

**AN EXPLORATION OF THE PRACTICE OF PRESCRIBING
AND USE OF MEDICINES, WITH A SPECIAL FOCUS ON
SELF-MEDICATION PRACTICES IN THE CONTEXT OF
DEVELOPING REFORM WITHIN THE HEALTH CARE
SYSTEM IN KURDISTAN-IRAQ**

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Abstract

This research has been undertaken to evaluate factors with an association with the practice of self-medication amongst respondents living within three cities within Kurdistan. The research was designed to be a cross-sectional one by arranging for data collection through the direct interviewing of respondents via the use of a questionnaire that had been prepared previously. In total, the investigation involved 627 pharmacist participants, 647 general participants, and 28 interviewees from various age groups. An explanatory design is a mixed methods approach with two phases, with quantitative data collection in the first phase, and qualitative data collection in a second; data collection was conducted using a non-probability convenience sampling technique. The primary reason for self-medication practice was that participants with previous experience of attending to the same disease. The information source regarding self-medicated drugs were previous prescriptions, community pharmacies and friends. The most common indication for self-medication was the common cold or fever/headache/infection, the drugs used to treat these conditions being most commonly antibiotics, then painkillers and preparations for coughs. From the general public, a sample of 647 participants was taken that consisted of 38.4% females and 61.6% males, with participant ages ranging from 18-70 years. Within the study, 12.4% of the cohort had a degree level of education from a university. Moreover, 243 participants had the belief that it was an acceptable practice to purchase antibiotics without a prescription. Self-medication was practiced by 14/28 of the interviewees, and 28/28 (100%) of the interviewees held the belief that the pharmacy always has someone with knowledge of medicines, and who can advise and provide medication. There were 627 pharmacist participants, of which 28.1% were female and 71.9% were male, and 57.2% of them holding a Diploma in Health Institution, and 39.2% of them having a Bachelors Pharmacy degree. 20.7% of participants disagreed with keeping records for the dispensing of drugs, and approximately 20% of participants had little or no ideas regarding the characteristics of pharmacy practice that are considered professional. It was discovered that, if asked by the customer, advice was provided by 82.5% of community pharmacists. The sale of antibiotics was the most common, followed by pain-killers. A 95.5% proportion of pharmacists sold all of the medicines as OTC medicine without prescription. In conclusion, medicines are used by the people of Kurdistan in an inventive way, with suggestions provided by lay people and members of

family or friends, which is acted upon without a qualified healthcare professional being consulted.

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List of Abbreviations

WHO	World Health Organisation
OTC	Over The Counter
UK	United Kingdom
NSAIDs	Nonsteroidal Anti-Inflammatory Drug
GI	Gastrointestinal
GNP	Gross National Product
POM	Prescription Only Medicine
GSL	General Sale List
P	Pharmacy Medicine
KRG	Kurdistan Regional Government
KR	Kurdish Region
KDP	Kurdistan Democratic Party
PUK	Patriotic Union Kurdistan
MOH	Ministry of Health
PHC	Primary Health Care
US	United State
NGO	Nongovernmental Organisation
IDPs	Internally Displaced Person
TB	Tuberculosis
UAE	United Arab Emirate
WMA	World Medical Association
IKPS	Iraq Kurdistan Syndicate of Pharmacists

Glossaries and definitions

Self-care: self-care is defined as the care that individuals administer to themselves in order to manage illness and improve their health, supported by information and experience gained independently and through the guidance of healthcare professionals, and administered either alongside professional care or independent of professional intervention.

Self-medication: is defined as the acquisition and consumption of drugs without advice of a physician either for diagnosis, prescription or surveillance of treatment.

WHO: The application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of life.

Antibiotic resistance: The ability of bacteria and other microorganisms to resist the effects of an antibiotic to which they were once sensitive. Antibiotic resistance is a major concern of overuse of antibiotics. Also known as drug resistance.

Antibiotic: A drug used to treat bacterial infections. Antibiotics have no effect on viral infections.

NSAIDs, or non-steroidal anti-inflammatory drugs: are a class of drugs that work to decrease blood levels of prostaglandins, chemicals that promote inflammation and pain. Effective for the **treatment of inflammation**, mild to moderate pain, and fever

OTC drugs: are defined as drugs that are safe and effective for use by the general public without seeking treatment by a health professional.

pharmacy: a place where medicines are compounded or dispensed

Pharmacist: a person who is professionally qualified to prepare and dispense medicinal drugs.

Pharmacist Assistant: an employee who works alongside licensed pharmacists and pharmacy technicians to help process prescriptions, but in Kurdistan such staff run their own pharmacies.

CHAPTER 1: INTRODUCTION TO THE STUDY

SECTION: 1

1.1.1 Introduction

The main objective of this Introduction is to provide a brief summary as well as a description of the research contents. Here, the nature of the research problems and the background of the study have been outlined. In addition, this chapter provides a framework for the research methodology applied, explores the research questions of the study and its goals. The Chapter shows the importance of the study and provides the structure of the thesis.

1.1.2 Background to the study.

Personal health and well-being have long been enhanced through various types of self-care behaviour. Many definitions of the term 'self-care' exist, with the WHO/DAP (1998) explaining that self-care refers to a holistic element of care that is provided as part of the delivery of healthcare, or as form of healthcare that serves as an enhancement to the care delivered by healthcare professionals. Others, such as Betsy et. al. (2001), define self-care as the care that individuals administer to themselves in order to manage illness and improve their health, supported by information and experience gained independently and through the guidance of healthcare professionals, and administered either alongside professional care or independent of professional intervention. Additionally, self-care has also been defined not as a type of lay medicine, but as a source of it.

Many factors have been attributed to the ongoing rise in both self-medication and self-care. Such factors include: increased and exorbitant expenses on health services; the increased desire to control various illnesses through self-medication; socio-economic factors; changes in the pattern of diseases; lifestyle; and increased and enhanced access to medication and self-care products (Nancy et. al. 1997).

However, all definitions of self-care agreed on some major concepts. According to Betsy et. al. (2001), self-treatment, self-medication, and diagnosis, as well as patient participation in proficient care, are important factors.

There are various definitions of self-medication. According to a professional consultative group from the WHO, self-medication can be defined as the choice and use of drugs by persons to cure self-recognized diseases or else symptoms (WHO 1993). According to Nancy

et. al. (1997), self-medication is one constituent of self-care. Moreover, Montastructural (1997), described self-medication as consuming or obtaining one or more medications with no proper instructions on surveillance, prescription or diagnosis of the treatment from the doctor. According to, Caulin et. al. (2000), "a self-medication drug is one that is precisely appropriate for use devoid of any physician's instruction".

Moreover, Caulin, et. al. (2000), argues that three essential issues need to be considered before manufacturing such medicinal products - their quality, efficacies and safety. Populations of both developing and developed countries use self-medication. This is according to the WHO Expert Committee on National Drug policies in the year 1995 (WHO 1995). The National Drug Regulatory Authority plays a key role in approving the safety of self-medication. In most cases, self-medication is used where medical consultation is not required, particularly in treating or preventing symptoms or minor ailments. According to the WHO (1995), self-medication is possible with the doctor retaining an advisory role, especially in recurring and chronic diseases after the first diagnosis and prescription.

It is normal for every individual to experience health problems. Such health problems may include major or minor disorders which, in turn, may trigger the need for a rapid medical response. In such cases, an individual may decide to self-medicate, especially if it is not possible to obtain medical help. Self-medication is referred to as the constant use of prescribed drugs for persistent, chronic illnesses or symptoms. It can also be described as the use of drugs to cure self-diagnosed illnesses or symptoms, or the recurrent diseases. According to Abdelmoneem et. al. (2005), self-medication is generally selected by customers for symptoms they find upsetting in order to necessitate drug therapy, but again not validate consultation with a prescriber.

There is a misunderstanding of the term 'non-medical description', between its meaning and the definition of self-medication, abuse as well misuse in relation to banned drugs and medicine in general. The above three terms are confused, and hence individuals tend to use each in place of the other. To start with, drug abuse mainly occurs where there is the use of prescription drugs. On the other hand, drug misuse takes place when a person uses prescribed drugs to treat a disease which differs from the one for which it was originally intended. By contrast, Fields et. al. (2004), defines drug misuse as when a person uses a legal drug which was not prescribed for them.

Therefore, misuse can be said to be the inappropriate use of prescribed drugs. This is mainly in cases where a person uses such drugs for therapeutic purposes but not for recreation. Also, if a person takes drugs at doses that were not intended by the doctor, this is also considered to be drug misuse. This predominantly takes place when a person wants to get well faster. Drug misuse occurs when a person uses drugs improperly for therapeutic benefits. This does not include the use of improper drugs for recreational use. On the contrary, medicine misuse occurs when a person takes a drug for pleasure, euphoria and ecstasy purposes repetitively. This does not include taking such drugs for therapeutic reasons.

The main difference of intent clearly distinguishes between drug abuse and drug misuse. Surprisingly, it is unusual to say that an individual is abusing pharmaceuticals by just taking a glance at him or her. According to Michael et. al. (2010), if a person shows significant physical, psychological and social limitations after taking improper unprescribed medicines, and then this confirms that medicine abuse has taken place, the Department of Health London's Clinical Guideline (Dr Jenny, K. 1991) 'Drug Misuse' provided various definitions of "drug misuse". Drug Misuse: used to signify drug taking which is risky or detrimental and unauthorized by expert or cultural standards. It is generally equivalent to such terms as "problem drug taking" and "drug abuse". Drug Dependence: This is mainly used to describe that altered corporeal and emotional condition which leads to troubled physical and psychological functioning when the drug is tersely withdrawn. It is largely equivalent to addiction.

There are many variations in the definition of abuse and misuse. This is largely because their definitions depend on judgments, which vary in line with community and personal attitudes. Such definitions vary from culture to culture, and are recurrent. Drug misuse consists of drug abuse and unsuitable drug use. According to Rathbone (1988), drug abuse is defined as drug use that has negative effects on the society and the user. Such drugs are condemned in the society. On the other hand, drug misuse is referred to as use of drugs for genuine medical purposes in an improper way, such as the use of a drug for a lengthier period than prescribed, or at a higher dose than that recommended on the manufacturer's original pack.

According to Hughes, McElnay, Hughes, and McKenna (1999), and Wazaify et. al. (2006), all drug products may be misused, although there are some products that are more likely to be abused such as those that do not require a prescription, and over the counter (OTC) (over-the-counter) products as well as products that contain opioids.

1.1.3 Research questions

A number of important research questions related to this research study include:

1. What are the reasons behind the rising overuse of drugs in Kurdistan?
2. What is the role of community pharmacies in the inappropriate use of medicine?
3. What are the reasons for escalations in self-medication in Kurdistan?
4. What are the unsuitable uses of medicine in the Kurdistan region?

1.1.4 Research aims and objectives

The main aim of this study is to evaluate the use of medicine of self-medication and medicine consumers' practices, in addition to affecting factors in the population. Moreover, this study aims to assess factors that influence the level and extent of self-medication that takes place. In addition, this study aims to discover behaviours, attitudes and knowledge of the citizens of Kurdish people who self medicate. The objectives of the study are:

1. To identify the dangers of buying medicines on standby and self-medication.
2. To determine reasons why patients, use unsuitable pharmaceutical drugs.
3. To determine the occurrence of self-medication with antibiotics, and to assess aspects related to this process.
4. To inspect the health system in the Iraqi-Kurdistan area from medical experts' viewpoints, and attempt to define its difficulties and priorities for enhancement.
5. To examine the degree to which public pharmacies in Kurdistan have an effective control over the unsuitable use of medications.
6. To establish the opinions of the community regarding community pharmacy services.
7. To gain an improved understanding of drug use and aspects affecting self-medication in the population (which is important for implementing appropriate interventional strategies).
8. To seek and find reasons for the cumulative statistics associated with the improper use of medicines and their overuse in the Kurdistan region.

1.1.5 Significance of the study

Self-medication is a practice that first arose long time ago. This practice varies from one culture to another. Moreover, the nature and the degree of self-medication varies greatly with educational level and social setting. Surprisingly, a recent study (Kriss R 2010) has revealed that self-medication is increasing, despite the fact that doctors are becoming more accessible and available.

Cindy et. al. (1989) argue that self-medication is highly practiced in most of the developing countries such as Iraq. Here, self-medication contributes to approximately 50-90% of the total therapeutic interventions. Research shows that people in developing countries such as Kurdistan and Iraq buy non-prescription drugs from public pharmacies. They then use such drugs without seeking a doctor's guidance. Such improper use of drugs comes with serious and harmful health effects on the users. Indeed, there has been no information on self-treatment practices that are carried out in Kurdistan. As a result, experimental research was performed in order to evaluate self-medication patterns by users in Baghdad. In this case, demographic features, the forms of bought drugs for self-treatment, source of data, and reasons for such exercise and demographic features were determined.

Among of eighty-four respondents, ninety percent of them reported medical clinics in their residential area and it was found that 85.7% of the total purchased drugs for self-treatment were antibiotics. Such medicines were bought devoid of authorized prescription from an experienced prescriber. Among the treated illnesses include diarrhea or constipation (64.3%), cold or cough (79.8%), and headache (76.2%). There are various risks related to such practices, which include antimicrobial resistance, drug interaction and inappropriate diagnosis. Iraq has to educate the public about the health risks. Moreover, pharmacists should play a crucial role in educating the clients on proper uses for the drugs involved.

Inas, R (2012), argue that pharmacy curriculum ought to include introductory pharmacy topics as well as constant education programs for the pharmacists. Most of the people practice self-medication to lessen pain, prevent diseases and get rid with some distress. Such factors comprise of cultural thoughtfulness and preferences for particular forms of medication to financial concerns. Such factors have a great impact on the choice of drugs in the market place. Moreover, political issues have the effect of regulates the availability of

medicine. Marketing campaigns plays a crucial role in creating awareness hence boosting the demand from the consumers, (Nancy V. et al 1997).

There has been an increase in the number of drugs that are sold over the counter as compared to prescribed medicines. This has led to increase in public health concern on self-medication since the year 1980's. Self-medication has then become a global issue and the negative impacts on physicians, patients as well as pharmacists. According to Anderson, J. et al, (1997), most of the developing countries still encourage the use of the unfavorable medicine that has risky effects on the users. Such drugs were demanded by the consumers, manufactured, prescribed by the experts and recommended by pharmacies.

There is higher prevalence of self-medication in industrialised nations. This is according to various current researches, which revealed that such prevalence is barely comparable to that of developing nations in qualitative as well as quantitative characteristics. According to Cindy L.K. et al, (1989), various factors lead to over counter form of self-medication in people. These factors include; demographic factors for instance age, morbidity, education, gender and income; economic and political variability; absence of periodic consultation; lack of firm health care system, that support the provision of health services in sensible cost.

Drugs contain chemicals, which have both positive and negative effects on human beings. This is because they have the power to heal or kill. Creating awareness on the risks of self-medication on the users is very important. Among the negative effects of self-medication include; delay in appropriate treatment and diagnosis; drug resistance; adverse drug reactions; improper use of drugs; drug abuse and drug interaction.

From the above discussions, the following features highlight the importance of the study:

1. The key challenges regarding knowledge of drugs by consumers are determined using the problems faced in Kurdistan. After identifying the gaps in such drug understanding, it will be possible to negotiate and implement policies, rules and regulations regarding the use of drugs.
2. This study explores reasons why service users practice self-medication in Kurdistan.
3. This study evaluates the degree to which public pharmacies in Kurdistan have an effective control over the unsuitable use of medicines.
4. Strategies and policies to enhance improved healthcare services in Kurdistan will be possible, since there will be an enhanced level of understanding of the factors and reasons behind self-medication.

5. This study determines the occurrence of self-medication with antibiotics, and to assess aspects related to such patterns.
6. This study attempts to evaluate patient understanding of the medicines adverse consequences together with challenges associated with self-medication.
7. This study inspects the health system in the Iraqi-Kurdistan area from medical experts' viewpoints and attempt to define its difficulties, and priorities for enhancement.
8. Discover the whys and wherefores of selecting the source of treatment for instance self-medication, traditional healers and health facilities.

1.1.6 Overview of the research methods employed

Data were gathered from healthcare professionals, pharmacist, and associated decisions in addition to the public using a two-phase mixed technique. Primarily, phase one consisted of the collection and analysis of quantitative data. Whereas phase 2 comprised the collection of qualitative data after the phase one finding were collated.

Questionnaires were used to interview 1,450 participants in phase 1. Amongst them were 750 public and 700 pharmacists. 28 participants from similar fields were chosen for semi-structured interviews in phase 2. According to (Creswell et al., 2003; Creswell and Clark, 2007; Plano Clark and Creswell, 2011), phase 2 plays a key role in providing a unfathomable meaning of the data set provided since it helps researchers to gain improved understanding of the preliminary outcomes qualitatively.

Encompassed in this is knowledge of participants regarding the use of drugs, as well as reasons as to why they practice self-medication rather than prescribed drugs. The main purpose of the first phase was to assess the present knowledge of participation concerning the proper use of medicines their health problem and to reconnoitre any factors regarding improvements in self-medication for management.

In order to determine the relationship between the variable trends, a quantitative approach is required. The major purpose of the second phase was to reveal and quality information required by decision makers and experts. Moreover, the second phase attempts to determines whether the experts and the participants are aware that the public and the pharmacies were or were not adhering to health policies. In this case, the qualitative approach is best placed to answer such questions.

Table (1.1) Illustrates phase two of the study that was performed with the list of set objectives, corresponding sample sizes in addition to the methods used to gather.

Chapter	Sample	No.	Design	Method of data collection	Objectives
3	Pharmacist and general public participants	1450	Mixed method, Qualitative and Quantitative.	Questionnaire	Survey the present knowledge of participation concerning the correct use of medicines and to reconnoiter any factors that serve as improvements to self-medication
3	Healthcare expert, pharmacists, decision maker	28	Mixed method Quantitative and Qualitative	Semi-structured interview	Understanding what type of information the decision makers, participants, and healthcare professionals have.

1.1.7 Thesis outline

This thesis has been categorised into five chapters as described below;

Chapter 1

Introduction to the study, nature of the research problem, the problem to be addressed and the purpose of the study has been covered in this chapter. Moreover, this chapter highlights an outline of the research methodology, the research questions and the objectives of the study.

Also literature associated with the concept of self-medication has been reviewed in this chapter. It also reveals diverse concepts of self-medication and other aspects related to this process. The positive and negative effects of side effects have been explored also.

Chapter 2

The techniques used in the present study, and its methodology and research design are presented in this chapter. In addition, a description and basis for effecting a mixed methods approach has been provided here. This chapter also provides a summary of the two-phase study design. The data collection methods, sampling method, recruitment of participants and data analysis are also performed provided in this chapter.

Chapter 3

In this chapter, there is an analysis and presentation of data from 1,304 participants. This services to determine factors promoting self-medication and also discover information regarding drug consumers in addition to the practicing of medicine in Kurdistan. Data were gathered using two questionnaires in phase one. These are; (1) the general public questionnaire and (2) the pharmacist questionnaire. And interview in phase two. Correlations between self-medication, knowledge of drug users, practicing of medicine together with demographic factors for example age, gender, as well as education are discussed in detail.

Chapter 4

The discussions of the main findings of the study are presented in this chapter. It considers these with reference to previous literature that connects to the unsuitable uses of self-medication and medicine.

Chapter 5

This chapter addresses the conclusions that were drawn from this research study. Here, various limitations of the study are highlighted. Moreover, recommendations, in addition to proposals for upcoming areas of research, are provided these considerations are based on the research conclusions.

Appendix 1

This appendix describes and discusses the Kurdistan healthcare rescue system and aspects behind its progress and also provides a short outline of key demographics, including health status. In Kurdish Islamic culture, there are a number of specific socio-cultural aspects that are related to the health system. The information and training system available has led service users to understand the importance and proper use of medication.

Appendix 2

The concept of medicine management as well as the present prominence of the pharmacy will be discussed in this appendix. Moreover, it discusses more on the drug delivery system in Kurdistan and its pharmacy service. This appendix also discusses the responsibilities of public pharmacists in Kurdistan.

