%) of the females came to

know of the drug from previous prescriptions. Four point one percent (4.1%) were advised by friends; 4.1% came to know of the drug from the media whereas 18.9% knew about the drug from previous prescriptions. Women making up a total of 1.2% of their sources of information on drugs cited other sources such as literature materials like magazines. These results match with those of WHO (2001), whereby many countries were said to have little or no access to regular, up-to-date drug information, and health workers are most entirely dependent on commercial sources of information, which is a serious constraint on policies to promote rational use of drugs.

Pharmacists are another source of information whereby customers tend to retain medical samples for drugs acquired from the chemists. Old and or copied previous prescriptions are characteristic of those suffering from chronic illnesses. Increase in awareness of their own health due to repeated treatment was also a factor especially in cases of chronic therapy such as asthma, ulcers, and high blood sugar etc.

However, it is worth noting that of all the drug customers, 80.7% said that it was not their first time to buy the drug while 19.3% said that it was their first time to buy the drug. No more expenses were incurred while acquiring the drugs by 74.5%, whereas 25.5% said that they did incur other expenses such as that of undergoing laboratory tests. These tests were done on those who were complaining of such conditions as eye infections and typhoid. Seventy three point nine percent (73.9%) of the respondents did receive guidance from the pharmacy staff. While the remaining 26.1% did not receive any form of guidance. Asked why, some said that they knew how to use the drugs and that for

some drugs such as painkillers and cough or cold remedies; there was no need for professional guidance because they knew how to use them. This indicates that drug consumers are quite oblivious of the dangers paused by persistently using drugs without consulting.

Nineteen point five percent (19.5%) of the respondents said that they had used and known the drug for one year and more. Colds, headaches, and muscle pain were the most complaints in this category. Seven point five percent of the respondents had known the drug for the last 2-6 months, 18.7% for more than one month, 26.1% for a week, whereas 28.2% of them had known the drug for less than a week.

The largest proportion of consumers who have received university education said that they came to know of the drug from previous knowledge of the disease. Point eight percent (0.8%) of the respondents got to know about the drugs from their friends, while 4.1% talked of previous prescriptions from the doctor

For the most part, Nairobi city residents say advertising helps them understand what OTC products are available for different ailments (27.6%). This could further be supported by the fact that most of them are educated and are therefore likely to understand advertisements and drug labels. However, of those 16.3% felt that it was not efficiently done. Thirty point three percent (30.3%) further explained that the adverts do assume the side effects. Fourteen point nine percent (14.9%) felt that drug advertisement should be discouraged because it did not give detailed information, whereas 10.9% were of the opinion that it should be totally discouraged. Advertising is one area in which age seems

to play a significant role in perceptions. The relationship between advertising and product selection reveals some rather extreme regional differences. Very few British Columbians and French Quebeckers say advertising influences them while Anglophones in Quebec report the highest influence (Canadian Health Monitor, 1995).

Of those who were said to have known the drug through previous prescriptions, 3.6% said that the prescription was less than a week old. Twelve point four percent (12.4%) said that the prescription was one week old, 14.8% said that the prescription was more than one month old, 20.7% of them had received the prescription more than two to six months earlier whereas 48.5% were basing their choice of drugs on prescriptions that were more than six months old.

Ninety one percent (91%) of Nairobi city residents say they pay attention to cautions or warnings on NP medications. The same number claim to read the label carefully before using a product for the first time; 80% also read any pamphlets or leaflets enclosed in the package. Most (78%) people say they found the instructions clear and easy to understand and 72% say this information helps them choose the correct products. However, consumers tend to ignore warning labels (in small print) and expiration dates (William, 2001).

5.7 Factors influencing the use of NP drugs

There were more males than females purchasing the NP drugs. The difference in the percentages by gender could be attributed to the fact that there are more males than females in Nairobi and in many cases it is the males who are the main breadwinners and

so are likely to purchase drugs more than do the females (GOK, 2000). Males are also the bread winners and they are therefore likely to purchase items for the family.

However, men report having fewer occasions to use OTC products hence lower consumption rates (44.9%) than women (55.1%). Women are not more disposed to seek treatment, but they do tend to recognise a larger number of conditions as self-diagnosable and self-treatable. They do not take more medications in relation to the incidence of ailments. Rather, their apparent ability to identify appropriate opportunities results in broader and more frequent usage. In addition, consideration must be given to the fact that the two conditions considered in the usage analysis erection problems and menstrual cramps are gender specific and often recurring (Blair *et al.*, 2003).