CHAPTER 1: LITERATURE REVIEW TO THE STUDY

SECTION:2

1.2.1 Self-care

In essence, self-care is the most popular and, indeed, oldest form of healthcare behaviour affecting people. The situation with regard to self-care these days arises from the evolution of attitudes towards individual roles in healthcare and developments in this sector generally (Betsy et al., 2001). Formal healthcare services have witnessed rapid changes with regard to their organisation, their content and their delivery, and this has further maintained the concept of self-care and associated theories. Health was centered upon medicines, doctors and health problems up until the 1960s, with patients seen as passive recipients of advice and prescriptions. By the 1970s, however, a shift in focus was based upon aspects of daily life, and in the 1980s, a more active attitude towards health became the focus for people. By the 1990s, people became more like consumers, playing an active role in the management of illnesses that they had and, in taking a more balanced perspective on health, took a greater interest in the prevention of illnesses and in taking options for self-care (Lau et al., 2000). As Betsy et al. (2001) noted, however, all self-care definitions agreed that its main concepts were self-treatment, diagnosis, self-medication, or the participation of patients within professional care. In the future, there is likely to be an increase in self-medication and self-care for a number of reasons, such as lifestyle, changing patterns of disease, the cost of healthcare services being prohibitive or higher, readily available self-care products, drugs and enhanced possibilities for the management of disease by self-medication (Nancy et al., 1997).

1.2.2 Self-medication

Self-medication is when medication is used without the supervision of a professional, in order to alleviate a condition or illness. Everyone has a point in their life where they deviate away from full health, be it either because of a major problem requiring urgent medical attention, or just a minor illness. However, since medical assistance is not always available, self-medication may be necessary. Self-medication can be described as the use of drugs to treat self-diagnosed disorders or symptoms. Consumers usually choose to self-medicate

when they do not consider there to be a sufficient justification for consulting a prescriber with regard to the knowledge that a troublesome symptom does indeed need some form of drug therapy (Abdelmoneem et al., 2005). Self-medication can be defined in different ways with a consultative expert group from WHO, for instance, which considers it to be the choosing and use of medicines by individuals in order to treat symptoms or illnesses that have been self-recognised (WHO, 1993). This self-medication aspect is just one part of self-care (Nancy et al., 1997). Self-medication can also be considered in terms of the acquisition and consumption of a drug without having received the attention of a physician either in terms of a diagnosis, handing over a prescription or follow-up monitoring or surveillance (Montastruct et al., 1997). As Caulin et al. (2000) note, a drug for self-medication is one that is particularly appropriate for use without the prescription of a physician. Before being made available on the market for treatment of an ailment, a medicinal product ought to be of a certain quality, have efficacy, and be safe (Caulin et al., 2000). The National Drug Policy Expert Committee of the WHO stated in 1995 that ‘Self-medications is widely practiced in both developed and developing countries. Medications may be approved as being safe for self-medication by the national drug regulatory authority. Such medicines are normally used for the prevention or treatment of minor ailments or symptoms, which do not justify medical consultation. In some chronic or recurring illnesses, after initial diagnosis and prescription, self-medication is possible with the doctor retaining an advisory role’ (WHO, 1995). Self-medication is as old as mankind itself, though the extent and nature of it varies depending on social and educational factors, and also upon the cultural context. Perhaps, given the greater accessibility to, and availability of, doctors, there would be an expectation that self-medication practice would decrease; however, this hypothesis has been disproved by an international study. Indeed, within developing countries such as Iraq, for instance, self-medication forms between 50 to 90% of the therapeutic interventions for the treatment of most illnesses (Cindy et al., 1989). As with other developing countries, in Kurdistan and Iraq, generally a significant proportion of medicines that have not been prescribed are bought from a community pharmacy without a physician having been consulted. There is the danger, however, that if medicines are not used appropriately, critical healthcare problems may ensue. Up until now, there has been little information available on the practice of self-treatment in Kurdistan/Iraq, and so a pilot study was conducted to provide an assessment of the pattern of self-medication amongst consumers in Baghdad; the demographic characteristics were determined, along with the type of self-treatment medicine purchased,

the reasons for using such a practice, and other information sources. From the 84 respondents, most (90.5%) reported that there was a medical clinic in their respective residential area. Antibiotics (85.7%) were the most commonly-used form of self-medication amongst all the medicines that were being purchased without the use of a legal prescription from a prescriber with the relevant qualifications. The most commonly treated problems were diarrhoea/constipation (64.3%), headache (76.2%) and cough/cold (79.8%). However, such self-medication can result in critical health problems that could arise from incorrect diagnosis, antimicrobial resistance and drug interactions, and so it is necessary for public health awareness programs to be run in Iraq. Also, pharmacists play an important role in educating consumers about the appropriate way to use medicines. Moreover, there is a need for introductory topics within the pharmacy curriculum related to pharmacy practice, and also a need for pharmacists to receive continuing educational programs (Inas, 2012).

1.2.3 Self-medication determinants

There are a multitude of factors that have a bearing on the decision of an individual to alleviate their discomfort, enhance their health or prevent illness through the use of the drugs that are available to them; such factors range from personal preferences for particular types of medication, to economic matters which affect availability to cultural issues. Political matters also have a bearing since they impact upon the availability of medicines through regulation, and can guide marketing campaigns which can either respond to or create customer demand (Nancy et al., 1997). With the changes in prescription status of drugs, and changes to what can be sold over the counter since the 1980s, self-medication has increased in importance for public health. This has been a trend across the world, and such increased self-medication possibilities is having implications for physicians, pharmacists and patients alike. It has been found that whilst certain drugs may not be in favour within developed countries in view of them being considered likely to have risks of leading to adverse effects, they were still produced, marketed, prescribed by physicians, recommended by pharmacists and, ultimately, taken by patients within developing countries (Anderson et al., 1997). Numerous self-medication studies have shown that it is more prevalent in industrialised countries, although clearly developed countries are different with regard to quality as well as quantity. For the population in Kurdistan, the use of self-medication bought over the counter has not only been affected by demographic factors such as level of education, gender, age,

income, the absence of periodic consultations, and morbidity and so forth. It is also affected by the lack of well-established systems for health care, and the overall economic and political instability (Cindy et al., 1989). Clearly, medicines are composed of chemicals that can have both positive and negative effects on the human body; medicines can cause harm as well as provide a cure, so it is of vital importance that people become aware of potential self-medication problems. Some of the potential self-medication problems are as follows:

- Adverse reactions of drugs: Reactions may range from mild to moderate. Unintended, harmful or noxious reactions can occur with normal doses employed for therapy, diagnosis or prophylaxis;
- Drug interaction: When self-medicating, many human subjects may be combining various different drugs which, unbeknownst to them, may continue to interact and hence diminish the potency or healing effect desired;
- Improper drug use: As proper medical personnel are not consulted before drugs are used, drugs can be used wrongly or inappropriately;
- Side-effects: There are side-effects from all types of drugs, such as nausea and vomiting. Some of the time, these side-effects are to be expected, and the person tolerates them; however, if drugs are taken without the advice of a doctor, side-effects can be damaging and severe;
- Abuse of drugs: Addiction can result from repeatedly using certain drugs that may have been restricted to requiring the recommendation and prescription of a doctor.
- Proper diagnosis and treatment being delayed: Perhaps this is one of the most costly self-medication issues. If medicines are used without the advice of a doctor, subjects may not attend a hospital when their sickness warrants it. As a result, suffering may be prolonged and more serious diseases, such as cancer or tuberculosis, may be masked when they could have been identified at an earlier stage.
- Resistance of drugs: Drug resistance occurs when a drug cannot cure the body and, usually, is as a result of use of an inadequate drug repeatedly, such as during an incomplete therapy, or if there is non-compliance, such as using a drug only once instead of on three occasions, for example.

Self-medication occurs for a number of reasons, some of which are listed below: -

- Economic constraints: In an attempt to save money, people may prefer to buy from drug peddlers or chemists even though it may be risky for their health;
- Ignorance: There can be a lack of awareness of the potential harmful effects that drugs can have, especially in developing countries;
- Inadequate enforcement of existing drug laws: There is poor procurement and supervision of the supply of drugs in most parts of Kurdistan;
- Difficulty in accessing certain prescribed drugs: When a long journey is required to access prescribed drugs, people often settle for alternatives that are more easily available;
- The health system is weak: As many of the systems for health are poor, many people have lost faith in them;
- False claims made by suppliers of alternative medicines: Many alternative and traditional practitioners make outrageous claims in the pursuit of profit; along with increased levels of advertising, people can be deceived;
- Poor attitudes: Often people perceive their lives to be under the stress of a limited schedule and seeing themselves as too busy, so they may prefer to self-medicate. They may, mistakenly, feel that they know what a hospital consultation would reveal and, consequently, make poor choices.

Self-medication has always tended to be a dilemma for medicine, with doctors unsure of whether they ought to encourage it or not. In a study of the UK by Anderson in 1997, it was discovered that two thirds of patients found self-medication to be effective. When self-medication is used appropriately, people can become more health conscious, and the demand upon doctors can be reduced. However, if self-medication is done inappropriately, there can be a delay to receiving an accurate diagnosis and suitable treatment, and there can be money wasted, drug interactions, side-effects or even significant toxicity. Moreover, clinical diagnosis and management may be affected if self-medication is employed as a first response prior to a consultation with a general practitioner (Cindy et al., 1989). It is vitally important, therefore, that nurses have an understanding of self-medication practices, and with such knowledge provide the public with greater awareness. The rate of self-medication in Kurdistan is high, which may be attributable to the fact that the majority of drugs can be acquired from pharmacies without needing a prescription. Often, illnesses that are not serious

are, as a result of the proliferation of self-medication, treated by antibiotics which can potentially harm society as a whole, as well as the individual in question, especially in view of the increasing rate of antibiotic resistance which currently represents a worldwide concern. When antibiotics are used correctly, they are among the most important drugs. When they are overused or inappropriately used, however, they contribute to a troublesome, increasingly worrisome problem in patient care: the development of antimicrobial resistant pathogens. On the one hand, the high number of requests of antimicrobial drugs by the respondents for self-medication is beyond justification. The law in relation to the practice of pharmacy in Kurdistan requires that prescription medications may only be sold when there is a prescription; however, in the context of such economic and political instability, there is loose application of the law related to the practice of pharmacy in Kurdistan. Moreover, the healthcare system for Kurdistan is not well-established, and health services are not being provided at a reasonable price. As a result, both community pharmacists and patients have encouraged numerous irrational practices in relation to health and pharmacy, such as risky self-medication practices for dealing with infectious diseases that are serious. Also, a large range of medical products are sold over the counter (OTC), and the Ministry of Health in Kurdistan has not issued an official, clear list of OTC medications; as such, with access and availability being quicker and cheaper to OTCs in community pharmacies, in comparison to private or public clinics, the pharmacists play a huge role in the management of moderate and minor illnesses. It is very rare for drug utilisation studies to be undertaken in Kurdistan, and furthermore, no background information is readily available with regard to the practices of community pharmacies and the role they play in self-medication amongst the Kurdish people (Angeles-Chimal et al., 1992). Considering there is a lack of continuing medical education amongst community pharmacists, and also the public's lack of awareness of health issues, self-medication ought to be viewed as a considerable public health problem in Kurdistan.

1.2.4 Self-medication information sources

When suffering an episode of illness, it is common for individuals to seek advice and information from a lay therapy management or referral group that contributes to decision making with regard to self-diagnosis and treatment by the sharing of experience and medications. Because access to medical care of a formal nature is limited by financial

constraints, it is particularly important for uninsured and low income subjects to maintain active and wide networks. In such cases, those who are uninsured can respond to illness by becoming aware of reduced rate or free sources of professional care, or alternatively finding out about effective measures for self-care (Nancy et al., 1997). Self-medication can be influenced by information gleaned from family members, neighbours, friends, and previous experience and consultation (Nancy et al., 1997). There are many potential sources of drugs used for self-medication such as the home medicine cabinet and any left-over drugs that were previously prescribed, pharmacies and traditional medical practitioners, family reserves and drugs shared amongst relatives and friends, and so on (Laure, 1998). It is therefore important that providers of healthcare, particularly professionals working within pharmacies, assume more responsibility for actively providing counseling and information with regard to drugs that are intended for self-medication (Stoelben et al., 2000). Nowadays, more information is sought by patients in order to make decisions with regard to the purchase and use of non-prescription medicines. Pharmacists are the most friendly, accessible and consulted source of information with regard to non-prescription medicines and so they are well placed to give an assessment of the problem of a patient and make a recommendation for a suitable course of action for them. It is possible for pharmacists to refer sick people to appropriate health services and providers whilst also discouraging healthy people from wasting their time and money on unnecessary products or health services. Indeed, the role of pharmacists in self-medication has not entirely fulfilled its potential, and it seems that action in public health and practitioner involvement is required in order to optimise the potential for use of self-prescribed drugs in a way that minimises risks to the consumer (Gore et al., 1994; Jaquier et al., 1998).

1.2.5 Treatment of the symptoms of illness by self-medication

There are several reasons why self-medication is common; these can include the availability and accessibility, of medications, and the costs incurred if using other health services, the consumer satisfaction levels with professional services and other forms of healthcare, and also the perceived severity of the disease in question. In almost 50% of episodes of illness, particularly when symptoms are not seen as serious, the initial response is to take non-prescription medicines (Lau et al., 2000). Although not all medicines are appropriate for self-medication, within Europe there are cohesive self-medication treatment areas. The following

areas of treatment have been identified for self-medication: sore throats, colds, hay fever, coughs, acne, skin problems, oral hygiene, hay fever, vitamins and minerals, eye problems, upset stomach, food supplements, smoking cessation, constipation, travel sickness, diarrhoea, gynaecologic problems, calming and sleeping issues, cystitis, gynaecologic problems, treatment of worms, haemorrhoids, treatment for conditions of pain, and other treatments (AESI, 1998).

Research into the prevalence of illnesses that led to self-medication has shown that the most prevalent problems were digestive disorders, cold/cough/influenza, headache/dizziness, insomnia/anxiety, asthma, skin problems, liver disease, boils and fevers (Lau et al., 2000).

Alcohol consumption, smoking and self-perceived poor health were significantly associated with many of the aforementioned problems. The choice of treatment is dependent on the sicknesses suffered, and self-medication was identified as being the healthcare type that was most common. Indeed, Lau et al. (2000), have noted that self-medication is increasing in scope within many countries around the world. Dealing with dyspepsia is a popular case, for instance. The most common reasons for self-medication practice were to deal with acid regurgitation, gastrointestinal pain and heartburn, with more than three quarters of respondents having said they had self-medicated with drugs to deal with dyspepsia. There is a poor level of knowledge about using drugs properly, and there is also a likeliness that they are, indeed, using them improperly (Siho et al., 1997). Studies into behaviour regarding the taking of medicines through surveys and diaries has shown that between 70 and 80% of illnesses are managed through self-care rather than intervention by a physician (Nancy et al., 1997). The dominant type of behaviour related to seeking health was found to be self-medication, especially when it came to the alleviation of pain.

1.2.6 Antibiotics

In developing countries and across the world, data available have indicated that antibiotics are often used in an indiscriminate way, and frequently they are misused. Also, it has been found that, as socio-economic status increases, self-medication increases too (Cruz et al., 1999). Research has indicated that the agents that have been used most often are erythromycin, metronidazole, ampicillin/cloxacillin, cephalexin, cotrimoxazole, tetracycline, amoxicillin and neomycin (Cruz et al., 1999). The mean amount of antibiotics that were

bought were eleven capsules/tablets, with the intention of using them over the course of three days or less (Cruz et al., 1999). One of the key reasons why a full antibiotic course was not completed was the poor knowledge that the purchaser had about antibiotics (rather than economic constraints). Analyses have shown that the previous type of treatment, the length of time of the symptom, and the age of the patient are useful as variables for predicting whether there is a decision to purchase antibiotics rather than alternative types of drugs. Antibiotics tend to be used when a sickness is experienced for more than a week without them already being used (Van Dong et al., 1997). As noted in the study of McKee et al. (1999), antibiotic sources were pharmacies, OTC purchases, gifts from friends, and leftovers from previous treatments. Across the world there is a concern nowadays for the growth in antimicrobial resistance, with bodies such as the House of Lords in the UK and the WHO having identified the reasons behind the emerging resistance to antimicrobial agents, as well as the urgent preventative measures that need to be implemented so that the spread of organisms that are resistant can be curbed by explaining the risks of self-medication, including bacterial resistance to patients, and by helping consumers to identify illnesses which are amenable to self-medication, or to be referred; to pick the most appropriate product; counseling on its proper use; and monitoring for desired therapeutic outcomes. It is not difficult to point out what lies behind the rise in resistant types of organism; since Fleming discovered penicillin, people throughout the world have considered it to be a fundamental right to have access to antimicrobial agents. This is the case for the self-prescription of cheap antimicrobial agents that are readily available and that can be accessed whenever a trivial infection becomes apparent. However, such widespread abuse of powerful antimicrobial agents for animals as well as people could be leading to an era where the microbe is dominant, because microbes become resistant against powerful antibiotics (McKee et al., 1999; Reeves et al., 1999). There is resistance nowadays to antimicrobials in common use, such as erythromycin, chloramphenicol, cotrimoxazole and ampicillin, for example (Reeves et al., 1999). Moreover, a number of authorities have warned of an era that is 'post-antibiotic', an era when infectious diseases will no longer be treatable as in the preantibiotic era before penicillin was discovered. Often, antibiotics are employed in the treatment of diseases caused by a virus (Richman et al., 2001). Abdul-Mohsin Jassim (2010), conducted research in 2007 to 2008 on the 'In-home' drug storage and self-medication with antimicrobial drugs in Basrah, Iraq to record the storage of medicines within the home and to provide an estimate of the prevalence of use of antimicrobial drugs in self-medication. The survey was a descriptive one that used a

questionnaire for data collection from a sample of three hundred households within Basrah. The study found that most households (i.e. 94%) had drugs stored in them. The survey encountered a total of 4,279 of various kinds of prepared drugs, of which only 31% were prescribed rationally. As such, only 31% of drugs encountered were being used currently, with 23% being saved for some use in the future, and 45% were just leftovers. A total of 66% of the stored drugs were acquired from private sector pharmacies. As many as 58% of the drugs were stored inappropriately. At 26%, the most common drug group that was stored in the home was antibiotics. These findings showed that education exerted an influence over the degree of compliance with recommended dosage, the exchange of drugs and the storage of drugs that had expired. Moreover, it was found that most families (78%) said that they practiced self-medication, with the most common sickness addressed involving drugs that were antimicrobial, i.e. diarrhoea, tonsillitis, upper respiratory tract infections and influenza. The conclusion to the research was that it was often the case that drugs were being used beyond their expiry date, there was a high prevalence of self-medication, drugs were stored inappropriately, and/or there was poor compliance (Abdul-Mohsin, 2010).

The study of Sarahroodi, Arzi, Sawalha and Ashtarinezhad (2012), with regard to ‘Antibiotics self-medication among southern Iranian university students’, aimed to provide an evaluation of the knowledge of self-medication with antibiotics and the associated behaviour amongst non-medical and medical students at university in Iran. A sample of two hundred students was chosen randomly in a cross-sectional study conducted from a non-medical and a medical university within Ahwaz in the south of Iran. Self-administered questionnaires were used for the data collection exercise with items that were both close-ended and open-ended. There was a total of 195 university student participants in the research with 97 of them male (49.7%) and 98 of them female (50.3%). No significant variation was identified between female and male students with regard to self-medication. About 50.3% of students were enrolled in the non-medical and 49.7% were enrolled in medical colleges. A division was made between two different groups of respondents, i.e. the non-medical student group in colleges that were non-medical, and a medical student group in medical colleges. The respondents had a mean age of 21.8 ± 0.25 years. The majority of the students (73.2%) at the time of the study were living in student homes or dormitories, whilst the remainder, i.e. 26.8%, were living at home with their families. About 48% of the non-medical students and 42% of the medical students had been using antibiotics without having received medical advice or a prescription. Antibiotics were the most commonly used of the

medications, with Penicillin ranked first at 91.5% for non-medical respondents and 81% for medical respondents. Amongst the various Penicillins, the most frequently used in self-medication was Amoxicillin at 74.3% for non-medical students, and 40.5% for medical students. Amongst the factors behind self-medication were previous experience of using prescribed medication amongst the non-medical group (32.6%) and academic medical knowledge amongst the medical group (50%). The conclusion of the research was that inappropriate antibiotic use was at a high level, and the suggestion was made that there ought to be education specifically with regard to antibiotics in non-medical colleges, and also that such education in the medical colleges of universities ought to be improved. Physicians ought to be warned that patients need to be instructed that they should not use previously-prescribed antibiotics for emerging future conditions, to be sure to complete therapy courses, and to avoid using medications for past illnesses without the suggestion from a pharmacist or physician. Also, self-medication using antibiotics may arise from a lack of control of pharmacies, and so there is a need for greater enforcement of the law upon pharmacies (Sarahroodi, 2010).

1.2.7 Non-steroidal anti-inflammatory drug/analgesic self-medication

One of the most widely taken classes of drugs across the world are non-steroidal anti-inflammatory drugs (NSAIDs), such as Ibuprofen, Aspirin and Diclofenac, with up to 8% of the adult population globally taking NSAIDS on prescription at any particular time. NSAID-related gastrointestinal (GI) complications have been well documented, with them being divisible into two types of factor: controllable factors, such as type, duration of NSAID treatment, co-therapy, dose, and possible infection of helicobacter pylori; and uncontrollable factors, such as gender, co-morbidity, history of GI conditions and age (Stiel, 2000). With the increase in self-medication, questions have been raised regarding the potential for doses of NSAIDs bought over the counter to lead to GI complications. Whilst there may be some evidence that OTC doses have led to a lower frequency of GI complications when compared to doses taken following prescription, the risk still exists. As noted by Stiel (2000), it demonstrates a side-effect profile that is favourable, but paracetamol continues to be a first choice as an analgesic for pain encountered on a day-to-day basis. Research undertaken in Sweden has shown that analgesics are commonly used amongst people suffering with chronic

pain, with women having a reported more extensive use of sedatives and analgesic in comparison to men. Medication with analgesics can be explained as a factor of the intensity of the pain, self-care action, insomnia, consultation with the physician, and self-perceived poor health, as well as gender. Level of education, marital status, social networks and socio-economic status were discovered to be of minor significance (Gloria, M. et al., 2003). Analgesic/antipyretic drugs are amongst those that are most often used for children, although the efficacy of them and potential adverse effects have been much debated. Research undertaken in France between 1981 and 1992 showed that there was a significant increase in the exposure of children to analgesics/antipyretics. The study showed that there had been a decrease in the percentage of subjects that had been treated with aspirin (-27%), whilst treatment with NSAIDs had increased (+179%) and paracetamol too (+19%); nasopharyngitis/influenza-like syndromes were given as the main reason for using these drugs. Consumption of analgesics/antipyretics following advice from those who were non-qualified and/or self-medication were found to be as common as medical prescription (Gloria, M. et al., 2003).

Whilst a picture emerged of a relatively responsible use of self-medication, a number of adolescents had engaged in more inappropriate forms of use of OTC medication, such as the frequent use of aspirin. Aspirin is administered in high doses, usually 300 mg, which can relieve pain, reduce high temperatures (fever) and reduce swelling. Long-term treatment with low doses of aspirin (usually 75 mg) has an anti-platelet effect, i.e. it renders the blood less sticky and can stop blood clots developing. Regular aspirin use is associated with gastrointestinal bleeding. Risk appears more strongly related to dose than duration of aspirin use. Efforts to minimize the adverse effects of aspirin therapy should emphasize use of the lowest effective dose amongst both short- and long-term users. This finding highlighted the importance of giving adolescents valuable and appropriate information regarding the use of these medications (Chambers et al., 1997).

1.2.8 Importance of the practice of self-medication

In most countries of the world, the demand for healthcare services has continued to grow at a rate that is faster than the gross national product (GNP) and, for the foreseeable future at least, this demand looks set to increase further. The treatment of minor ailments by self-medication rather than visiting a doctor for a consultation could be one possible reason for

this increase (AESI, 1996). It is the case that consumers are able and willing to have more responsibility for the management of their own health conditions and, as such, significant levels of resources could be redirected to more demanding areas of healthcare rather than providing patients with consultations and prescriptions for ailments that are minor. Research of consumer behaviour conducted by the WHO (1998), has clearly shown that people wish to take responsibility for their self-medication, and they tend to use medicines with caution, and also know when they should treat themselves and when they ought to seek out professional help. It is true that self-medication can be an important first step in responding to illness and, indeed, numerous illnesses can be managed successfully at this initial stage. Contrary to the views of doctors, self-medication is seen as having a valid role in developed societies by WHO. Research has shown that the majority of people can discriminate between minor and major ailments that can be dealt with through self-medication, or that ought to be dealt with through consultation with a physician. Collingsworth et al. (1997), have noted that healthcare systems can benefit from self-medication since clinical skills are freed up to be better used, the degree of access to medication is increased, and it may also contribute to a reduction in the costs of prescribed drugs that are associated with health programmes that are publically-funded.

1.2.9 Problems with self-medication

Developing countries such as Kurdistan are influenced by various factors such as lifestyle, the ready availability of drugs, increased opportunities for the management of minor illness through self-medication, previous experience in the treatment of similar illnesses, and socio-economic factors. Self-medication is a cheaper alternative for people who are unable to pay for clinical services; however, with its increasing spread, there are also problems with self-medication across the world, which has the potential to harm not only the individual patient but also society as a whole (Phalke et al., 2006). Pharmaceuticals can, of course, present dangers to anyone without awareness of how to administer them correctly and/or little knowledge of the potential risks involved. It is, however, very difficult to undertake a study of the propensity for illness to be induced through self-medication. Ethical problems present difficulties for performing research into medication without giving advice to participants over the potential risks involved. There are also problems in providing documentation of the delayed effects from the taking of certain drugs, as well as the issue of confounding the side-

effects from taking medication with primary illness symptoms (Laurie, 1989). Whilst it is usual that self-medication using non-prescription drugs has the desired outcome, it is not uncommon for there to be mishaps, and numerous studies have shown that there is potential for the risk of excessive drug dosage, misdiagnosis, polypharmacy, drug interactions and prolonged duration of drug use, as well as the pharmacological and toxicological risks linked to the improper use of non-prescription medicines (Huges et al., 2001). Using anti-inflammatory agents and analgesics in self-medication can have serious side-effects, particularly in women. Bacterial resistance ought to be explained in order for an improved analysis to be undertaken of the ratio of risk to benefit in using such self-medication (Reeves et al., 1999). Considerations should be given to safety issues such as the underlying diseases and the potential for interactions of drugs, pregnancy and the user age. Many consumers are considered as those lacking the ability to accurately self-diagnose conditions that are self-limiting. Over the counter (OTC) drug use can have other problems for the consumer, including misuse, interaction of the OTC drugs with other OTC drugs or with other prescriptions, reactions with alcohol or food, a lack of understanding of the effects of the medicines and the need for them, a lack of understanding of clinical conditions, the condition of the patient, and a failure to interpret the information on labels (Iihara et al., 2000). There may, however, be advantages in the switch from prescription-only to OTC drugs for certain agents for use in the short-term for particular infections and illnesses that are minor. It is important, however, that instructions are included to help prevent drugs being used improperly (Reeves et al., 1999). It has been widely reported that attention needs to be brought to the issue of self-medication using antibiotics and anti-biotic resistance (WHO, 1998). Noori (2010), conducted a study using interview-based questionnaires at the University of Kufa in Annajaf in Iraq that aimed at providing an estimate of the irrational self-medication of antibiotics. A total of 1,041 respondents took part in interviews related to their attitudes with regard to self-medication and its appropriateness and situational antibiotic use, their knowledge of antibiotic effectiveness in dealing with bacteria and viruses, their awareness of the resistance of antibiotics, and their beliefs in general, with regard to using antibiotics to deal with minor ailments. A total of 28 questions with associated sub-items were used to measure public experiences, beliefs and knowledge with regard to antibiotics, in addition to predictors of accurate knowledge of the effectiveness of antibiotics. A total of 1,041 individuals of the Annajaf/Iraq community were provided with the questionnaire, of which 82%, i.e. 835 respondents, completed all of the questionnaire.

A total of 853, i.e. 82%, of the respondents were well-informed about antibiotics, and 188, i.e. 18% were misinformed about them. Of those that were well-informed, 558 respondents, i.e. 65.4%, were self-medicating. The agents that were used most frequently were Quinolones (0.5%), Macrolides (0.6%), Co-trimoxazole (0.8%), Tetracyclines (0.9%), Aminoglycosides (2.9%), Cephalosporins (13.1%) and Amoxicillin (50.2%). The research also revealed that there were consistent associations between self-medication with antibiotics and their prescribed use. One effective manner in which self-medication can be prevented is through the removal of leftovers, which can be brought about through ensuring that the amount prescribed corresponds accurately to the amount dispensed, and through the education of patients and ensuring that doctors are aware that their prescriptions for ailments that are minor can increase the risk of future self-medication for these types of ailments (Iihara et al., 2000).

1.2.10 The role played by community pharmacies and pharmacy professionals

The counsel of pharmacists can reduce some of the risks associated with self-medication through helping their customers identify the types of sickness that can be treated easily through self-medication, or that are better referred onto professionals. Also, pharmacists can help the consumer to choose the most suitable product, advice on how to use it properly, and monitor the consumer to see that the desired therapeutic outcome is being achieved. The aforementioned reasons, along with the greater proportion of OTC purchases, has led to the pharmacist having a greater role. However, the role of the pharmacist in the self-medication of consumers does not appear to have been living up to expectations (Gore et al., 1994).

Both qualitative and quantitative analyses were undertaken with regards to the impact that the counseling of pharmacists was having on health outcomes for patients, and also the impact that special training regarding self-medication was having on pharmacy services. It was discovered that the provision of advice and counseling in relation to self-medication by pharmacists had measurable impacts in relation to outcomes, and it was shown that patients do value information given to them by a pharmacist. Research has suggested that primary healthcare quality of self-medication would see an improvement if there was more intense involvement from pharmacists. Research into discovering the obstacles for geriatric patients in relation to self-medication has shown that the pharmacist was responsible for a greater

number of recommendations for the improvement of the efficacy and safety of drug therapies and compliance with medication regimens than any other health professional. Recommendations that pharmacists made included simplification of the regimens of medicines, requesting certain levels of drugs or particular laboratory tests, and employing compliance aids (Krishnan et al., 2000). The pharmacy and pharmacists are expected to help foster appropriate drug use in their sale of drugs and preparation of prescriptions, help patients in their self-medication and also take an active role in supporting custodial medical care for those housebound and the elderly in general (Kushida, 1998).

Research into the practice of pharmacy has focused attention on the role that pharmacists play in promoting self-medication amongst the public. Research has looked into the interactions between the client and the pharmacist, and the degree to which they are sensitive to the economic, social and cultural context in which the advice and sale of medicines occur. The degree to which clients follow pharmacy personnel advice, or question their expertise or motives, however, has been left undocumented. Users tend to view pharmacies as primary care resources due to their proximity, their trust and their opening hours. Healthcare support is provided for the treatment of illnesses and advice given on medication usage. If a situation is clinically serious, patients are referred to a suitable doctor (Llanes de Torres et al., 2000). In order to minimise risk and maximise benefits to all of those with a concern for self-medication practices, proposed strategies have included a partnership between physicians, pharmacists and patients, monitoring systems and the provision of information and education (Huges et al., 2001). The law in relation to pharmacy in Kurdistan promotes the legal and correct sale of various medications. However, in accordance with that available in other developed countries, most drugs that can be bought within the market are available as OTC medications.

Lots of patients in Kurdistan look for medical advice from community pharmacies since it is quicker and cheaper than visiting the clinic of a doctor, and often more easily accessible; in rural areas, where medical services are not so well developed, the differences are even more discernible. As such, it is clear that community pharmacies play a vital role for the community and in public health generally. The personnel working in pharmacies in Kurdistan are behind in terms of science, clinical pharmacology and other issues with their practice; for instance, strong antibiotics can be bought over the counter, and sometimes various potent NSAIDs are dispensed without the customer being given adequate direction over their use (Chalker, 2001).

1.2.11 The role that drug consumers play in self-medication

Currently, consumers are more willing to be personally responsible for the status of their health and wish to acquire good information from experts so that they can make sound decisions with regard to healthcare (AESI, 1998). The role played by the self-medicating consumer of drugs is that he or she treats their conditions or ailments with approved medicines that are effective and safe when used appropriately, and that are available without needing a prescription. Medicines are required to have good qualities and efficacies, and to have been proven to be safe. The medicines used are those for self-recognizable conditions and for a number of those that are recurrent or chronic. Clearly, whatever the condition, medicines ought to be made for a particular purpose, and therefore a suitable dosage and forms will be needed. The medical products ought to be accompanied by information that describes the following: -

1. The way in which the medicine ought to be used or taken;
2. The effects of taking the medicine and potential side-effects;
3. The manner in which the effects of taking the medicine ought to be monitored;
4. Potential interactions;
5. Warnings and precautions;
6. The recommended duration of use and when professional advice should to be sought (Nancy et al., 1997)

If self-medication practice is undertaken responsibly:

1. It can help treat ailments and symptoms, as well as prevent them, without the need for medical consultation;
2. It can lead to a reduction in pressure that has been mounting upon medical services for dealing with minor ailments, especially when human and financial resources are scarce;
3. There can be increased availability where access to advice from medics may be difficult in remote, rural areas;
4. It can enable chronic conditions to be managed by patients themselves (WHO, 1995).

As noted above, there are advantages and disadvantages to self-medication, and further research into self-medication can contribute to improving the benefits for the public health within a country. As self-medication and associated knowledge of medicines are not

particularly well known for Kurdistan, this research study aims to explore some of the issues around consumer knowledge of drugs and the practices of self-medication in the region.

1.2.12 Over the counter (OTC) medicines

In the context of therapy, a huge range of drugs are produced every year in many countries across the world, particularly those with Europe and America. Whilst most of these drugs are acquired from a physician who has been consulted for a prescription, many drugs are bought OTC in a pharmacy within the community. Many addictions and other health complications can occur because lots of consumers assume that buying OTC drugs involves less risk than really is the case; indeed, powerful OTC drugs acquired without a prescription have been known to kill (Blenkinsopp and Bradley, 1996). Certain drugs have been known to be deregulated from the previous status of being ‘prescription only’, whilst OTC drugs can lead to addiction perhaps because of a tolerance being built up. Also, if high doses of OTC drugs are taken, there can be strange changes to mood and sleeping patterns, and even hallucinations (European Proprietary Medicines Manufacturers Association, 1995; Blenkinsopp and Bradley, 1996). Worldwide, the policies in relation to OTC drugs can differ. Since non-prescription drugs are displayed on counters that are open for consumers to access within retail stores or pharmacies, in countries such as the United States they are also known as over-the-counter drugs. In Canada, medicines that are non-prescription have to be kept on a shelf, in a store room that the pharmacist can observe, or a behind a counter. OTC drugs can only be acquired through pharmacies in many countries within Europe. In Australia, pharmacists have to give advice about OTC drugs in person to the purchaser (Drife, 1993). In Kurdistan, however, prescription-only medicines POM and OTC are put out on display in pharmacies within counters that consumers can openly access without question, without any limit to the amount taken. There are two categories given to OTC drugs in Ireland and Britain, i.e. general sale list (GSL) drugs that can be bought in general retail outlets that do not have to have trained pharmacists, and pharmacy medicines (P) which are a category of drugs that are not available ‘off-the-shelf’ and that are bought from pharmacies that are registered with pharmacists able to give advice on appropriate usage and to monitor the patients (Blenkinsopp and Bradley, 1996). Pharmacists ought to have to be involved in person in the sale of a drug of the pharmacy medicine category, and also to adhere to certain protocols with regard to treatment and advice (Bond and Grimshaw, 1995). The licensing body for drugs in Britain, the Medicines Control Agency, streamlined their drug deregulation

procedures in 1992 and, with further amendments to the Medicines Act (also in 1992), every five years the agency was obliged to have a reassessment of licensed drugs and to provide justification for their continued status as a drug that was restricted to prescription only.

1.2.13 Legal controls

There are various ways in which drugs are legally controlled across the world, though there have been a number of attempts to offer standardisation to the legal position with regard to drug use. A robust statement with regard to proper and improper drug use needs to be made by a government; however, such statements depend upon local circumstances. Most countries have now signed up to the WHO Single Convention on Psychotropic Drugs of 1971, with individual countries interpreting the convention locally to put their legislation in line with it. The Medicines Act of 1968 in the UK was an Act of Parliament for governing medicine control for the use of the public, and also covered the manufacture and supply of medicines and medical specialties. Pharmaceutical product management has a direct relationship to the rules and regulations of a country in relation to medicines and the address of concerns over public health. In Kurdistan, however, the programs and systems of the National Health Service are faced with the challenge of achieving set goals in relation to medicines and saving lives in the context of no regulations and rules regarding pharmaceutical products. There is no categorisation of medicines, and patients are able to buy whatever medicines they feel they need, and in any quantities, without having received a prescription from a qualified physician. Furthermore, there are many pharmacies that health staff have opened illegally. (Al Hilfy et al., 2007).

1.2.14 Conclusions

The Kurdistan Regional Government has the responsibility of minimising the inappropriate use of drugs that could have adverse impacts upon individuals, families and the general public. Amongst the many considerations, in this regard, are the following:

- a. There is an urgent need for the government to tighten laws or regulations for controlling legitimate drug use (of either OTCs or POMs), and also to prohibit the use of illicit drugs;
- b. There is a major requirement to ensure the enforcement of workable laws;
- c. Professional healthcare staff are required to be educated in order to minimise the prescription of commonly-misused drugs such as painkillers, benzodiazepines and antibiotics.

CHAPTER 2: METHODOLOGY

2.1 Introduction

This Chapter delineates the nature of data required for achieving the study aims and the different methods of data collection that are used for investigation into the adoption of health-seeking behaviour, self-care and self-medication within the three cities within Kurdistan. This Chapter also argues that a more nuanced appreciation of the issues surrounding self-medication and health sector reform, especially in KRG, is facilitated through the use of a mixed methods approach involving a questionnaire survey, interviews and a number of participatory techniques. The research design followed is explained, including the rationale behind the implementation of the mixed methods approach. The Chapter then has a discussion of the ethical issues that were involved before, and finally provides an overview of the two research phases and then methods that were employed in them. As such, details are provided about how participants were recruited and the quantitative data collected and analysed for Phase 1, and also about the methods of sampling, interviewing, management of data and its analysis during Phase 2.

2.2. Health research and design

From Creswell et al. (2003), researchers should decide upon a design for research at an early stage since the research methodology, data collection and analysis methods are then determined. Hardon et al. (2001, p.140), provided a definition of research design as "the systematic collection, analysis, and interpretation of data to answer a certain question or solve a problem". The methodology can be considered as the overall approach that the researcher decides to take for the process of their research which could involve a qualitative, quantitative or a mixed methods approach, and decisions over the data collection and analysis methods. As Parahoo (1997) made clear, there is a distinction between methodology and methods, the latter being the procedures and techniques employed for collection and analysis of data within the assumptions made with the former.

With a focus upon scientific reasoning, with disease seen as being related to aetiological agency, earlier health research has been dominated by the biomedical model. Social scientists, however, have argued that the biomedical model is too focused upon bodily functions and technological solutions rather than a more holistic appreciation of the social

context within which people live their lives; biomedical solutions are, therefore, considered as incomplete since ill-health can result from a various determinants in combination, such as social, psychological and biological factors (Bowling, 2009). Therefore, solutions need to be broad in scope, and it is more widely recognised these days that the root of health problems lies within the cultural and social context(s), such as ethnic identities, socio-economic status, gender norms and prevailing norms overall (Mack et al., 2005; Ulin et al., 2005). Given that a main aim of research related to health is the provision of all kinds of knowledge and evidence to help the public health and the inform/reform of healthcare systems, the researcher has been motivated to draw on the worlds of anthropology and sociology to help gain insights into the complexities surrounding ill health. Within such disciplines, there are usually different methodological approaches that are valid within the associated academic tradition, although they usually have a focus upon the cultural or social context (Green and Thorogood, 2004). To have a deeper understanding of health and illness complexities, healthcare providers are increasingly employing qualitative methods from social science to help gain valuable insights. Both practical and theoretical problems significant for clinical practice can be addressed by research focusing on self-medication. Indeed, there are social, biological and psychological aspects to research into this area, and therefore there may be various research methods that are appropriate to address the range of questions that may be raised. Because of the nature of studies into self-medication, research tends to be strongly related to epidemiological and biomedical aspects. There are, however, a number of researchers of self-medication that have shown an interest in social and human behavioural issues, and they have introduced interviewing and surveying methods from the social sciences into the field. Health-related research has been dominated in the past by research methods that are quantitative; however, nowadays a large variety of different approaches and methods are being employed from various research disciplines (O'Cathain et al., 2007). With every new finding, it appears that more questions lead to the need for different research approaches. When considering the behaviour of patients, with regard to self-diagnosis and self-medication, for instance, various different approaches for the collection and analysis of data can be considered (Pope and Marys, 1995). Clearly, quantitative methods are of great use to research into health and health services. However, there is an increasing call for health research to include research methods that are qualitative and/or mixed methods (Bowling, 2009; O'Cathain et al., 2007). Several studies have shown that there is a high rate of treatment by self-medication, and often there can be complications that place more demand

upon healthcare systems (Findings, 2003; DiMatteo, 2004). As such, there is a very significant challenge for low and middle income countries, such as Kurdistan/Iraq, to improve their health systems. It is critical to understand the factors behind self-medication practice and why people do it rather than receive medical treatment from a physician. This study has the aim of assessing medicine use and the practice of self-medication, and also to understand the factors that influence the population. In addition, the study aims to explore the behaviours, attitudes and knowledge of Kurdish people with respect to the use of medicines, and to understand the factors that influence their self-medication. In order to answer the research questions, this study employed a research design that has a sequential explanatory mixed methods strategy (Tashakkori and Teddlie, 1998; Creswell et al., 2003; Plano Clark and Creswell, 2011).