Education is another prevailing factor, whereby the more educated one gets, the more he/she becomes aware of the non-prescription drugs in the market. Many of the NP drug users aged between 21 and 25 years are jobless and may therefore not afford consultation fees which would be more than they would require to acquire the drug over the counter. They may not also have the commitment and patience to queue in hospitals.

Another factor was employment. The self-employed were fewer than both the employed and the unemployed. The employed were the greatest consumers of NP drugs. The self-employed were the least consumers. This is because; they do not have a constant source of income. The same findings have been documented by MacCormack *et al.*, (1989), who

indicated that households with seasonal access to cash will not consider procurement of health maintaining items, a main concern.

It is perplexing to find that a substantial number of respondents were under medical cover. This perhaps indicates that their respective medical cover could be partial and not comprehensively-covering all the medication expenses.

Drug consumers do trust the pharmaceutical staff and the advice that they give to them. This can be said to be one factor that promotes the usage of non-prescription drugs. Seventy three point nine percent (73.9%) reported to have been asked to explain what they felt if they could not name a disease before being allowed to purchase any drug. However, 26.1% received the drug without having to explain what they felt. This concurs with results from the Health Vision 1996 which indicated that Canadians are most likely to consult a pharmacist for assistance in self-medicating cold symptoms, with 16% of the population doing so on a regular basis. According to Nielsen (1996), consult pharmacies for other minor ailments: stomach upset (11%) and muscle aches (7%). This would be because most dispensers, as it emerged during the in-depth interviews understand the extent to which drugs are being abused and in the process cause adverse effects such as developing drug dependency.

On the cost of the drugs, 22.6% of the respondents felt that the NP drugs were very expensive. Thirty point five percent (30.5%) felt that they were expensive but affordable. Thirty four point two percent (34.2%) rated the NP drug prices as average and therefore

not expensive. Ten point three percent (10.3 %) felt that the NP drugs were slightly less expensive, whereas 2.5% rated them as less expensive. The majority were of the opinion that the NP drugs were affordable particularly for those who were purchasing painkillers such as panadol® and aspirin®. This would explain why they still went ahead and purchased the drugs.

Seventy four point five percent (74.5%) said that they preferred a non-prescription medicine because, there is no queuing as is the case in hospitals, and there are no consultation fees. Others said that they had no confidence in the public healthcare delivery system. Others expressed confidence in pharmacists and especially where they know of professionals of integrity.

It emerged from the in-depth interviews that some pharmacists allowed their customers to buy drugs in small amounts and some regular and entrusted customers could acquire the drugs on credit. In stock were both original and generic drugs and therefore the customers would have a variety to choose from depending on the amount of money available. Eleven point three percent (11.3%) of the respondents claimed to have known the staff and were therefore confident that they would receive good services. Five point two percent (5.2%) said that the chemist had qualified retailing personnel whom they therefore trusted. Their customers know some of these pharmacists as "daktari", a Swahili name for a clinician.

On enquiring how long they had been using the drug, 28.2% said that they had used the drug for one day, 26.1% for one week, 18.7% for one month, 7.5% for the last six months

and 19.5% for one year or more. Of those who were said to have known the drug through previous prescriptions, 5.2% said that the prescription was less than a week old. Eleven percent (11%) said that the prescription was one week old, 14.2% said that the prescription was more than one month old, 19.4% of them had received the prescription more than two to six months earlier whereas 50.3% were basing their choice of drugs on prescriptions that were more than six months old. The continued use of these drugs can be attributed to the temporal relief of most symptoms treated and convenience of self-treatment (William, 2001).

Seventy seven point six percent (77.6%) responded while they were acquiring drugs for their own consumption. This clearly indicates that the information got from them during the interview is a good representation of the situation on the ground. Ten point six percent (10.6%) said that they were getting the drugs for use by their friend, 3.3% for their children and 4.1% for their spouses.