2.3. Research questions

This study had particular research questions, which are shown below: -

1. What status does the community pharmacy have for people in Kurdistan?
2. To what degree are medicines used inappropriately within the Kurdistan region?
3. What reasons can be identified for the overuse and inappropriate use of medicines in Kurdistan?
4. What reasons lie behind the prevalence of the practice of self-medication within Kurdistan?

2.4. Settings

This research was undertaken in three cities within Kurdistan/Iraq that had a population of approximately 5 million people. Data collection was from self-diagnosing patients and those purchasing medicines from pharmacies directly (without having been for a consultation with a doctor), and also from pharmacists.

2.5. Research Approach

Health research can be based on one of three approaches, i.e. a qualitative approach, a quantitative approach, and a mixed methods approach. There are, typically, different procedures and tools employed in qualitative and quantitative approaches. Qualitative

approaches typically employ interviews, the study of documents and observation, with description and analysis of narratives. Quantitative approaches, on the other hand, use tools that are usually questionnaires and surveys, and experiments and analysis is normally undertaken in a statistical manner, with the numerical data gathered being used for the measurement of variables and the testing of theories. The main differences between the two approaches lie in the nature of the collection and analysis of the data, and the way in which results are presented (Appleton, 2009; Ary et al., 2009).

Table (2.1): The main differences between quantitative and qualitative research approaches

	Quantitative	Qualitative
Purpose	To study relationships; cause and effect	To examine a phenomenon as it is in rich detail
Design	Developed prior to undertaking a study	Flexible, and can evolve during the study.
Approach	Deductive; for testing theory	Inductive; may be used for the generation of theory
Tools	Uses instruments that have been preselected	The primary data collection tool is the researcher himself/herself
Sample	Samples are large	Uses small samples
Analysis	Numeric data is statistically analysed	Narrative description and interpretation of findings

The worldview of the researcher is also a major factor in the differences between qualitative and quantitative research approaches. Researchers ought to state clearly the background to their worldview, their prior knowledge status and how their knowledge informed the way in which they attempted to find answer(s) to research question(s). For Bryman (1998), How (1988, cited in Clarke, 2003) and Morgan, (1998), there is an assumption with quantitative methods that the world is, in general, a stable place and, therefore, processes have a degree of predictability; qualitative methods, on the other hand, are used with an assumption that the world is in flux and is dynamic and ever-changing.

Quantitative research approaches usually have an association to the (post) positivist paradigm and hence the worldview of the researcher could hail from thinking in a cause-and-effect type of manner that leads to selected variables being measured and correlated, and theories tested (Slife and Williams, 1995). Qualitative research approaches, on the other hand, usually have an association with the constructive paradigm, with the worldview of the researcher being rooted in the study of participant perceptions and objective views taken on their personal

experiences and social interactions. Mixed method research approaches usually have an association with pragmatism, though they can have more than one worldview, such as constructivism and (post) positivism (Plano Clark and Creswell, 2011). Rather than a focus on the world view of the researcher, pragmatism has a focus upon choosing the most appropriate methods to be employed in answering research questions (Tashakkori and Teddlie, 2003; Plano Clark and Creswell, 2011). Researchers are free with the pragmatic approach to employ any procedures, techniques or methods within the same research study, be they qualitative or quantitative. As such, the methods employed are driven by the research questions, when a philosophy of pragmatism is taken (Onwuegbuzie and Leech, 2005). Based on the work of Morgan (2007), Table 2.2 below has a summary of the main differences between qualitative, quantitative and pragmatic approaches to research.

Table(2.2): A comparison between qualitative and quantitative pragmatic research approaches

Approach	Qualitative	Quantitative	Pragmatic
Connection of theory data	Induction	Deduction	Abduction
Relationship to research process	Subjectivity	Objectivity	Inter subjectivity
Inference from data	Context	Generality	Transferability

Source: Morgan (2007)

Table 2.2 has the aim of differentiating between deduction and induction, and there is the suggestion that, in real world scenarios, it is difficult to remain with just one approach. As Bryman (2008) notes, an inductive research approach involves firstly, the collection of data potentially followed by the development of theory, whereas the deductive research approach involves movement from hypotheses or theories to the collection of data; the sequences are not necessarily followed in a pure manner, however (Ivankova and Stick, 2006). As Morgan (2007) notes, taking a pragmatic approach can enable a researcher to alternate between deduction and induction, and this can be reliant on a type of abduction which can be considered as an approach that primarily involves converting observations into theory and then evaluating that theory in action. For instance, the researcher can decide to move down

from theory to the data, though when analysing the data, he/she may see that a modification to the theory is needed. Also, the researcher, having moved from data to theory, may come to the realisation that there is a need for more data for the theory to be confirmed. For researchers using mixed methods in a way that is sequential, it is quite common to adopt the use of abduction from a pragmatic viewpoint. For instance, it is possible to use qualitative data that has been derived from inductive results in order for deductive goals to be established for subsequent collection of quantitative data, or vice-versa (Ivankova and Stick, 2006; Morgan, 2007).

Table 2.2 above also shows the differences between objectivity and subjectivity in research, and provides an explanation of the relationship that exists between the process of the research and the researcher. In general, objectivity has an association with research approaches that are quantitative, and subjectivity has an association with research approaches that are qualitative. There is an emphasis on the inter-subjective process from the viewpoint of pragmatism; usually, there is an intention to transcend the duality existing between objectivity and subjectivity through the suggestion of social action through an orientation that is reflexive. It has a focus upon the communication process and is broadly shared between static. Table 2.2 also provides an explanation that qualitative approaches have an association with knowledge entirely particular to a certain concept, and quantitative approaches have an association with sets of principles that are generalised. Taking a pragmatic approach, the transferability concept was introduced by Morgan (2007); transferability has a focus upon what the individual is able to do with knowledge that has been produced instead of deliberating over what may be generalisable or universally applicable, or what may be specific or dependent on the context. The main notion with pragmatism is that an effective approach, with an aspect that is transferable abductive and inter-subjective, can be reached by working back and forth between the extremes of the two approaches. Pragmatic research offers many advantages with the researcher having flexibility, for example, to employ various techniques in answering the study research questions. Moreover, collaboration between various researchers with various different philosophies can be promoted, and micro and macro research levels can be combined (Onwuegbuzie and Leech, 2005).

2.5.1 Rationale behind using the mixed methods research approach

- i. Quantitative and qualitative approaches are combined within a single study with mixed methods research; the advantages of both approaches can be incorporated, with the disadvantages avoided (Tashakkori and Teddlie, 1998; Denscombe, 2007; Plano Clark and Creswell, 2011). Qualitative research provides the opportunity to have a deep exploration into the feelings and thoughts of participants, though it can be weak in that the researcher influences the analysis with their own interpretation and, given the limited number of study participants, it is difficult to generalise results. Quantitative research with a large sample size can provide strong evidence by its objective approach; however, on its own, it tends to be weak in terms of gaining an understanding into the context behind the comments or observations of people. It is considered, therefore, that using an approach that is a mixed methods one can enable a researcher to overcome the disadvantages inherent in using either of the research methods on its own; indeed, mixed methods research can be very advantageous (Tashakkori and Teddlie, 1998; Denscombe, 2007; Plano Clark and Creswell, 2011). The various advantages to mixed methods research have been summarised by Plano Clark and Creswell (2011) as follows:-
 - a) The adoption of more than one worldview can be supported since there is not a single association to one kind of research method;
 - b) Research questions that may have been difficult to address successfully by the use of just qualitative or quantitative research in isolation can be answered well using a mixed methods approach;

- c) The use of mixed methods research enables stronger evidence to be provided for further study of an issue which may then be achieved using a qualitative or quantitative approach;
- d) It is possible to use a variety of methods for collection of data. A researcher does not have to use just one type of data collection method.

Mixed method approaches have been given many different classifications, each of which has its own features and terminology (Tashakkori and Teddlie, 1998; Denscombe, 2007; Plano Clark and Creswell, 2011). The mixed methods research approach has been defined by Creswell et al. (2003, p. 212) as “the collection or analysis of both quantitative and/or qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of data at one or more stages in the process of research”. The study purpose will determine the choices made by the researcher. Creswell et al. (2003) identified the six most commonly used designs for mixed methods research, i.e. three concurrent designs and three sequential ones. The mixed methods sequential explanatory design is the one of the most popular of the sequential designs, and has been described in detail within the academic literature (Tashakkori and Teddlie, 1998; Creswell et al., 2003; Plano Clark and Creswell, 2011). As shown in Figure 2.1 below, this current research study has followed a design that is a sequential explanatory mixed method one.

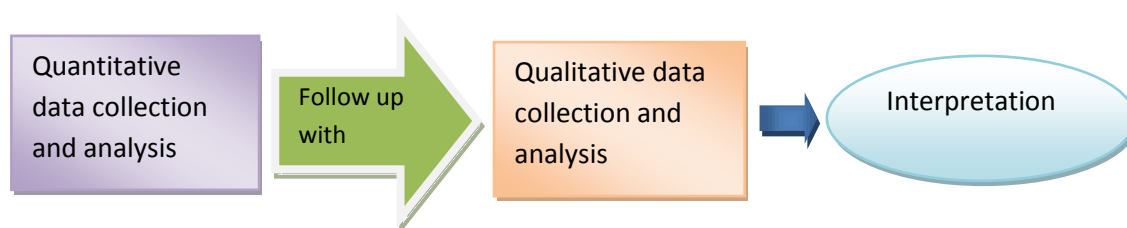


Figure (2.1): Sequential explanatory mixed method design

2.5.2. The sequential explanatory mixed method design

An explanatory design is a mixed methods approach with two phases, with quantitative data collection and analysis in the first phase, and qualitative data collection and analysis in a second phase that has been designed on the basis of results acquired during the initial quantitative phase. The second phase has the purpose of facilitating the provision of qualitative explanations for the initial results so that the study acquires further deep insights (Creswell et al., 2003; Creswell and Clark, 2007; Plano Clark and Creswell, 2011). For this research, the design was utilised for the collection of data from people who were consumers of medicines, and who practiced self-medication. Phase 1 of the research examined the current behaviours, attitudes and knowledge of Kurdish people with regard to the use of medicines and to gain an understanding of the factors that lay behind self-medication. A quantitative approach is required for the identification of associations between variables so that trends can be established. Phase 2 of the study had the purpose of obtaining opinions from a range of medical professionals (qualified), pharmacists, pharmacy inspectors and doctors, with regard to the inappropriate use of medicines in Kurdistan and key reform factors; a qualitative approach best addresses these types of issue.

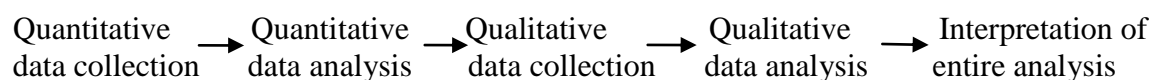


Figure (2.2): Visualisation of the mixed methods sequential explanatory design.

Mixed methods designs, including the explanatory sequential one, have a number of advantages and disadvantages (discussed in Section 2.5.1). This study design has the following major advantages:

- i. The straightforward design gives opportunities for quantitative findings to be explained in detail (Clarke, 2003; Morgan, 2006).
- ii. If there are unexpected results from the initial quantitative study, it is particularly useful (Morse, 1991).
- iii. The two phases within the design are structured separately, and as only one kind of data is collected within each phase, the design can be implemented easily without the researcher requiring a whole team of researchers (Plano Clark and Creswell, 2011).

It can be extremely time-consuming to design and use mixed methods approaches to research, and, often, the qualitative phase can take a lot more time than the initial quantitative phase. In addition, it is crucial that the resources required are given due consideration, as well as the feasibility of collecting and analysing all the data; Plano Clark and Creswell (2011) provide a useful summary of points to consider.

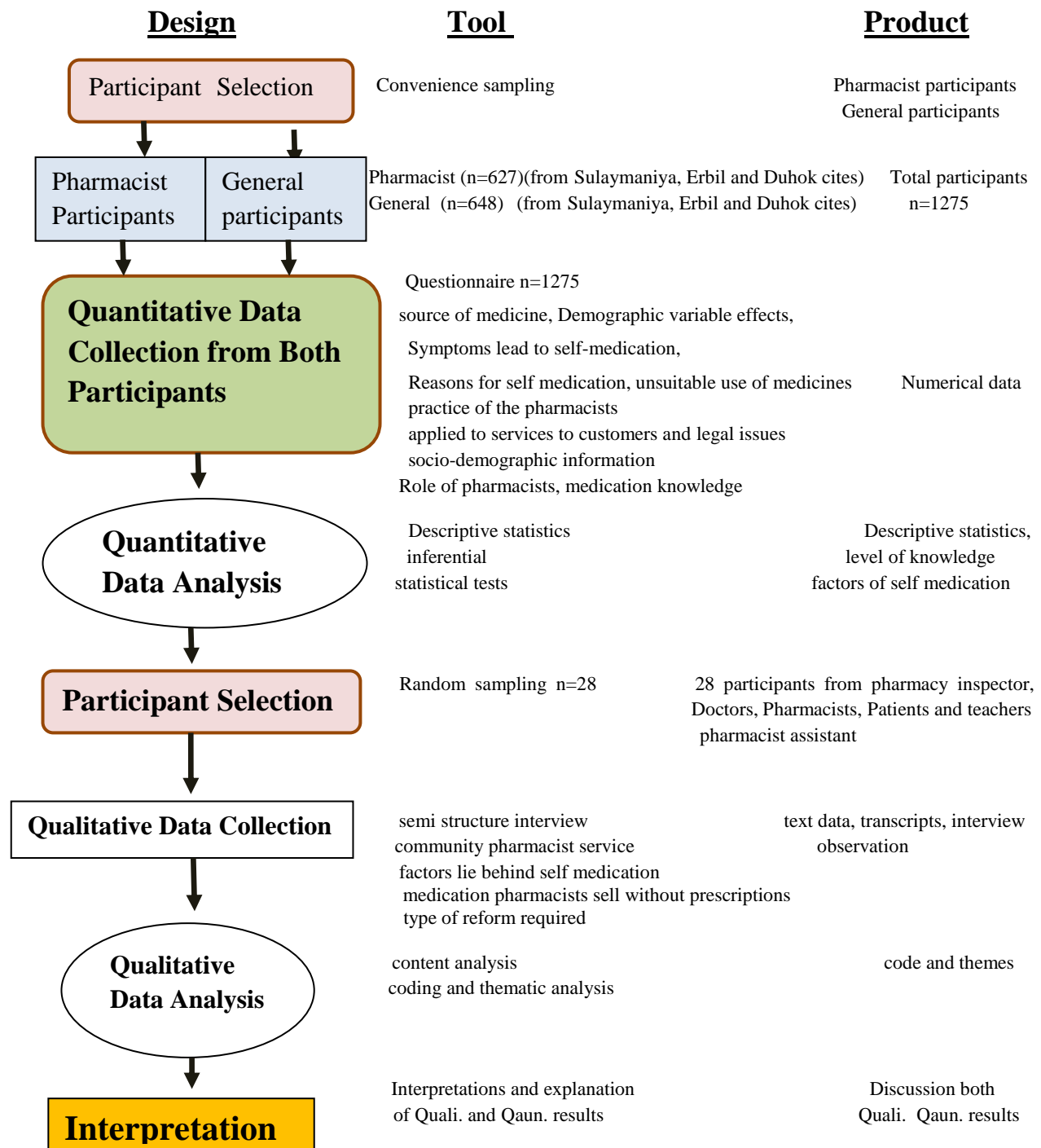


Figure (2.3):Visual model of the current mixed methods sequential explanatory design

2.5.3. Justification of using a sequential explanatory mixed method design

Numerous mixed methods approaches can be used for information collection, with the particular design chosen for a study being dependent on the objective(s) of the study, the research strategy that is adopted, and the time that is available for the collection of data. For this research, an explanatory sequential design was selected as the best choice for the reasons given below: -

- i. Given that an initial study aim is to acquire background information to act as a baseline for study of the behaviour, attitudes and knowledge levels of Kurdish people with regard to their use of medicines, it is important that quantitative research gives strong evidence to start with. Plano Clark and Creswell (2011) explain that an explanatory design is helpful to a researcher when there is a concern for quantitative data, and so the research gains the benefits of taking a quantitative approach. It is common that a sequential explanatory design is used for a quantitative data focus to gain a strong evidence base for a study; examples being a study by Thøgersen-Ntoumani and Fox (2005) on corporate employees and their physical activities and mental wellbeing, and by Clarke (2003) exploring wellbeing in later life following a stroke.
- ii. Since this research programme has the aim of studying inappropriate medicine use in Kurdistan, qualitative methods are also important. The research design had the objective of facilitating the analysis of the quantitative phase results through the use of qualitative methods in order to gain a deeper understanding (Tashakkori and Teddlie, 1998; Plano Clark and Creswell, 2011).

- iii. The study plan had the purpose of data collection by the researcher, and so the design was appropriate since it facilitated the collection of one kind of data during a time period (Plano Clark and Creswell, 2011). Mixed methods research does usually require much time for completion, and in the case of this PhD research project, there was sufficient time for completion of both study phases (Johnson and onwuegbuzie, 2004; Plano Clark and Creswell, 2011).
- iv. The explanatory sequential type of design initially involves the collection of quantitative data followed by explanation of the results through the use of qualitative data, and there can be various ways by which this is conducted. Generally, however, there are two typologies or variants in explanatory sequential design depending on decisions over the sequencing of the qualitative or quantitative phases. The two types are the follow-up explanation variant and the participants-selection one. The former of these is a common type of design that has a focus upon the quantitative phase whilst having a reliance upon the following qualitative phase to facilitate an explanation of the findings; a useful type of design if a researcher wishes to have an investigation into relationships amongst the quantitative data and to find reasons for them. The participants-selection variant, on the other hand, has a focus upon a qualitative approach so that phenomena found in Phase 2 can be explained, with the quantitative phase purpose being the identification of participants that are suitable (Plano Clark and Creswell, 2011).
- v. With an explanatory sequential design, a researcher should have consideration for the numerous issues regarding methodology. For example, decisions have to be made with regard to whether priority is given to qualitative or quantitative data collection and its analysis, to how the collection and analysis of data should be sequenced, and to how research stages are connected within the process and the integration of results

(Morgan, 1998; Creswell et al., 2003). Creswell et al. (2003) considered there to be four key criteria for helping in the effective design of a study: i.e. theoretical perspective, priority, implementation and integration, and reflection on these assist researchers to decide on whether to collect qualitative or quantitative data initially, or whether their collection will be performed concomitantly. In addition, the researcher decides on the theoretical framework to be followed, determines the priority that they will give to either qualitative or quantitative data, and makes a decision over when the different sources of data will be integrated. Taking the criteria in turn for this research, the theoretical perspective adopted by the researcher was a (post) positivist framework for the analysis of quantitative data, such as the measurement of the variables in Phase 1, and a constructivist approach for the deeper description and analysis facilitated in the qualitative Phase 2 (Plano Clark and Creswell, 2011). For this research, the priority criteria refer to the greater weight that was given to the collection of quantitative data, since the later exploratory Phase 2 was used to help provide an explanation for the results of the initial quantitative Phase 1. Thirdly, with regard to implementation, the study examined the level of knowledge and explored any further factors that may have had a bearing upon self-diagnosis and enhancement of treatment through self-medication; this was performed through following through on the study aims of the collection of data from a large sample. Finally, in terms of integration, it became clear that the data would be combined from the two stages, with the researcher using the analysis of the Phase 1 set to help in choosing which topics which should be explored further, and to decide upon who to interview. Also, the findings were, of course, merged as the stage arrived for their interpretation.

2.6 Ethical approval

Within academic research, particularly studies involving direct contact with people, it is always important to give a full consideration to ethical matters (Grinnell and Unrau, 2008). At De Montfort University, it is an essential prerequisite for research studies to receive formal ethical approval, and therefore this was requested from the Faculty of Health and Life Sciences Research Ethics Committee. The following matters were required to be addressed within the application: -

- i. Drafting of an information sheet for the participants describing all study aspects;
- ii. Ensuring the participant gives their informed consent, through submission of a consent form, and ensuring that participants are clearly informed so that they can withdraw from the study whenever they wish without their rights being affected;
- iii. Ensuring any information acquired is retained confidentiality and anonymously, with the Committee needing to be reassured that information will be stored safely.
- iv. Any potential hazards or risks for the researcher and participants need to be identified and described for consideration by the Research Ethics Committee;
- v. Prior to the participant signing the consent form, they need to be fully informed of the research nature and purpose (Denscombe et al., 2002).