For the non-prescription drug users, there are multiple brands that include the same active ingredient(s). Well-known national brand names and drug store brands were said to afford the consumer the opportunity to select a specific brand of a given drug substance on the basis of a variety of factors including but not limited to price per unit dose. According to some pharmacists, as with all other consumer goods markets, consumers also express preferences by their purchasing habits for other product attributes (Nielsen, 1996). This was quite evident in the field where customers bought different brands of products for the same condition or disease. Cough and cold remedies recorded the vast majority of brands such as Calpol ® and Brufen ®.

There were complaints on the drug prices with some suggesting that drug prices should be reduced. Thirty six point eight (36.8%) were of the opinion that the cost of drugs should be reduced. Thirteen percent said that there was a need for more awareness to be created on the new drugs in the market. Forty five point four percent (45.4%) wanted more qualified personnel recruited.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

1. Several factors such as age, gender, occupation, religion, marital status, medical cover and level of education promote the usage of NP drugs.
2. The types of NP drugs in most demand are painkillers, chronic disease remedies, antibiotics, anti malarials, antibiotics/medications for general metabolism; reproductive health drugs and others which include ear and eye ointments and vitamin and iron tablets.
3. The NP drugs were for the alleviation of pain; management of chronic diseases, general infections such as coughs and colds, malaria, for family planning, to correct erectile dysfunctions, anaemia and nutritional disorders.
4. The NP drug consumers would resort to such options as seeking medical advice, seeking advice from the pharmaceutical staff, picking on another drug, trying out some herbal medicine, and others which included faith healing and waiting for the disease to disappear on it's own in that order.
5. The drug consumers come to know of these drugs from such sources as previous prescription from a doctor, previous knowledge of the disease, advert in the media, advice from friends and others sources such as health seminars.
6. Pharmacists have a role to play in promoting the use of NP drugs.

6.2 RECOMMENDATIONS

1. There is need for a supportive infrastructure by all stakeholders in promoting public health education on rational usage of drugs.
2. More stringent measures should be taken against those who offer misleading information on non-prescription drugs
3. Public health education has an important role to play to influence these decisions on drug usage positively.

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APPENDICES

APPENDIX 1:

QUESTIONNAIRE FOR THE CONSUMERS OF NON-PRESCRIPTION DRUGS.

I am Judy Wairimu, a student at Kenyatta University, pursuing a Masters Course in Public Health and Epidemiology. This study is interested in establishing the usage of non-prescription drugs by the residents of Nairobi. I therefore ask you to be as truthful as possible in answering the questionnaire. I also assure you that the data will only be used for the purposes of this study only so confidentiality will be guaranteed.

Socio-demographic data

Gender

1.Male ( )

2. Female ( )

1. **How old are you?** ( )

2. **What is your marital status?**

1.Single ( ) 2. Married ( )

3. Divorced ( ) 4. Widowed ( ) 5.

3. **What is your Occupation**

1. Employed ( ) 2. Self-employed ( )

3. Unemployed ( )

4. **Highest level of Education**

1. None ( ) 2. Primary ( )

3. Secondary ( ) 4. Secondary with some training ( )

5. Tertiary ( )

5. **What is your religion**?

1. Catholic ( ) 2. Protestant ( ) 3. African Traditional Religions ( )

4. Muslims ( ) 5. Other ( )

6. **Are you under any medical cover**? 1. Yes ( ) 2. No ( )

If yes, which one?

Knowledge Assessment

7. **Which medicine have you bought**?

8. **For What ailment/disease is it**?

9. **Who will use the drug purchased**?

1. Me ( ) 2. A Friend ( ) 3. My children ( ) 4. Spouse ( )

5. Others ( ), Specify.

10. **Is the person under any medical cover**? 1. Yes ( ) 2. No ( )

If Yes, which one?

11. **What is the age of the end user?**

12. **What is the sex of the end user**? 1. Male ( ) 2. Female ( )

13. **For how long have you or the person been using the drug?**

a. one day ( ) 2. One Week ( ) 3. One month ( )

4. Six months ( ) 5. One year ( )

14. **What made you purchase this drug**?

1. Previous knowledge of the disease ( )

2. Advice from a friend ( ) 3. Advert in the media ( )

4. Previous prescription form the doctor ( )

5. Others ( ) If others, specify.

15. If it was from previous prescription, how long ago was that?

1. Less than a week ago ( ) 2. One week ( ) 3. One month ago ( )

4. 1-6 months ago ( ) 5. More than six months ago ( )

Practice Assessment

16. **Is it your first time to buy it**? 1. Yes ( ) 2. No ( )

17. **Have you tried any traditional medicine**? 1. Yes ( ) 2. No ( )

If yes, which one?