Approval by the Health Committees of the local NHS hospital and health institution will also be sought so that reliable informed consent can be assured. The research process will be undertaken to accord with the latest version of the Declaration of Helsinki and the International Conference on Harmonisation of Good Clinical Practice Guidelines. Once the nature of the study was explained fully to participants, their informed consent was sought and their involvement only proceeded if that informed consent was obtained (Fournier et al., 2008). Having established the risks involved in the study, these were shown to the Research Ethics Committee, and it was made clear that should a participant happen to have a poor reaction to their involvement in the study, they are free to withdraw. Any risks involved in

the study needed to be completely identified and the Ethics Committee notified so that the research complied with the Data Protection Act of 1998. All the information gathered during the study was stored in electronic form on a computer using a password for protection. Since the research was undertaken in Kurdistan, the Research Ethics Committee also requested for a letter with the approved agreement of the health authorities in Kurdistan; the letter of agreement was received on the 13th May 2013 from the health authority. Consequently, an ethical approval letter was received on the 25th June 2013 from the Faculty of Health and Life Sciences Research Ethics Committee of De Montfort University, Leicester.

2.7. Phase One: Quantitative procedures

This passage provides a description of the procedures for quantitative study used within Phase 1 of the research.

2.7.1 Phase 1 study objectives

- i. Assessment of knowledge in relation to the consumers of drugs and the practice of self-medication, and also factors that have an influence upon them amongst the population sample;
- ii. Assessment of the type and extent of practices with regard to self-medication;
- iii. Identification of factors that exert a bearing on self-medication;
- iv. Making recommendations for health system reform for Kurdistan-Iraq so that problems related to inappropriate medicine use or improper practice of self-medication with pharmaceutical drugs can be tackled;
- v. Exploration of the reasons for paramedical staff and other medical professionals being involved in the self-medication of patients and their inappropriate pharmaceutical drug use;

- vi. Identification of the variety of factors related to inappropriate medicine use and self-medication within Kurdistan, and provision of a discussion of these practices within the cultural and demographic context of the region, so that a greater understanding can be developed that could help in the prevention of further inappropriate medicine use;
- vii. The provision of information for assessment of the existing role of community pharmacies within Kurdistan, especially in relation to inappropriate medicine usage.

2.7.2. Participants

Given the ethical considerations of the research, the participant profile was limited to those who were at least 18 years of age. Both females and males were included, i.e. those who had worked in primary healthcare centres, and private and public hospitals; the study included pharmacy assistants who were NHS staff that had sold medicines from pharmacies without or with a valid prescription, and patients who had taken medication that they had acquired without having received a prescription from a doctor, as well as patients who self-diagnosed and purchased medications for the purpose of having them on ‘stand-by’. Data collection was conducted using a non-probability convenience sampling technique. Since there is considered to be selection bias and uncertainty with convenience sampling, it is viewed as a weak approach; as such, improvement to the representativeness of the sample was sought through three different measures. Firstly, questionnaires were distributed to participants of various ages and of both genders on different days and at various times of the day. Secondly, it was considered the larger the sample size, the more reliable the findings (Bowling, 2002)[92]. Thirdly, an effort was made by the researcher to allow all participants present to complete a questionnaire if they so wished; everyone taking medicine(s) without having acquired a prescription and, with pharmacists, those working within a pharmacy and dispensing

medicines to patients (i.e. pharmacy assistant, nurses, pharmacists and others). In that manner, the approaches of the convenience sample could be improved, and it could also aid the acquisition of a probability sample that had representative characteristics.

The study sample size was estimated using an automated online calculator (RAOSOFT); three factors are taken into consideration by the calculator, i.e. the population and response distribution (for this study, 95%), the error margin (for this study, 5%), and the confidence interval (for this study, 95%). Based on this approach, the minimum estimated amount for an effective size of sample was deemed to be 385 participants (RAOSOFT, 2009). For this research, however, 1,450 participants were invited to take part (750 participants from the general public who were both female and male, and 700 pharmacists who were both female and male). There were two reasons for choosing this number of participants. Firstly, it was recommended to have a larger sample size, especially as a convenience sample approach was being taken. Secondly, as the research project had the aim of dividing participants into a pharmacist group and a general public group (with three further sub-division groups depending on the city), it was considered that a large sample size gave the researcher an improved means of finding sufficient participants for each category, especially the pharmacists. The research purpose and the manner in which the findings would be used was fully explained to every study participant. All those who agreed to be a participant had to provide written consent (See Appendix 6). Assurance was given that the data would remain confidential.

2.7.3 Pharmacist participants

There were two sections within the questionnaire that were used with pharmacist participants.

Section One: There were a total of 14 questions in this section, of which two were open and twelve were closed. Questions in this section included those related to demographic information about the pharmacist participants;

Section Two. There were a total of 31 questions in this section, of which 1 was open and 30 were closed. Questions in this section related to pharmacist experience with self-medication and experience within pharmacies.

The researcher had discussions with two supervisors at Leicester School of Pharmacy with regard to community pharmacies in Kurdistan and practice in relation to pharmaceuticals. Discussions also covered the UK situation in detail, and the two countries were compared with account taken of the differences in the societal contexts and their cultural backgrounds. The process of discussion helped the researcher to identify several common practices that may result in inappropriate drug use in Kurdistan.

A number of stages for developing and refining the questionnaire were completed, and it was then translated into Kurdish by the researcher who is a native speaker. So that the translation could be double-checked, the version in English was passed to a translator of Kurdish (see Appendix 3) in the UK so that the questionnaire could be translated back into Kurdish, and minor modifications could be made once this was compared to the original translation of the researcher. Once there was a clear version of the questionnaire for pharmacists in Kurdish, the researcher took it over to Kurdistan and used it in a pilot study of pharmacists. The pilot study of the initial questionnaire for community pharmacies was undertaken by the investigator for ten pharmacists working at ten pharmacies within Sulaymaniya City. Each of the pharmacists was selected randomly with those in attendance asked for their answers to the questions. Prior to commencing the main study, the researcher had discussions about the results of the pilot study with two members of staff from the university, and the necessary amendments were made.

Once the amendments had been completed, the questionnaire was sent to seven hundred participants in the three Kurdistan cities. There were both open-ended and closed-ended

questions and, as well as those relating to demographic details. There were also questions related to attitudes with regard to the use of antibiotics and self-medication with them, and questions related to beliefs about their use in dealing with minor ailments. In addition, there were questions in relation to inappropriate medicine use, the knowledge of participants with regard to antibiotic effectiveness, information sources in relation to antibiotics, and the reasons behind antibiotics being self-prescribed.

The researcher distributed the questionnaires at the reception desk of the pharmacy and help was offered in completing it. The study was undertaken from 1st of April up to the 4th August in 2014. There was an expectation that many participants would require a little further explanation to help them complete the questionnaire fully. Once the questionnaires were completed, the researcher collected them on the same day as they had been distributed. Out of the total of 700 people approached, 28 people did not participate because of lack of time. Also, 23 participants returned questions that were incomplete and which had to be excluded, and 22 of them did not return the questionnaires at all. Hence, a total of 627 questionnaires were completed successfully (89.56%), the results of which were then taken forward for analysis.

Table (2.3): The response rate for the questionnaire

Distributed questionnaires	Refused	Uncompleted	Not returned	Response Rate
700	28	23	22	89.56% (627)

2.7.4 General public participants

There were two sections within the questionnaire given to the general public. The first section had questions in relation to demographic details, whilst the second section had questions in relation to the experience that the respondents had with pharmacies and pharmacists, and also in regard to chosen medications and how they were purchased. Various procedures and steps were passed from the initial meeting of the researcher with the

academic supervisors through to reaching the final version of the questionnaire; these steps are summarised as follows: -

1. Initial questionnaire to be used for the general public was developed;
2. The questionnaire was translated into the Kurdish language;
3. A Kurdish translator, i.e. Mr Salih Fatah, checked the accuracy of the translation;
4. The questionnaire was taken to Kurdistan and piloted on n = 10 participants from the general public;
5. The results of the pilot test were discussed with two academic staff members from the university in Kurdistan, and modifications were made to the questionnaire;
6. The questionnaire was administered within the three main cities of Kurdistan.

A random selection of members of the general public (totaling 750 people) was then performed from the cities of Duhok, Sulaymaniya and Erbil, i.e. the cities within which the survey of the community pharmacies had been conducted. Participants received a full explanation of the study purpose, and their written consent was received once they had agreed to participate. The questionnaire was distributed in a random fashion to people who were in the waiting area of the primary health centre, within the waiting area of a private hospital, or whilst they awaited the services of a doctor in a general public or dental hospital; participants were asked to complete the questionnaire then and there. The researcher collected the completed questionnaires on the same day as their distribution and, of the total of 750 people that were asked, 9 people did not return the questionnaire, 51 returned questionnaires that were incomplete and were consequently excluded, and 42 people declined to participate in the study in view of time constraints. Hence, a total of 648 valid completed questionnaires were collected (a total of 86.4%), the results from which were analysed in the study (Table 2.4). The questionnaire survey was undertaken from the 1st of April 2014 to the 20th of August 2014.

Table (2.4): Questionnaire response rate

Distributed questionnaires	Refused	Uncompleted	Not returned	Response Rate
750	42	51	9	86.4% (648)

2.7.5 Data collection methods

In Phase 1, questionnaires were used to conduct the cross-sectional survey design. Whilst questionnaires are the most common manner in which to collect data within research that is quantitative, they can also be employed within research that is qualitative (Creswell, 2009; Sanders and Wilkins, 2010). Questionnaires can be a very effective method for describing populations by, for instance, counting the frequency of a particular event, for assessing the distribution of certain variables, or for studying associations between variables such as sex, age, knowledge, groups, attitudes or other similar types of information in relation to the population (Appleton, 2009). As an instrument of research, the questionnaire has numerous advantages, with it being fairly easy to organize, and is also economical, both in terms of time and money, when compared with other methods such as interviews; this is the case, particularly when there are large numbers of participants spread over a broad geographical area. Moreover, questionnaires only require printing and posting. Also, interpersonal factors can have less of an impact when questionnaires are used, and they offer greater anonymity (Bowling, 2002; Denscombe, 2007; Watson and Coombes, 2009). Using questionnaires, however, can have several disadvantages such as the possibility that questions may be unclear to certain participants and the response rate may be relatively low. Furthermore, it may be difficult for the direction of variable associations to be established (Denscombe, 2007). The researcher chose to hand the questionnaires out himself within the health centres

in an attempt to overcome these disadvantages; personally being there enabled the researcher to introduce the topic of the study and to encourage the participants to give frank responses. The researcher could provide clarification when needed, and also encourage participants to fully complete questionnaires whilst they were in the pharmacies or waiting rooms.

2.7.6 The rationale behind the choice of a survey questionnaire for this research

- i. As noted by Creswell (2009), the questionnaire is one of the most commonly used primary data collection tools;
- ii. The questionnaire survey offered the best choice in terms of economy and time as a large target population sample was required to achieve the objectives of the research;
- iii. Questionnaires are a prime means of describing a population and studying the relationship between different variables by undertaking the necessary techniques for test analysis, such as the Fisher's Exact Test;
- iv. Questionnaires are consistent with the pragmatic paradigm approach adopted for this particular study.

Questionnaire questions may be either open- or closed-ended, or a combination of the two (Black, 1999). Usually, closed questions are employed within research investigations that are quantitative (Mitchell and Jolley, 2010). The researcher offers a participant a fixed number of possible answers to choose from within closed questions (Oppenheim, 1992), there may be options in a ranking scale, such as questions with a Likert-scale, multiple choice questions, or simple questions requiring a simple yes or no response. Questions that are closed tend to be helpful for gathering simple demographic data, and for the categorisation of respondents; for instance, a question such as 'What is your level of education? (high school/graduated from

college and so on), or ‘What are the main reasons why you self-medicate? (convenience/fast/cost savings, etc.). Also, it is easier to conduct an analysis on closed questions; their answers are easy to compare and, when compared with questions that are open-ended, less time is required for both the participant and the researcher (Sanders and Wilkins, 2010). When a researcher uses open-ended questions, there are no answers from which the participant can choose; instead the respondent has to answer in their own words to explain their opinions. This, of course, can be very beneficial since open-ended questions give the participant the opportunity to provide information in greater depth and express their personal feelings and perspectives on a particular topic (Oppenheim, 1992; Sanders and Wilkins 2010). Closed questions can lead to artificially suggested answers, whereas open-ended ones give participants the latitude to take a different revealing angle on the question than the pre-conceived view of the researcher (Sanders and Wilkins, 2010).

For the Phase 1 of the research, two questions were employed with both open and closed questions for the data collection from the participants (pharmacists and the general public). It was considered a useful way in which to build up baseline information from the sample, and also considered an appropriate way to have an exploration into consumer knowledge of medicines, self-medication, and factors that have a bearing on self-medication. Also, given the large sample size of 1450 participants, the questionnaire survey was considered to be an ideal approach. Furthermore, given the suitability for using a computer analysis program, such as XLSTAT or the Statistical Packages for the Social Sciences (SPSS), the type of questionnaire chosen enabled identification of associations and trends between variables, and so the two questionnaires, i.e. one for the pharmacists and one for the general public, were utilised in this study. Chi-squared contingency table analysis and Fisher’s exact test values,

together with their corresponding probability (p) values were performed using either SPSS version 17 or XLSTAT2015 association coefficients software module options.

2.7.7 Data analysis of the questionnaires

As noted above, a cross-sectional survey was conducted with the purpose of providing an examination into the existing knowledge of people in Kurdistan who were practicing self-medication, and to undertake an exploration into the factors that had a bearing on self-medication. SPSS version 17 was used for the analysis of data that was acquired by the questionnaire.

2.7.8 The measurement variables

- i. Information of a demographic nature, such as gender, age, marital status, level of education, occupation, city and treatment type;
- ii. Exploration of the knowledge of the participants;
- iii. The level of self-medication;
- iv. Policies related to pharmacy;
- v. Use of antibiotics in self-medication.

2.8 Phase 2: The qualitative procedure

This particular section has a description of the qualitative research methods that were used for addressing the study objectives of Phase 2 of the research project.

2.8.1 The Phase 2 objectives

- i. To establish what is the status of the community pharmacy within Kurdistan;
- ii. To acquire knowledge about drug use and factors that have a bearing on self-medication in the population to facilitate the adoption of appropriate policies;
- iii. To help in the identification of reasons for the increase in overuse and misuse of drugs in Kurdistan;
- iv. To help in the identification of the views of healthcare professionals with regard to community pharmacy effectiveness and the level of service they provide to the community;
- v. The provision of information that assesses the existing role played by community pharmacies within Kurdistan, particularly in regard to self-medication.

2.8.2 Participants

Phase 2 of the study had the aim of providing further explanation for the initial results from the quantitative Phase 1. It has been recommended that a sample for qualitative data within an explanatory design is a lot smaller than the initial quantitative sample, given that a direct comparison of data is not sought (Plano Clark and Creswell, 2011). As such, in Phase 1 there are 40 study participants that were selected randomly for participation in an interview that was semi-structured, with the selection of the sub-sample of people from the three Kurdistan cities conducted through the use of stratified random sampling. Interview arrangements for each participant involved initial contact to arrange an appropriate interview date and time, with a phone call the day before to act as a reminder. If a potential participant made their

excuses for not attending the interview, the following participant in the list was chosen as a replacement.

There were a total of 28 participants interviewed, with 8 from Duhok City, 8 from Hawler, and 12 from Sulaymania City. With twelve people failing to attend for an interview, the arrangements were made with the 28 other participants as shown in Table 2.5 below. For those who had agreed to be interviewed, the interview purpose and the aims for using the data were explained, and then further written consent was acquired (Appendix 6). Data confidentiality was assured at all times, and the interviews were not recorded using tape recorders.

Table (2.5): Stratified random sample from each of the cities

Groups	Participants
Sulaymania	12
Hawler	8
Duhok	8
Total	28

2.8.3 The interview method

As Creswell and Clark (2007) note, qualitative research has the main aim of providing details of the experiences, opinions or views of participants. Qualitative research helps a researcher have a deeper appreciation of participant perceptions, and how their world is structured within the context of everyday life (Berg, 2007). The most commonly used method for

collecting data within qualitative research is the interview, which has been described by (Green and Thorogood, 2004, p. 79) as “a conversation that is directed more or less towards the researcher's particular needs for data”. An interview can be both flexible and practical, and is especially appropriate when a researcher has the aim of obtaining detailed information, such as the experiences, feelings or opinions of people (Denscombe, 2007; Coombes, 2009). A researcher can make observations within an interview with regard to changes in the facial expressions or voice, or any other indications of participant feelings and, when it comes to undertaking an analysis of the data, such details can be very significant. Interviews may be totally open, semi-structured or highly structured. An open or unstructured interview seeks to gain an understanding in depth of the point of view of an interviewee on a specific topic, whereas a semi-structured interview aims for particular information or knowledge that can be contrasted or compared to other views gathered across studies or within the same study. An interview that is structured is similar to a questionnaire; it is undertaken with the participant face-to-face, with the aim of gathering participant information using a schedule with a particular order (Dawson, 2009). The interview type chosen is dependent upon the research purposes with, for instance, certain studies using unstructured interviews, since there is a need for a deep exploration into how the participants feel or think about a particular research subject in question. Semi-structured interviews were used in this research project, as there was a need for collection of particular information with regard to the knowledge people had in respect to the practice of medicine, drug policies and self-medication within Kurdistan; such information could not be acquired through the Phase 1 part of the research, and there was a requirement to check for any misinterpretations or misunderstandings that may have occurred within the questionnaire survey. A number of set prompts and questions were used for each semi-structured interview (Appendix 5); the aim was to ensure that the interviews had a degree of control and order so that the interviewee did not stray too far from the

particular focus of the research. The subject matter and the order of the questions did, however, ensure that there was a degree of flexibility for what information the participant may wish to impart (Green and Thorogood, 2004; Denscombe, 2007; Dawson, 2009). There are several disadvantages with interviews, however; if the participants are spread over a large geographical area, the research can be costly and time-consuming, for example (Denscombe, 2007). Also, the skill of the interviewer has a bearing upon the interview quality (Bowling, 2009). The transcription and analysis of interview data can also be very time-consuming, and so a researcher has to listen, think and analyse further in a way that is more complicated than the straightforward collation of questionnaire information.

2.8.4 Data management and analysis

Qualitative data can be analysed through the use of several approaches such as grounded theory, phenomenology and ethnography (Hsieh and Shannon, 2005; Elo and Kyngas, 2008). The most commonly used analysis method in research studies related to health is content analysis (Green and Thorogood, 2004; Hsieh and Shannon, 2005; Elo and Kyngas, 2008). Content analysis has been defined by Berg (2001), as “a research technique for making replicable and valid inferences from data according to their context”. Content analysis is a flexible research design method for the analysis of text data and does not just involve the counting of words or extraction of objectives from text; a researcher ought to undertake an analysis of the relationships between concepts and words and their meanings. As such, content analysis enables a researcher to enrich their understanding of a topic and, as Hsieh and Shannon (2005, p. 1278), stated, it can be defined as “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns”.

Depending on the study purpose, both deductive and inductive forms of analysis can be employed with, for instance, deductive analysis are used for the comparison of existent categories or theory testing, and inductive approaches are used when there is no clear prior knowledge and/or no previous studies have been done in relation to the phenomenon in question (Elo and Kyngas, 2008). Since there was a lack of data that was relevant to Kurdistan, this research used inductive methods that had the aim of taking the Phase 1 findings and enriching them. In general, there are 3 main processes involved in content analysis, i.e. the collection of data, its coding and then its analysis (Elo and Kyngas, 2008; Bowling, 2009). Within this research project, data that had been transcribed was broken into still smaller units for analysis (Denscombe, 2007). Categories were created through the use of open coding that entailed the writing of notes or headings upon transcripts, the creation of categories and then reducing their number through grouping them under higher headings (Elo and Kyngas, 2008). Analysis was then performed upon the texts in relation to the frequency that categories were observed, and their relation to other categories in the gathering of knowledge and understanding (Denscombe, 2007). In the paragraphs that follow, the process of the research and the methods that were utilised in the qualitative Phase 2 are explained, including a description of the interview procedures, the transcriptions and the stages involved in the data analysis.