18. What do you think about traditional medicines?

19.Why did you prefer this chemist?

20. **What would be the next course of action if the drug does not work?**

1. Seek medical advice ( ) 2. Pick on another drug ( ) 3. Get advice from the Pharmacy staff ( ) 4. Try out some herbal medicine ( ) 5.Others.

If others, specify.

Attitude Assessment

21. What is your general feeling about the cost of the drugs?

1. Very expensive ( ) 2. Expensive ( ) 3. Average ( )

4. Slightly less expensive ( ) 5. Less expensive ( )

22. Are there other costs incurred other than the direct purchasing amount?

1. Yes ( ) 2. No ( ). If yes, which ones?

23. **Did you get any guidance from the pharmacy staffs?** 1. Yes ( ) 2. No ( )

If yes, how would you rate their guidance?

1. Very Appropriate ( ) 2. Appropriate ( ) 3. Average ( ) 4. Less appropriate ( )

5. Poor ( )

24. **When you were buying the drug(s) were you asked what disease or ailment you were buying the drugs for?** 1. Yes ( ) 2. No ( )

25. **Given an option, would you prefer to buy drugs with or without a doctor's prescription?** 1. Yes ( ) 2. No ( ). **Give reasons for your answer**

26. **What do you think about drug labels, pamphlets or leaflets?**

1. Vitally important 2. Important 3. Sometimes important 4. Less Important

5. Not Important.

27. **Why did you decide to buy from this chemist?**

28. **How much have you spent on the drug?**

29. **Are there other costs incurred other than the direct purchasing amount?**

1. Yes ( ) 2. No ( ).

If Yes which ones?

30. **In your opinion, what should be done in order to improve on the services that you have just received?**

31. **Do you think that the care you got was the best?**

Explain.

32. **What do you think about drug advertisement in the media?**

APPENDIX 2:

AN IN-DEPTH INTERVIEW WITH THE RETAILING STAFF.

Thank you very much for your time. I am a student at Kenyatta University and I am carrying out a study to establish the usage of non-prescription drugs by residents of Nairobi.

1. What non-prescription drugs are most demanded for?

2. Where in your opinion do your customers get to know of these drugs?

3. For what ailments do customers get non-prescription drugs?

4. Why do customers prefer to use the non-prescription drugs to consulting the doctors?

5. Do you know of any drugs that should not be sold over the counter without a doctor's prescription? 1. Yes ( ) 2. No ( ). If yes, which ones?

6. What do you think should be done to improve the quality of services provided to the non-prescription dug users?

7. Do those who buy the non-prescription drugs seek guidance on the drugs they buy? If yes, how often?

Judy Wairimu Mugo,
Kenyatta University,
Reg. No. I57/7765/02
4th August, 2003

To,
The Director,
Board of Post Graduate Studies,
Kenyatta University.

Thro'
The Dean,
School of Pure and Applied Sciences.

Thro'
The Chairperson,
Department of Zoology.

Thro'
The Supervisor,
Dr. E. Kabiru.

RE: CLEARANCE TO CARRY OUT A RESEARCH

I am a student taking a Masters Degree in Public Health and Epidemiology in the above named university.

I have successfully completed my course work and I am now prepared to carry out my research project. My research title is "The Usage of Non- prescription Drugs by residents of Nairobi."

Thank you.

Yours Faithfully,

Judy Wairimu Mugo.

KENYATTA UNIVERSITY
BOARD OF POSTGRADUATE STUDIES

P.O. Box 43844,
NAIROBI
Tel. No. 810901/9 Ext. 57530
E-mail: kubps@yahoo.com

Our Ref: 157/7765/2002 **Date:** 19th August, 2003
Your Ref:

The Permanent Secretary,
Ministry of Education, Science & Technology,
P.O.Box 30040
NAIROBI.

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION:

I write to introduce Ms. Judy Wairimu Mugo who is a Postgraduate Student of this University. She is registered for a Master of Public Health and Epidemiology (M.P.H.E) degree programme in the Department of Zoology.