2.8.5 The interview procedure

In April, May and June of 2014, a total of 28 semi-structured interviews were undertaken with 5 of them being with female interviewees and 23 with male ones. The researcher, Omer Aziz, conducted all the interviews in Kurdistan himself, and he made clarifications whilst there and made further in-depth questions, where possible, when emergent themes became apparent. As well as the taking of notes, the researcher transcribed all of the interviews. When the interviews began, in order to accord with the ethical approval for the research, as well as to accord with previous research techniques established for interviews, the interview

nature was contextualised, with the research purpose explained to potential interviewees. The participants that were selected were contacted at first by phone to arrange an appropriate date and time for the semi-structured interview, and this was later confirmed the day before the scheduled interview. Prior to the commencement of each interview, the researcher gave the interviewee an explanation of the research purpose and why they were being interviewed, and informed the participants of the purpose for any findings obtained. The participants were then asked to give their signature to a consent form, and assurance was given that data would remain anonymous and confidential, and stored appropriately. The interviews had a duration of between about 15 and 45 minutes, and an outline was handwritten at first and a full transcription was performed later. All of the interviews were undertaken by the researcher in person within offices or pharmacies on or between the 2nd of April 2014 and 5th of June 2014. The researcher translated the transcripts into English and discussed them with the supervisory team, with auditing of research procedures, and then the analysis of data ensured. The researcher also analysed directly other transcripts that were in the Kurdish language. It was important that transcripts are analysed in their original language in order to reduce limitations ascribable to any loss of meaning (Van Nes et al., 2010). Following this, findings and quotations were reported carefully in English.

2.8.6 The interview analysis

The analysis and classification of data was performed manually using the technique of cutting and pasting which, although ‘low tech’, was considered an effective method that entailed the researcher taking an active involvement in comparing, contrasting and extracting the themes and sub-themes of the dataset. So that the findings could be compared and contrasted easily, the Microsoft Word programme was also used as the cutting and pasting of transcriptions could be conducted with new pages for each theme upon a computer using different fonts and colours (Green and Thorogood, 2004). Participant numbers were used as a code for each participant, along with their educational

level. Different colours were used as codes for each of the cities, i.e. green for Sulaymaniya, blue for Duhok, and yellow for Howler.

So that a close understanding could be gained of the particular interests of each of the interviewees, the transcripts were read a number of times and highlights made on the transcripts which were also transferred onto a Microsoft Word file separately. The process of re-reading the texts helped in highlighting new items and, once all the aforementioned procedures were completed, a total of 8 codes and master themes were identified within the transcripts. Simply using scissors over a suitably large table, it was possible to categorise together all the relevant sections to the codes and themes, and the code of the participants was used as a heading for each section; in this manner, common answers could be found, and any differences between participant groups could be determined. Within the research process, two further methods of checking the validity of analysis of the data from interviews were employed (Burnard, 1991; Creswell, 1998). Firstly, member checking was used with, for instance, a colleague (who was not involved in other aspects of the research) being asked to help if they were familiar with the processes involved in the analysis of qualitative data. As such, a PhD student who was a Kurdish colleague within the Liverpool John Moores University was asked to help in the identification of categories within three of the Kurdish transcripts, with the aim that a discussion could ensue that highlighted any major differences between the findings and analysis of the colleague and those of the researcher. The second way in which validity was checked was by obtaining participant feedback. Therefore, 3 participants were asked to discuss the major issues from their own transcripts for comparison. Using these two methods together helped the list of categories that were used in the analysis of the interview data to be adjusted accordingly.

2.9 Chapter summary

A description of the methodology employed in Phases 1 and 2 of the research programme has been given in this chapter. Moreover, this chapter has provided an outline of the rationale behind the choice of methodology and the research approach, and also the methods of collection and analysis of the data. With its two phases, the research conducted employed a mixed methods design that is explanatory and sequential; the first of the phases adopts a quantitative method in the use of a questionnaire with the aim of describing the population, examining the existing extent of consumer knowledge of medicine, and exploring the factors that may lead to self-medication. The study involved a convenience sample of 1,275 participants (648 general public and 627 pharmacists), with participants recruited from within pharmacies and in clinic waiting areas within the three Kurdistan cities. The quantitative data acquired were analysed using inferential statistical tests and descriptive statistics. Following analysis of the quantitative results, the second phase was undertaken as a follow-up study. Within the second phase, semi-structured interviews were undertaken with 28 participants in order to provide a deeper exploration of the main findings from Phase 1 of the study, i.e. to understand the factors that lay behind self-diagnosis, self-medication and appropriate medicine use. The data was then analysed using thematic analysis, and this assisted with the provision of additional information to support the initial findings and enable a more reliable conclusion to be put forward.

CHAPTER 3 - PHASE ONE RESULTS

Section 1:

3.1.1 Introduction

The purpose of this chapter is to present and analyse data that was collected from all the participants in Kurdistan. The aim of this study was to assess the use of drugs by the consumers of medicine and self-medication practices, and also influencing factors in the population. A further aim was to explore the knowledge, attitudes, and behaviours of Kurdish subjects in using medicines, and to understand the factors influencing self-medication in Kurdistan.

The first part (Phase 1) of this chapter is concerned with pharmacists working in community pharmacies. This is divided into two sections, with the first being concerned with demographic information of the target population, and the second relating to the practice of the pharmacists as applied to services available to customers and legal issues.

The second part (Phase 1) relates to the responses of the general public, including their contacts with community pharmacies, as well as their assessment of the services provided by pharmacists and the practicing of self-medication.

The third part (Phase 2) relates to interviews with healthcare officials with regard to their opinion and assessment of the professionalism and practice of community pharmacists.

Community pharmacies

3.1.2 Demographic characteristics of the sample

A total of 700 pharmacy staff were approached by the researcher to take a part in this study in the three major cities of Kurdistan. The questions included a focus on attitudes towards antibiotic use and self-medication, with antibiotics, beliefs about antibiotics for minor ailments, inappropriate uses of medicine, knowledge about effectiveness of the use of antibiotics, sources of information on antibiotics, and reasons for the self-prescription of antibiotics.

The purpose of the study, and how the results arising from them would be utilised, were fully explained to all participants. Confidentiality of data collected was assured. All questionnaires were handed out at the pharmacy by the researcher at the pharmacy reception desk. Moreover, offers of assistance to complete the questionnaire were offered for most, since many participants were expected to have a question or require an explanation at some point. The completed questionnaires were collected by the researcher on the same day that they were distributed to participants. Of the 700 that were approached, 28 declined to participate in view of time constraints, 22 participants did not return the questionnaires, and 23 returned questionnaires which were excluded since they were incomplete. Hence, 627 participants completed the questionnaires, and their results are included in this study, i.e. 89.56% of the total number (table 3.1.1). The study was conducted from the 1st of April to the 4th of August in 2014. The characteristics of the 627 participants who completed the questionnaire, including the frequency distribution of the participants and socioeconomic and self-medication data, are discussed below.

Table(3.1.1): Response rate of questionnaires distributed.

Distributed questionnaires	Refusal to complete	Uncompleted	Not returned	Response Rate
700	28	23	22	89.56% (627)

3.1.3 Gender of participants

Of the 627 participants, most of them were male.

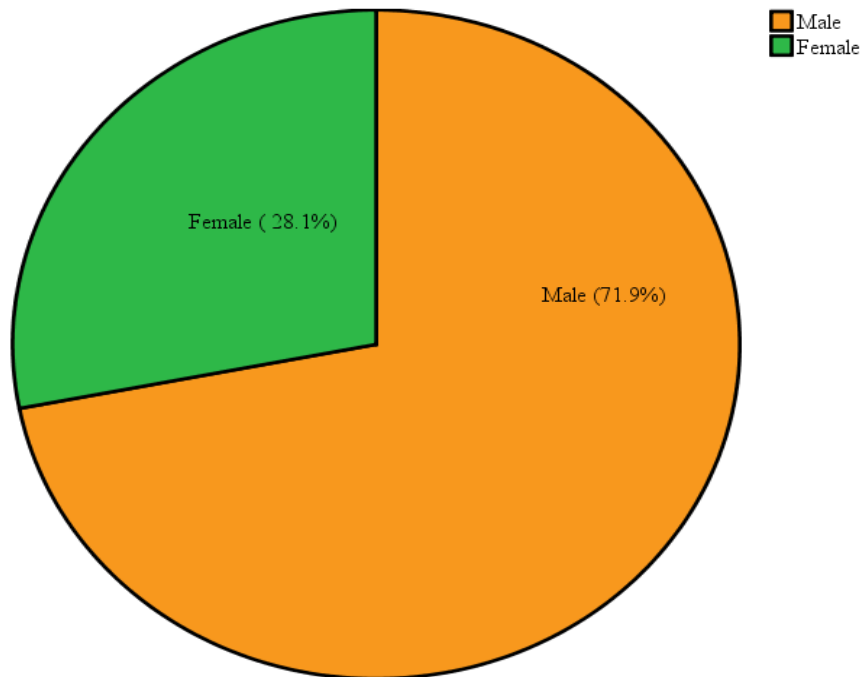


Figure (3.1.1): The distribution of pharmacists according to gender.

3.1.4 Distribution of pharmacy staff according to the three cities

The pharmacy staff in this study were randomly selected from the three major cities of Kurdistan. Of these pharmacy staff, about one of third were from Erbil, more from Sulaymaniya, and less from Duhok (Figure 3.1.2).

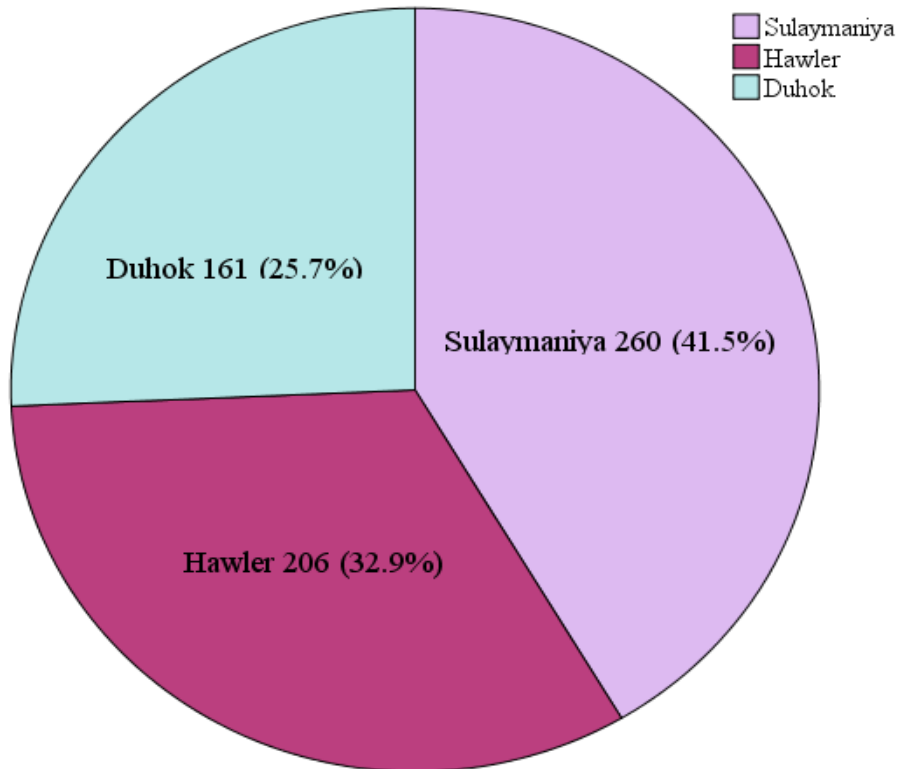


Figure (3.1.2): Frequency distribution of pharmacists according to the three cities involved.

3.1.5 Age

Figure (3.1.3) displays the distribution of pharmacy staff according to their age. Most of the pharmacy staff were in the age range of 26-35 years, followed by pharmacy staff below 26 years of age.

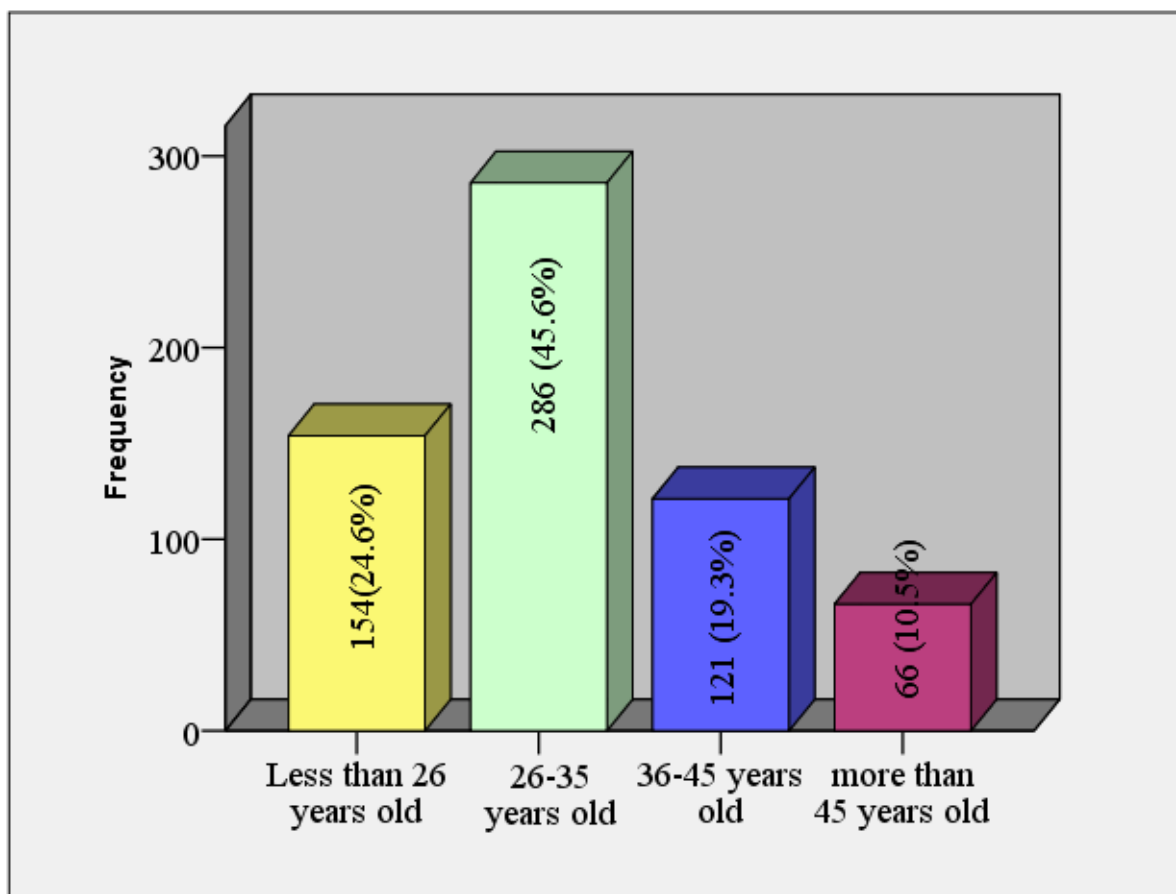


Figure (3.1.3): Frequency distribution of pharmacists according to age.

3.1.6 Marital status

The distribution of pharmacy staff according to their marital status at the time of interview is presented in table (3.1.2). Most of them were married, and only a few of the pharmacy staff were divorced.

Table (3.1.2): Frequency distribution of pharmacists according to marital status.

	Single	Married	Divorced	Widowed	Total
Number	129	486	8	4	627
Percentage frequency	20.6%	77.5%	1.3%	0.6%	100%

3.1.7 Qualifications

Figure (3.1.4) shows the frequency distribution of pharmacists according to qualification. Less than one-half of this cohort possessed a bachelor's degree in pharmacy. The majority of pharmacists or staff working in pharmacies as pharmacists had no bachelor's degree in pharmacy, as shown in figure below.

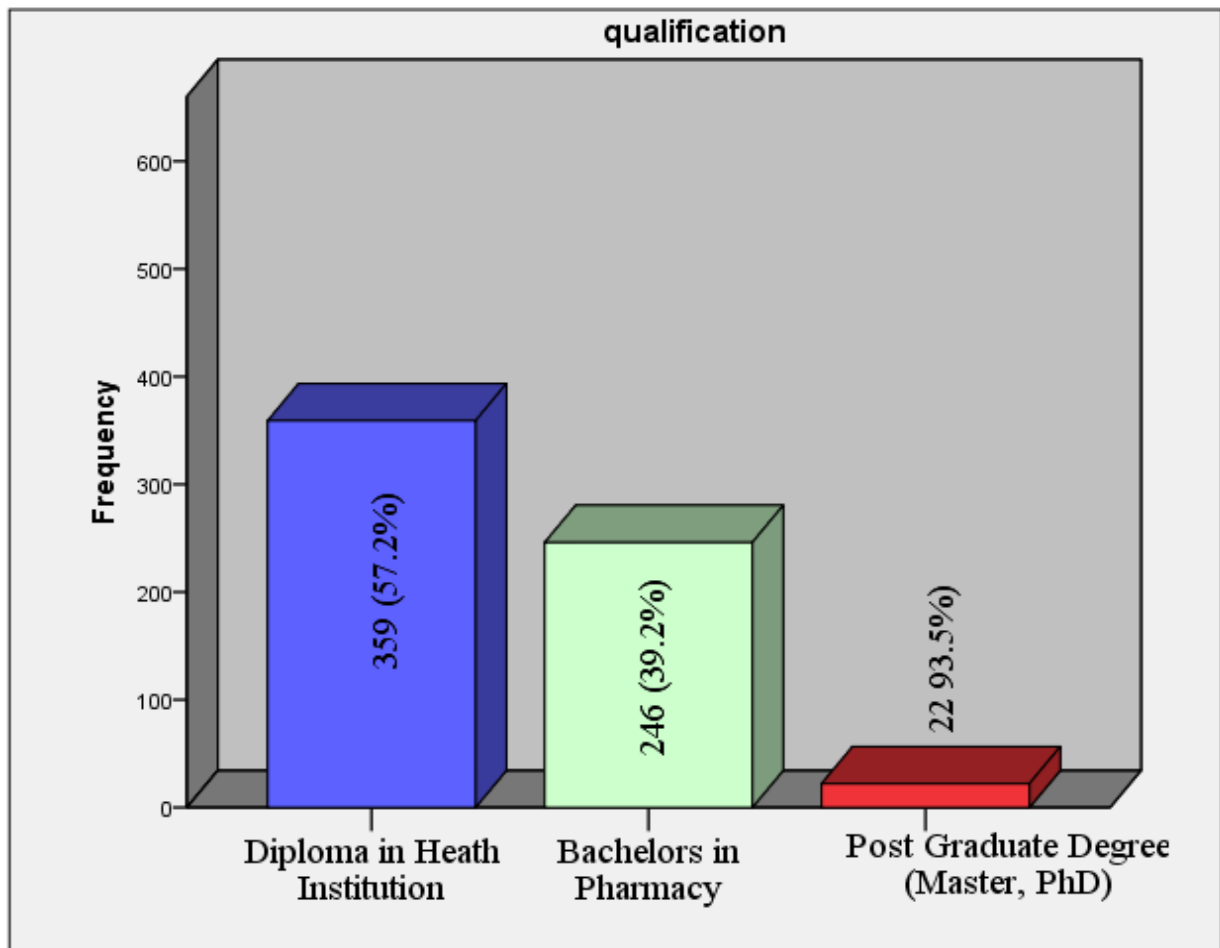


Figure (3.1.4): Qualifications of pharmacists

3.1.8 Gender

Gender / Opening hours of pharmacy

The table (3.1.3) below identifies the pattern of opening hours of the pharmacies in the study population. Respondents were asked to detail the hours of opening in three periods of the day (morning, afternoon and night). The results are presented in this table (3.1.3), where it can be noted that 29 of the male pharmacists were in pharmacies open at night; most of the pharmacies were open in the afternoon, and none of the male participants were in pharmacies that were open in the morning. It is interesting to note that the most popular times for shopping for Kurdish citizens is during the afternoon (i.e. in the 14.00 - 18.00 hr. period) because midnight customers may be asking for drugs for non-medical uses.

Table (3.1.3): Gender of pharmacists according to opening hours of pharmacy.

Opening Time	Male	Female
Morning	0<	6<
Afternoon	422>	170>
Night	29>	0<
Total	451	176

Morning-08.00 up to 12.00 hours

Afternoon = 12.00 up to 18.00 hours

Night = 18.00 up to 24.00 hours

(< >) shows below or above expected value

Gender / Proportion of customer visits to pharmacies

The frequency of customer visitation to the pharmacy was assessed by asking each pharmacist what proportion of the customers visited more than once a week. The result presented in the table (3.1.4) below reveals that most of the male and female pharmacists answered 1-50 visitors (p-value 10^{-9}). Only a small number of the male pharmacists indicated that a 51-100 proportion of customers visited the pharmacy with a frequency of more than once a week, and few female participants indicated that 1-50 customers visited the pharmacy with a frequency of more than once a week; this is lower than the null hypothesis expected value.

Table (3.1.4): The gender of pharmacists according to the proportion of customers visiting the pharmacy more than once a week.

Proportion of customers visiting pharmacies	Male	Female
1-50	433>	169>
51-100	11<	4<
101-150	7<	1<
More than 150	0<	0<
Total	451	176

Gender / Indication of 3 medical conditions for which you sell the most medicines

Another question relating to pharmacy activities asked the pharmacists to rank medicine sales for the treatment/management of common ailments in order of the volume of sales for each. In addition to 5 identified disorders (headache, infection, colds, fever, skin disorder), respondents were invited to choose the three most common reasons for the sale of medicines. The results are presented in the table (3.1.5) below. From this, it can be observed that the most common disorders according to the male pharmacist responses were Headache > Cold > Infection (90 respondents); Fisher p-value = 10^{-9}). According to female pharmacist responses, the order of ranking was Headache > Fever > Cold. The highest sales were considered to be for headache remedies and infection. Many respondents made notes on the questionnaire that the sales of such items were seasonal.

Table (3.1.5): Distribution of gender according to their ranking of medicine sales in order of the volume of sale for the treatment of some common ailments.

Condition Disease	Male	Female
Headache, Fever, Cold	5<	47>
Headache, Fever	71>	9<
Headache, Fever, Infection	31>	15<
Headache, Cold, Infection	90>	13<
Infection, Skin disorder	11<	5<
Infection, Cold	86>	34>
Cold, Headache, Fever	54>	2<
Infection, Headache, Fever	15<	13<
Infection, Headache, Cold	88>	38>
Total	451	176

Gender/ Most sold medicines

The pharmacists were also requested to provide an assessment for medicine which had the most sales. The results presented in the table (3.1.6) below show that antibiotics were sold the most, pain killers the second most; Omeprazole and Simvastatin were sold the least. Most of the male pharmacists responded Amoxicillin, then Ciprofloxacin. However, many male pharmacists responded that painkillers had the highest sales; p-value 10^{-9} , from Fisher's exact test.

Table (3.1.6): Gender of pharmacist distribution according to the most sold medicines.

Most frequent selling medicine	Male	Female
Amoxicillin,	190>	68>
Ciprofloxacin,	105>	52>
Panadol, Paracetamol	121>	30<
Simvastatin	18<	12<
Omeprazole	17<	14<
Total	451	176

Gender / Is it essential to keep records for all medicines that you purchased?

The pharmacists were asked about their record keeping for non-controlled drugs (non-controlled drugs in Kurdistan are simply known as drugs or medicines, and these include over-the-counter medications, and those that are prescribed to treat medical conditions such as high blood pressure, diabetes, and bacterial infections; all require prescription by law) bought and sold. From the information in the table (3.1.7) below it can be observed that while the majority, of male pharmacists, agreed that they should keep records for purchased medicines (Fisher's exact test showed that this value was above the expected value), while some male pharmacists disagreed and few of them strongly disagreed to the keeping and maintaining of records for purchased medicines; this was below the expected value. Notwithstanding, 55 male pharmacists neither agreed nor disagreed to keep the record for non-controlled drugs, which was above the expected value. Interestingly. However, it should be noted that it is not compulsory by law to keep records for medicines purchased.

Table (3.1.7): The gender of pharmacists and record keeping for the purchase and dispensing (sale) of non-controlled drugs by community pharmacists.

Keep recording of medicine	Male	Female
Strongly agree	33>	2<
Agree	250>	146>
Neither agree or disagree	55>	11>
Disagree	77<	17<
Strongly disagree	36<	0<
Total	451	176

Gender / Do you know what is a controlled drug?

Of those respondents answering the question regarding controlled drugs, many of the male pharmacists and some of female pharmacists were not aware of what were controlled drugs (the results are presented in the table (3.1.8) below. Participants were requested to provide an answer to the question of whether or not they kept records for the sale/dispensation of controlled drugs. It was observed that some participants did not respond to the question relating to controlled drugs, as they did not understand the meaning of the term. Moreover, pharmacists responded 'yes' they aware of controlled drugs but they were not keeping records for the sale of controlled medicines, however the Kurdistan health system does not request the keeping and maintenance of records for any prescription, controlled or uncontrolled drugs; Fisher's exact test shows this is above the expected value (p-value 10^{-9}).

Table (3.1.8): Records kept on the selling/dispensing of controlled drugs.

Controlled Drug	Male	Female
Yes	279>	102>
No	143>	49>
Not answered	29<	25<
Total	451	176

Influence of gender on the use of computers

It was found that the majority of the male female pharmacists had a computer system in their pharmacies and used the computer for general information; Fisher's exact test gave a p value of 10^{-9} . Almost same number of male pharmacists and female pharmacists had a computer system in their pharmacies and used the computer for checking interactions; this is below the expected value.

Table (3.1.9): Gender of pharmacists, according to the use of a computer in their pharmacy.

Computer use	Male	Female
General information	405>	130>
Checking interaction	46<	44<
Labelling medicine	0<	2>
Total	451	176

Gender/ Advice provided to patients

The table (3.1.10) below shows that majority of male and female pharmacists did advise patients sometimes, then high number of male and female pharmacists advised orally; the Fisher exact test shows this is above the expected value (p value 10^{-9}). Same number of male and female pharmacists responded that they always advise the patients about the drugs they bought.

Table (3.1.10): Gender of pharmacists according to advice provided to patients.

Advice to patients	Male			Female		
Always	55<			55>		
Sometimes	396>			121>		
Never	0<			0<		
Total	451			176		
	Orally	In writing	Both	Orally	In writing	Both
	275>	141>	35<	176>	0<	0<

Gender / Number of qualified pharmacists

The researcher requested information regarding the number of qualified pharmacists who were employed in their pharmacies. The table (3.1.11) below shows that a lot of male and female pharmacists responded that their pharmacies employed only one pharmacist; the Fisher exact test shows this is above the expected value and p-value, with a p-value of 10^{-9} . Some male pharmacists and a small number of female ones responded that their pharmacies operated without such a pharmacist; this is above the expected value. The remaining participants responded that no more than one pharmacist was in each pharmacy; this is below the expected value.

Table (3.1.11): Gender of the pharmacists according to the number of qualified pharmacists working therein.

Number of Pharmacists	Male	Female
None	97>	34>
One Pharmacist	354>	142>
Two Pharmacist	0<	0<
Three Pharmacist	0<	0<
Total	451	176

Gender / Pharmacist assistant

The post of assistant pharmacist is somewhat similar to a pharmacy technician or dispensing assistant in UK community pharmacies. The table (3.1.12) below shows that high number of the male pharmacists and a lot of female pharmacists responded that there is one pharmacy assistant employed in their pharmacies; Fisher exact test shows this is above the expected value (p value 10^{-9}). Few of the male and pharmacists responded that there were two pharmacy assistants employed in their pharmacies. It was noted via cross-tabulation between this question and the previous one regarding the number of qualified pharmacists that most of the pharmacies had additional pharmacy assistants working within them.

Table (3.1.12): Gender of pharmacists according to number of pharmacist assistants.

Number of Pharmacy Assistants	Male	Female
None	0<	0<
One Pharmacy Assistant	392>	157>
Two Pharmacy Assistant	27<	19<
Three Pharmacy Assistant	31<	0<
Total	451	176

Gender/ Dispensed steroid medicine

A group of questions sought to determine the demand from customers for pharmacists to sell them prescription only medicines on an OTC basis. In addition to revealing the general expectation of this facility, the results were also considered as possibly providing information of the perception of the public that most of the pharmacies such drugs could be purchased without difficulty. One of these questions was concerned with the frequency with which customers asked the pharmacists to sell them a steroid without prescription. The majority of the male pharmacists and high number of female pharmacists responded that sometimes they sell steroid medicine without prescription; Fisher exact test shows this is above the expected value (p value 10^{-9}). Some of the male pharmacists responded that they always they sell steroid medicines without prescriptions; this is above the expected value. However, a very small number of the female pharmacists never sold steroid medicine as an OTC medicine without any questioning from the customer and none of the male pharmacist did not sell steroid medicine to the customers without prescription.

Table (3.1.13): Gender of pharmacists according to dispensing steroid medicine without prescription.

	Male	Female
Always	58>	0<
Sometimes	393>	174>
Never	0<	2>
Total	627	176

Gender/ Selling codeine

With regard to the question related to codeine preparations, the table (3.1.14) below shows that many of the male pharmacists and some of the female pharmacists responded that there was daily selling of codeine or derivative products without prescription. Nearly half of the male and female pharmacists responded that they were selling codeine or derivative product without prescription on a weekly basis; Fisher exact testing shows this is above the expected value (p value 10^{-9}).

Table (3.1.14): Gender of pharmacist and how often do you to sell a codeine or a derivative product.

	Male	Female
Daily	176>	88>
weekly	240>	80>
Once a month	24<	8<
More than once a month	11<	0<
Total	627	176

Gender/ Selling medicine containing stimulant without prescription

For the controlled drug groups (stimulants), the proportion of pharmacists being asked to sell them on OTC basis, is shown in the table (3.1.15) below which shows that nearly all of the male pharmacists and many female pharmacists answered ‘yes’, that they were selling controlled medicine without prescription as OTC medicine; the Fisher exact test shows that this is above the expected value (p value 10^{-9}). Other pharmacists answered ‘No’ that they were not selling them without a prescription from a physician. These results were very similar to those with codeine and other POM medicines.

Table (3.1.15): Gender of pharmacists and whether they sold medicine containing stimulant without prescription.

	Male	Female
Yes	430>	169 >
No	21<	7<
Total	451	176

Gender / Professional relationship with physician

The data concerning the distribution of pharmacists according to their relationship with the physicians in their area is presented in the table (3.1.16) below. Many of the male pharmacists and few female pharmacists responded that there were mutual relationships with physicians. Many of the male and female pharmacists responded that there was little relationship with physicians; Fisher exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.16): Gender of pharmacists and how they would describe their relationship with physician.

	Male	Female
Mutual	235>	30>
Little	170>	102>
Insufficient	44>	38>
No relationship	2<	6<
Total	451	176

3.1.9 Age

Age /Opening hours of pharmacy

Respondents were asked to detail the hours of opening in three periods of the day (morning, afternoon and night). The results are presented in the table (3.1.17) below, where it can be seen that few of the pharmacists in all age groups were in pharmacies open at night, nearly all pharmacists in all ages were in pharmacies open in the afternoon; Fisher's exact test shows this is above the expected value (p value 10^{-9}).

Table (3.1.17): Ages of pharmacists according to opening hours of pharmacy.

Opening Time	<26	26-35	36-45	>45
Morning	0<	2<	3<	1<
Afternoon	150>	278>	104>	60>
Night	4<	6<	14>	5<
Total	154	286	121	66

Morning-08.00 up to 12.00 hours

Afternoon = 12.00 up to 18.00 hours

Night = 18.00 up to 24.00 hours

Age / Proportion of customer visits to your pharmacy

The result presented in the table (3.1.18) below reveals that most pharmacists in age 26-35 years of age answered 1-50 visitors, many pharmacists in the age below 26 years old indicated that a 1-51 proportion of customers visited the pharmacy with a frequency of more than once a week, some pharmacists in age 36-45 years indicated that 1-50 visitors and not many pharmacists in the ages above answered 1-50 visitors; according to the Fisher's exact test this is above the expected value (p value 10^{-9}). According to all pharmacists in all ages

only a low proportion of customers visited the pharmacy with a frequency of more than once a week; this is below the expected value.

Table (3.1.18): The age of pharmacists according to the proportion of customers visiting the pharmacy more than once a week.

Customer Proportion	<26	26-35	36-45	>45
1-50	150>	275>	114>	65>
51-100	4<	6<	4<	1<
101-150	0<	5<	3<	0<
More than 150	0<	0<	0<	0<
Total	154	286	121	66

Age / Indicate 3 medical conditions that you sell for the most

The table (3.1.19) below shows five disorders (headache, infection, colds, fever, skin disorder), and respondents were invited to choose the three most common reasons for the sale of medicines. The results are presented in the table (3.1.19) below. The most common disorders according to the ages, with the pharmacist responses were Headache > Colds > Infection, The highest sales were considered to be for infection, headache, cold; Fisher's exact test shows this is above the expected value (p value 10^{-9}). According to all the age groups, the lower sales were considered to be those for skin infection. Many respondents made notes on the questionnaire that sales of such items were seasonal.

Table (3.1.19): Age of pharmacist according to their ranking of medicine sales in order of the volume of sales for the treatment of some common ailments.

Condition Disease	<26	26-35	36-45	>45
Headache, Fever, Cold	15<	32>	5<	0<
Headache, Fever	22<	48<	0<	10<
Headache, Fever, Infection	0<	12<	1<	33>
Headache, Cold, Infection	37<	45>	21>	0<
Infection, Skin disorder	1<	0<	0<	15<
Infection, Cold	25>	41>	54>	0<
Cold, Headache, Fever	27<	9<	20>	0<
Infection, Headache, Fever	0<	0<	20>	8<
Infection, Headache, Cold	27>	99>	0<	0<
Total	154	286	121	66

Age/ Most selling medicine

The results presented in the table (3.1.20) below shows that pharmacists in below 26 years of age responded Amoxicillin were sold the most, and painkillers were sold the least, but pharmacist in the age group between 26-35 years indicated Ciprofloxacin was sold the most, then painkillers were sold the second most, then Omeprazole; Fisher's exact test shows this is above the expected value (p value 10^{-9}). Pharmacists of all ages responded that Simvastatin and Omeprazole were sold the least; this is below the expected value.

Table (3.1.20): Age of pharmacists distribution according to the most selling medicine.

Most frequent selling medicine	<26	26-35	36-45	>45
Amoxicillin,	140>	71>	31>	16<
Ciprofloxacin,	14<	98>	14<	31>
Panadol, Paracetamol	0<	75<	76>	0<
Simvastatin	0<	11<	0<	19<
Omeprazole	0<	31<	0<	0<
Total	154	286	121	66

Age / Is it essential to keep records for all medicine that you purchased?

The table (3.1.21) below is about the record keeping for non-controlled drugs by pharmacists which were sold the most. Many of the pharmacists in the age group of 26-35 years and the some pharmacists in age 36-45 years, it was agreed that they should keep records for purchased medicine; Fisher's exact test shows that this is above the expected value (p value 10^{-9}). Small number of pharmacists in the age group below 26 years and 22 pharmacists in the age group 26-35 years were neither in agreement or disagreement with regard to the keeping of records for purchased medicine. Few pharmacists in age group 26-35 years strongly disagreed to the keeping of records for purchased medicine; this above the expected value.

Table (3.1.21): The age of pharmacists and record keeping for the purchase and dispensing (sale) of non-controlled drugs by community pharmacists.

Keep recording of medicine	<26	26-35	36-45	>45
Strongly agree	33>	2<	0<	0<
Agree	0<	239>	121>	36>
Neither agree or disagree	44>	22>	0<	0<
Disagree	77<	0<	0<	17<
Strongly disagree	0<	23>	0<	13<
Total	154	286	121	66

Age / Do you know what is a controlled drug?

Results acquired from the questions regarding the maintenance of records of the selling and dispensing of controlled medicine show that high number of pharmacists in age group 26-35 years and many pharmacists of age 36-45 years responded 'yes' that they should keep records for controlled drugs; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.22): The age of pharmacists and records kept on the selling/dispensing of controlled drugs.

Controlled Drug	<26	26-35	36-45	>45
Yes	0<	279>	102>	0<
No	126>	0<	0<	66>
Not answered	28>	7<	19<	0<
Total	154	286	121	66

Age / Using computer

It was found that most of the pharmacists in all ages used the computer for general information; the Fisher's exact test shows this is above the expected value (p value 10^{-9}). Few pharmacists of age below 26 years and not many pharmacists of age between 26-35 years had a computer system in their pharmacies and used the computer for checking interactions; this is below the expected value.

Table (3.1.23): Age of pharmacists, according using computer in their pharmacy.

Computer use	<26	26-35	36-45	>45
General information	108>	240>	121>	66>
Checking interaction	46<	44<	0<	0<
Labeling medicine	0<	2>	0<	0<
Total	154	286	121	66

Age / Advice provided to patients

The table (3.1.24) below shows that pharmacists in all ages, particularly in age group 26-35 years, were always giving advice to the customers. Only few pharmacists in the age group below 25 years and some pharmacists in age group above 45 years of age responded that sometimes they advised customers; Fisher exact test shows this was above the expected value (p value 10^{-9}). None of the pharmacists responded that they never advised their customers.

Table (3.1.24): Age of pharmacists according to advice provided to patients.

Advice to patients	<26	26-35	36-45	>45
Always	99>	286>	121>	11<
Sometimes	55>	0<	0<	55>
Never	0<	0<	0<	0<
Total	154	286	121	66

Age/ How do you advise the patients?

The table (3.1.25) below shows that most of the pharmacists in all ages advised the patients orally. Small number of pharmacist of age below 26 years and some pharmacists in age group 26-35 years responded that they always advised the patients in writing about the drugs that they had bought. Only a few pharmacists in the age group range of above 45 years responded that they provided advice to the patients both orally and in writing.

Table (3.1.25): The age of pharmacists and how they advise the customers.

Advice to patients	<26	26-35	36-45	>45
Orally	99>	220>	121>	11<
In writing	55>	66>	0<	20>
Both	0<	0<	0<	35<
Total	154	286	121	66

Age/ Number of qualified pharmacists

The table below is in regard to the number of qualified pharmacists who were employed in their pharmacies. The table (3.1.26) shows that most of the pharmacies had at least one employed pharmacist in any age group but some pharmacists responded that their pharmacies operated without such a pharmacist; Fisher exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.26): Age of the pharmacists according to the number of qualified pharmacists working therein.

Number of Pharmacist	<26	26-35	36-45	>45
None	97>	34>	0<	0<
One Pharmacist	57>	252>	121>	66>
Two Pharmacist	0<	0<	0<	0<
Three Pharmacist	0<	0<	0<	0<
Total	154	286	121	66

Age / Pharmacist assistant

The table below shows that all pharmacies have at least one pharmacist assistant and nearly all pharmacists in all ages responded that there is one pharmacy assistant employed in their pharmacies; Fisher exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.27): Age of pharmacists according to number of pharmacist assistants.

Number of Pharmacy Assistants	<26	26-35	36-45	>45
None	0<	0<	0<	0<
One Pharmacy Assistant	127>	267>	121>	35>
Two Pharmacy Assistant	27<	19<	0<	0<
Three Pharmacy Assistant	0<	0<	0<	31>
Total	154	286	121	66

Age / Dispensed steroid medicine

The table below shows the pharmacists selling steroid medicine on an OTC basis, with some pharmacists in the age group below 26 years having responded that they always sell steroid medicine without prescription, and most of the pharmacists in all ages were sometimes selling steroid medicines without prescription; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.28): Age of pharmacists according to the dispensing of steroid medicine without prescription.

	<26	26-35	36-45	>45
Always	58>	0<	0<	0<
Sometimes	96>	286>	121>	64>
Never	0<	0<	0<	2>
Total	154	286	121	66

Age/ Selling codeine

The table below shows that pharmacists in all ages responded that they were selling codeine or a derivative product daily without prescription. Most pharmacists in the age group of 26-35 years and some pharmacists in the age group of 35-45 years responded that they were selling codeine or a derivative product weekly without prescription; Fisher exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.29): Age of pharmacist and how often they sell a codeine or derivative product.

	<26	26-35	36-45	>45
Daily	119>	47>	41>	57>
weekly	0<	231>	80>	9<
Once a month	24<	8<	0<	0<
More than once a month	11<	0<	0<	0<
Total	154	286	121	66

Age / Selling medicine containing stimulant without prescription

The table below shows that pharmacists in all ages answered 'yes', that they were selling stimulant medicines without prescription as an OTC medicine; Fisher exact test shows that this is above the expected value (p value 10^{-9}). Only a small number of pharmacists in the age group below 26 years answered 'no' that they were not selling them without a prescription from the physician. Respectively, very similar findings were shown in relation to codeine and other POM medicines.

Table (3.1.30): Age of pharmacists and do you sell medicine containing stimulant without prescription.