Ms. Mugo intends to conduct research for a project entitled, "The Usage of Non-Prescription Drugs by Residents of Nairobi", as a partial fulfillment of the requirement of her degree programme..

Any assistance given to her will be highly appreciated.

Yours faithfully,

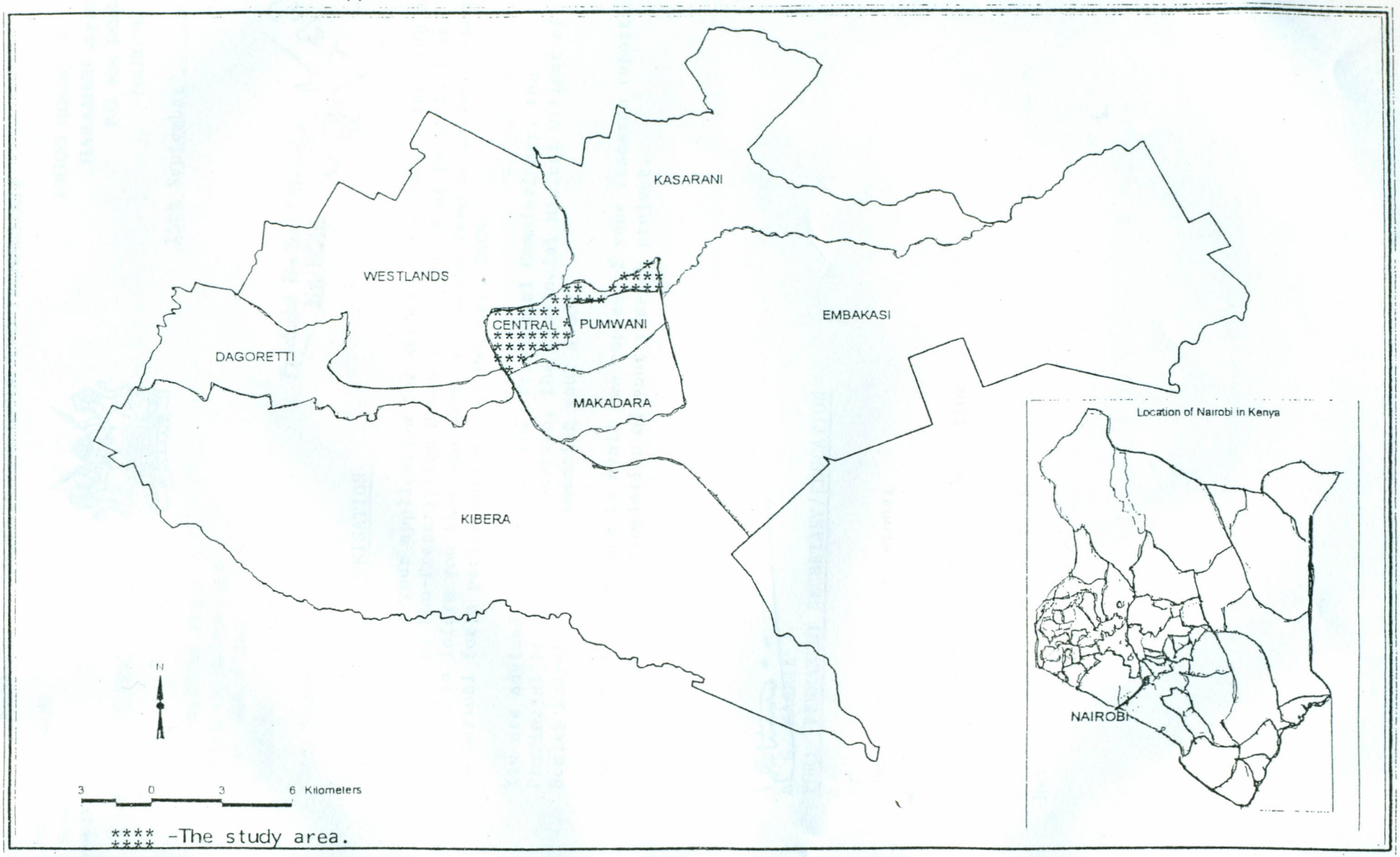
KENYATTA UNIVERSITY
THE OFFICE OF THE DIRECTOR

J.O. IFUKHO
FOR DIRECTOR, BOARD OF POSTGRADUATE STUDIES

C.C. Registrar (Academic)
Director, BPS - to see on file
Dean, School of Pure & Applied Sciences.
Chairman, Zoology Dept.

JOI:sa

Appendix 5: NAIROBI ADMINISTRATIVE DIVISIONS (Inset, the map of Kenya showing the position of Nairobi



**** -The study area.

Source: Central Bureau of Statistics

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

Telegrams: "EDUCATION", Nairobi
Telephone: Nairobi 334411
When replying please quote

Ref. No. ...MOEST.13/001/33C 245/2
and date

JOGOO HOUSE "B"
HARAMBEE AVENUE
P.O. Box 30040
NAIROBI

15th September, 20..03

Judy Wairimu Mugo
Kenyatta University
P.O. BOX 43844
NAIROBI

Provincial Medical Officer
NAIROBI
O.K. 28/10/03

Dear Madam

RE: RESEARCH AUTHORISATION

Please refer to your application for authority to conduct research on 'the usage of Non-Prescription Drugs by Residents of Nairobi, I am pleased to inform you that you have been authorised to conduct researc in Nariobi for a period ending 30th October, 2004.

You are advised to report to the Provincial Commissioner, the Provincial Director of Education, the Provincial Medical Officer of Health Nairobi before commencing your study.

You are further advised to avail two copies of your research report to this Office upon cimpletion of your reserch project.

Yours faithfully

A. G. KAARIA
FOR: PERMANENT SECRETARY/EDUCATION

CC
The Provincial Commissioner
Nairobi

The Provincial Director of Education
Nairobi

The Provincial Medical Officer of Health
Nairobi

APPENDIX 7: A LIST OF THE SAMPLED NON-PRESCRIPTION DRUGS

Type of Drug	Sampled brand names
Painkillers	Panadol®, hedex®, indocil®, aspirin®, tylenol®, Cafenol®, Maramoja®, Brufen®, maxadol®, diclofenac®, piroxicam®, nimesulide®, indomethanol®, APC®, meloxicam®, buscopan® and nauma®.
Anti malarial	Malaraquin®, Metakelfin®, Fancidar®, Lariam®, Malarone®, Quinidine®, Artemisin®, Dawaquin®, amodiaquin®, cotecxin®, arinale®, arsumax®, coartem®, mefloquine®, artequin® and lapdap®.
Antibiotics/Respiratory Medications	Celestamine®, Clob b®, Piritons®, Strepsils®, Candida®, Calpol®, Brufen®, tetracycline®, amoxil®, septrin®, ampiclex®, flagyl®, ceclor®, zinnat®, augmentin®, doxycycline®, tetracycline®, norfloxacin®, betasone®, cetrizine®, prednisolone®, polaramine®, claritine® and astemizole®.
Reproductive health medications	Stamina®, Postinor 2® KY gel®,Femiplan®, vitamax®, vega®, viagra®, cialis®, microgynon®, microlut® and spermicides.
Gastrointestinal Medications	Pepcid®, Zantac®, Actal tums®, Eno®, Beechams hot lemons®, Olworm®, ABZ®, maalex®, relcer gel®, flatameal®, viscid®, alugel®, ulgel®, gaviscon®, mebendazole®,levamisole®, zentel® and niclosemide®.

Chronic disease Medications	Franol®, Fluoxetine®, Ventolin®, solarex®, dricany®, berotec®, accolade®, bambuterol®, prepanolol®, aldomet®, lisinopril®, zosoretic-20®, nifedipine®, hydrallazine®, artenolel®, insulin®, glitenclamide®, glucophage®, ameprazole®, ranitidine®, cimetidine®, esomepazole®, bismuth sulphate®, triple therapy kit, dual therapy kit.
Others	Scott's Emulsion®, Gripe water®, Listerine®, mixavit®, multivitamins® roofer®, canferon®, ferro B®, Feso4®, folic acid®, clotrimazole®, hydrocortisone®, betamethasme®, ketokenazole®, histamine cream®, zovirax®, gentamyan®, tetracycline®, hydrocortisone®, miconazole®, betamethasme®, cellulose®, zovirax®, ciprofloxacin®, chloramphenicol® ,oxytetracycline® , pontel's® and no marks®.