	<26	26-35	36-45	>45
Yes	133>	279 >	121>	66>
No	21<	7<	0<	0<
Total	154	286	121	66

Gender / Professional relationship with physician

The data concerning the distribution of pharmacists according to their relationship with the physicians in their area is presented in the table (3.1.31) below. Most pharmacists in the age group from 26-35 years, some pharmacists in the age group from 36-45 years and few pharmacists in the age above 45 years responded that there were mutual relations with physicians. Majority of pharmacist in all ages group were responded that there was little relation to physicians; Fisher exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.31): Age of pharmacists and how they describe their relationship with physician.

	<26	26-35	36-45	>45
Mutual	0<	135>	100>	30>
Little	135>	107>	0<	30>
Insufficient	17<	38>	21<	6<
No relationship	2<	6<	0<	0<
Total	154	286	121	66

3.1.10 City

City /Opening hours of pharmacy

Respondents in the three cities of Kurdistan were asked to detail the hours of opening in three periods of the day (morning, afternoon and night). The results are presented in the table (3.1.32) below, where it may be observed that in all three cities, most of the pharmacies in Erbil, Sulaymanya and Duhok city were opened in the afternoon; according to Fisher's exact test this is above the expected value (p value 10^{-9}). Few pharmacies were opened in the morning and night in all the cities; this is below the expected value.

Table (3.1.32): Number of pharmacists in each city according to opening hours of pharmacy.

Opening Time	Erbil	Sulaymaniya	Duhok
Morning	2<	3<	1<
Afternoon	195>	244>	153>
Night	9<	13<	7<
Total	206	260	161

Morning-08.00 up to 12.00 hours

Afternoon = 12.00 up to 18.00 hours

Night = 18.00 up to 24.00 hours

City / Proportion of customer visits to your pharmacy

The frequency of customer visitation to the pharmacy was assessed by asking each pharmacist what proportion of the customers visited more than once a week. The result in the table (3.1.33) below shows the highest proportion of visits between 1-50 in Sulaymanya city, then followed by Erbil and then by Duhok city; Fisher's exact test shows this is above the expected value (p value 10^{-9}). Pharmacies in all cities indicated a very low proportion of visitors, between 51-100, visited the pharmacy with a frequency of more than once a week.

Table (3.1.33): The proportion of customers visiting the pharmacy more than once a week in each city .

Customer Proportion	Erbil	Sulaymaniya	Duhok
1-50	201>	252>	151>
51-100	1<	6>	8>
101-150	4<	2>	2>
More than 150	0>	0>	0>
Total	206	260	161

City / Indicate 3 medical conditions that you sell for the most

A question related to the medicine that was sold the most according to management of common ailments in order of the volume of sales for each. Five disorders were identified, i.e. headache, infection, colds, fever, skin disorder. In all of the cities the highest sales were for infection, headache, cold as the three most common reasons for the sale of medicines. In Erbil city, the next most significant reasons for selling were for headache and fever, however in Sulaymaniyah and Duhok it was for infection and cold. In the all of the three cities, the highest sales were considered to be for cold, infection and pain, and the minimum sales were for skin disorder.

Table (3.1.34): Distribution of pharmacies according to their ranking of medicine sales in order of the volume of sale for the treatment of some common ailments in each city.

Condition Disease	Erbil	Sulaymaniya	Duhok
Headache, Fever, Cold	20>	15<	17>
Headache, Fever	36>	28>	16>
Headache, Fever, Infection	18>	19<	9<
Headache, Cold, Infection	26>	44<	33>
Infection, Skin disorder	4<	8<	4<
Infection, Cold	35>	48>	37>
Cold, Headache, Fever	21>	28<	7<
Infection, Headache, Fever	8<	16<	4<
Infection, Headache, Cold	38>	54>	34>
Total	206	260	161

City/ Most selling medicine

The table below shows which antibiotics were sold the most in each city. Majority pharmacists in Sulaymania, Erbil and Duhok city responded that Amoxicillin sold the most, In Erbil city pain killers were the highest selling medicine, however in Sulaymanyia and Duhok Ciprofloxacin, had the highest sales; Fisher's exact test shows that this is above the expected value (p value 10^{-9}). According to the pharmacy responses in all three cities, Simvastatin and Omeprazole were sold the least; this is below the expected value.

Table (3.1.35): Distribution of pharmacists according to the most selling medicine in each city.

Most frequent selling medicine	Erbil	Sulaymaniya	Duhok
Amoxicillin,	87>	115>	56>
Ciprofloxacin,	42>	64>	51>
Panadol, Paracetamol	52>	66>	33>
Simvastatin	10<	8<	12<
Omeprazole	15<	7<	9<
Total	206	260	161

City / Is it essential to keep records for all medicine that you purchased?

From the information in table below, the majority of pharmacists in all three cities agreed to keeping of records for non-controlled drugs bought and sold, but they will not keep the records because it was not compulsory by law to do so.

Table (3.1.36): The record keeping for the purchase and dispensing (sale) of non-controlled drugs by community pharmacists in each city.

Keep recording of medicine	Erbil	Sulaymaniya	Duhok
Strongly agree	10<	17<	8<
Agree	132>	161>	103>
Neither agree or disagree	21>	27>	18>
Disagree	32>	38>	24>
Strongly disagree	11<	17<	8<
Total	206	260	161

City / Do you know what is a controlled drug?

Of those respondents that answered the question with regard for controlled drugs, most pharmacists in Sulaymania, Erbil and Duhok city responded 'yes' that they aware of controlled drugs but they were not keeping the record of controlled medicine sold, but the Kurdistan health system will not request the keeping and maintenance of records for any

prescription, controlled and uncontrolled drugs; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.37): Records kept on the selling/dispensing of controlled drugs in each city.

Controlled Drug	Erbil	Sulaymaniya	Duhok
Yes	129>	165>	87>
No	58>	73>	61>
Not answered	19<	22<	13<
Total	206	260	161

City / Using a computer facility

It was found that most pharmacists in all of the Kurdistan cities had a computer system in their pharmacies which they used for general information; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.38): Pharmacists using computer in their pharmacy in each city.

Computer use	Erbil	Sulaymaniya	Duhok
General information	174>	222>	139>
Checking interaction	32<	36<	22<
Labeling medicine	0<	2<	0<
Total	206	260	161

City/ Advice provided to patients

The table below shows that a high number of pharmacists in Sulaymanya, Erbil and Duhok city responded that they always offered advice to patients. A small number of pharmacists in Sulaymanya, Erbil and Duhok city responded that they did advise patients sometimes; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.39): Number of pharmacists in each city according to advice provided to patients.

Advice to patients	Erbil	Sulaymaniya	Duhok
Always	171>	206>	140>
Sometimes	34>	54>	21<
Never	0<	0<	0<
Total	206	260	161

City / How do you advise the customer?

The table below shows that most of the pharmacists in all of the cities advised the patients orally, Only some pharmacists were responded that they always advised the patients in writing about the drugs they bought. Only a few pharmacists in each city responded that they were providing advice to the patients both orally and in writing.

Table (3.1.40): How pharmacists advise their customers in each city.

Advice to patients	Erbil	Sulaymaniya	Duhok
Orally	132>	188>	131>
In writing	58>	59>	24<
Both	16<	13<	6<
Total	206	260	161

City/ Number of qualified pharmacists

The table below shows that most of the pharmacies in each city had at least one pharmacist working in there or registered as a pharmacist in name but with only a pharmacist assistant working in there; the Fisher's exact test shows that this is above the expected value (p value 10^{-9}). A high number of male pharmacists and female pharmacists responded that their pharmacies operated without such a pharmacist; this is above the expected value. From the remaining responses, there was no more than one pharmacist in each of the pharmacies; this is below the expected value. Pharmacies employed only one pharmacist in each pharmacy.

Table (3.1.41): Pharmacists in each city according to the number of qualified pharmacists working therein.

Number of Pharmacist	Erbil	Sulaymaniya	Duhok
None	48>	57>	26<
One Pharmacist	158>	203>	135>
Two Pharmacist	0<	0<	0<
Three Pharmacist	0<	0<	0<
Total	206	260	161

City / Pharmacist assistant

The table below shows that most of the pharmacies in each city had at least one pharmacist assistant employed; the Fisher exact test shows this is above the expected value (p value 10^{-9}). Only a very few busy pharmacies employed more than one pharmacist assistant.

Table (3.1.42): The number of pharmacies in each city according to the number of pharmacist assistants.

Number of Pharmacy Assistants	Erbil	Sulaymaniya	Duhok
None	0<	0<	0<
One Pharmacy Assistant	181>	224>	145>
Two Pharmacy Assistant	16<	20<	10<
Three Pharmacy Assistant	9<	16<	6<
Total	206	260	161

Influence of city/ Dispensed steroid medicine

The table below shows that most pharmacists in Sulaymania, Erbil and Duhok city responded that sometimes they sell steroid medicine without prescription; the Fisher's exact test shows that this is above the expected value (p value 10^{-9}). Only a small number of pharmacists in Sulaymania, Erbil and Duhok city responded that they always sold steroid medicines without prescriptions; this is above the expected null hypothesis value.

Table (3.1.43): Number of pharmacists in each city according to the dispensing of steroid medicine without prescription.

	Erbil	Sulaymaniya	Duhok
Always	18<	26<	14<
Sometimes	188>	232>	147>
Never	0<	2>	0<
Total	206	260	161

City/ Selling codeine

The table below shows that most pharmacists in Sulaymania, Erbil and pharmacists in Duhok city responded that were selling codeine or a derivative product without prescription on a daily basis. Also, many pharmacists in Sulaymania, Erbil and Duhok city responded that they were selling codeine or a derivative product without prescription on a weekly basis; the Fisher exact test shows that this is significantly above the expected value (p value 10^{-9}).

Table (3.1.44): The number of pharmacists in each city in relation to how often customers ask them to sell them a codeine or derivative product.

	Erbil	Sulaymaniya	Duhok
Daily	84>	108>	72>
weekly	109>	131>	80>
Once a month	9<	15<	8<
More than once a month	4<	6<	1<
Total	206	260	161

City/ Selling medicine containing stimulant without prescription

The table below shows that the majority of pharmacists in each city answered that 'yes', that they were selling controlled medicine without prescription as an OTC medicine; Fisher exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.45): The number of pharmacists in each city and whether they sell medicine containing stimulant without prescription.

	Erbil	Sulaymaniya	Duhok
Yes	199>	241>	160 >
No	7<	19<	1<
Total	206	260	161

City / Professional relationship with physician

The table below shows that many pharmacists in Sulaymania, Erbil and Duhok city responded that there were mutual relations with physicians. Most pharmacists in Sulaymania, Erbil and Duhok city responded that there were little relations with physicians; the Fisher exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.46): The number of pharmacists in each city and how they would describe their relationship with physician.

	Erbil	Sulaymaniya	Duhok
Mutual	87>	121>	57>
Little	91>	102>	79>
Insufficient	26>	34<	22>
No relationship	2<	3<	3<
Total	206	269	161

3.1.11 Qualification

Qualification /Opening hours of pharmacy

Respondents were asked to detail the hours of opening in three periods of the day (morning, afternoon and night). The results are presented in the table (3.1.47) below, with a high number participants with Bachelors in pharmacy, or Diploma in Pharmacy or participants with Post- graduate degree who opened their pharmacies in the morning; according to Fisher's exact test this is above the expected value (p value 10^{-9}). Only a few pharmacies were opened in the morning and nighttime, regardless of the certification.

Table (3.1.47): Qualification of pharmacists and opening hours of pharmacy.

Opening Time	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Morning	2<	3<	1<
Afternoon	232>	342>	18>
Night	12<	14<	3<
Total	246	359	22

Morning-08.00 up to 12.00 hours

Afternoon = 12.00 up to 18.00 hours

Night = 18.00 up to 24.00 hours

Qualification/ Proportion of customer visits to your pharmacy

The frequency of customer visitation to the pharmacy was assessed by asking each pharmacist what proportion of the customers visited more than once a week. Most participants with Bachelors in pharmacy, participants with Diploma in Pharmacy and participants with Postgraduate degree answered 1-50 visitors; according to Fisher's exact test this significantly above the expected value (p value 10^{-9}). Only a few participants with all qualifications confirmed 51-100 visitors; with a frequency of more than once a week this is below the expected value.

Table (3.1.48): The qualification of pharmacists and proportion of customers visiting the pharmacy more than once a week.

Customer Proportion	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
1-50	234>	351>	19<
51-100	7<	6<	2<
101-150	5<	2<	1<
More than 150	0<	0<	0<
Total	246	359	22

Qualification/ Most selling medicine

The table below shows which antibiotics were sold the most. Some participants had a Bachelor degree, Participants had a Diploma in pharmacy and participants had a postgraduate degree and responded Amoxicillin was the most sold. Following these participants with Bachelor degree said that painkillers had been the most sold. However, participants with Diploma and postgraduate said Ciprofloxacin had had the highest sales; Fisher's exact test shows that this is significantly above the null hypothesis expected value (p value 10^{-9}). According to all participants with any degree, Simvastatin and Omeprazole were sold the least; this is below the expected value.

Table (3.1.49): Qualifications of pharmacists and distribution according to the most selling medicine.

Most frequent selling medicine	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Amoxicillin,	93>	161>	4<
Ciprofloxacin,	48>	91>	18<
Panadol, Paracetamol	75>	76>	0<
Simvastatin	12<	18<	0<
Omeprazole	18<	13<	0<
Total	246	359	22

Qualification/ Is it essential to keep records for all medicine that you purchased?

From the information in the table (3.1.50) below, most participants had a Bachelor's degree or participants had a Diploma in pharmacy and agreed with the keeping of the records for non-controlled drugs bought and sold, but they will not keep the records because of it not being compulsory by law. In addition, the few participants with post graduate degrees responded strongly that they agreed to the keeping of the record.

Table (3.1.50): Qualification of pharmacists and record keeping for the purchase and dispensing (sale) of non-controlled drugs by community pharmacists.

Keep recording of medicine	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Strongly agree	12<	2<	21<
Agree	166>	229>	1<
Neither agree or disagree	24>	42>	0<
Disagree	41>	53>	0<
Strongly disagree	3<	33>	0<
Total	246	359	22

Qualification/ Do you know what is a controlled drug?

Of those respondents answering the question regarding controlled drugs, many participants had a Bachelor's degree, or participants had a Diploma in Pharmacy or participants had postgraduate degrees and responded 'yes' that they were aware of controlled drugs but they were not keeping records of the selling of controlled medicine, however the Kurdistan health system will not request the keeping and maintenance of records for any prescription, controlled and uncontrolled drugs; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.51): Qualification of pharmacists and records kept of the selling/dispensing of controlled drugs.

Controlled Drug	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Yes	232>	127>	22<
No	14>	178>	0<
Not answered	0<	54<	0<
Total	246	359	22

Qualification / Using computer

It was found that a lot of the participants had a Bachelor's degree, or participants had a Diploma in Pharmacy or participants who had a postgraduate degree responded that they had a computer system in their pharmacies and used the computer for general information. In addition, some participants who had a Bachelor's degree answered that they were using a computer for checking drug interaction; Fisher's exact test shows this is above the expected value (p value 10^{-9}). Only a few pharmacists who had a postgraduate degree were using a computer for labeling dispensed medicines.

Table (3.1.52): Qualification of pharmacists and which three medicine do you sell most.

Computer use	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
General information	156>	359>	20>
Checking interaction	90<	0<	0<
Labelling medicine	0<	0<	2>
Total	246	359	22

Qualification / Advice provided to patients

The table below shows that most participants who had a Bachelor's degree, or participants who had a Diploma in Pharmacy or participants who had a post graduate degree responded that they always offered advice to patients, and then some participants who had a Diploma in Pharmacy responded that they advised patients sometimes; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.53): Qualification of pharmacists and how advice is provided to patients.

Advice to patients	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Always	244>	252>	22>
Sometimes	2>	107>	0<
Never	0<	0<	0<
Total	246	359	22

Qualifications / Number of qualified pharmacists

The table below shows that the majority of participants who had a Bachelor degree, or participants who had a Diploma in Pharmacy and some participants who had a postgraduate degree responded that at least one pharmacist works in there or is registered in the name of a pharmacist but only a pharmacist assistant work there; Fisher's exact test shows that this was significantly above the expected value (p value 10^{-9}). A high number of participants had a Diploma in Pharmacy and responded that their pharmacies operated without such a pharmacist; this was above the null hypothesis expected value. The remaining stated that no more than one pharmacist was in each of the pharmacies; this is below the expected value. Pharmacies employed only one pharmacist in each of the pharmacies.

Table (3.1.54): Qualifications of the pharmacists and the number of qualified pharmacists working therein.

Number of Pharmacist	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
None	0<	131>	0<
One Pharmacist	246>	228>	22<
Two Pharmacist	0<	0<	0<
Three Pharmacist	0<	0<	0<
Total	246	359	22

Qualification / Pharmacist assistant

The table below shows that nearly all participants had a Bachelor's degree, or a Diploma in Pharmacy or a postgraduate degree and responded that most of the pharmacies in each city employed at least one pharmacist assistant; Fisher's exact test showed that this is above the null hypothesis expected value (p value 10^{-9}). Only a few very busy pharmacies employed more than one pharmacist assistant.

Table (3.1.55): Qualifications of pharmacists and number of pharmacist assistants employed in the pharmacies.

Number of Pharmacy Assistants	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
None	0<	0<	0<
One Pharmacy Assistant	199>	359>	22<
Two Pharmacy Assistant	46<	0<	0<
Three Pharmacy Assistant	0<	0<	0<
Total	246	359	22

Qualification/ Dispensed steroid medicine

The table below shows that a high number of participants who had a Bachelor's degree, majority of participants who had a Diploma in Pharmacy and few participants who had postgraduate degrees responded that sometimes they sold steroid medicine without prescription; the Fisher's exact test showed that this is above the expected value (p value 10^{-9}).

Table (3.1.56): Qualification of pharmacists and the dispensing of steroid medicine without prescription.

	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Always	0<	58>	0<
Sometimes	246>	301>	20>
Never	0<	0<	2>
Total	246	359	22

Qualification / Selling codeine

The table below shows that many participants had a Bachelor's degree, or a Diploma in Pharmacy or a postgraduate degree that responded that they were selling codeine or a derivative product without prescription daily. Most participants who had a Bachelor's degree, or who had a Diploma in Pharmacy or a postgraduate degree responded that they were selling

codeine or a derivative product without prescription weekly; Fisher's exact test shows that this is above the expected value (p value 10^{-9}).

Table (3.1.57): Qualification of pharmacist and how often they sell a codeine or derivative product.

	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Daily	166>	106>	14<
weekly	50>	252>	8<
Once a month	19<	13<	0<
More than once a month	11<	0<	0<
Total	246	359	22

Qualifications/Selling stimulant-containing medicines without a prescription

The table below shows that some participants had a Bachelor's degree, and a high number of them with a Diploma in Pharmacy answered 'yes', that they were selling controlled medicine without prescription as OTC medicine; Fisher's exact test shows that this was above the expected value (p value 10^{-9}). A small number of participants who had post graduate degrees answered 'no' that they were not selling them without prescription from a physician. Respectively, very similar findings were for codeine and other POM medicine.

Table (3.1.58): Qualifications of pharmacists and whether they sell medicine containing stimulant without prescription.

	Bachelors in pharmacy	Diploma in pharmacy	Post graduate degree
Yes	240>	359 >	0<
No	6<	0<	22<
Total	246	359	22

Qualification / Professional relationship with physician

The table below shows that only some participants had a Bachelor's degree, few participants had a Diploma in Pharmacy and small number participants had a postgraduate degree and responded that there were mutual relations with physicians. Majority participants who had Bachelor's degree and participants who had a Diploma in Pharmacy responded that there

were only limited relationships with physicians; Fisher's exact test showed that this was above the expected value (p value 10^{-9}). Some participants had a Diploma in Pharmacy and described their relationships with physicians as insufficient. Only a few participants had a Diploma and responded that they did not have a relationship with the physicians at all; this was below the null hypothesis expected value for no association.

Table (3.1.59): Qualifications of pharmacists and how they would describe their relationship with physicians.

	Bachelor's in pharmacy	Diploma in pharmacy	Post-graduate degree
Mutual	235>	8<	22<
Little	11>	261>	0<
Insufficient	0>	82>	0<
No relationship	0<	8<	0<
Total	246	359	22

CHAPTER 3: GENERAL PUBLIC

SECTION 2:

3.2.1 Introduction

The questionnaire applied to the general public was designed to determine both the professional practice of the community pharmacists as witnessed by the community at large, and the attitude of the public towards the professional services that were offered. Samples of the general public were randomly selected from the cities of Erbil, Duhok and Sulaymaniya in which a survey of community pharmacies had been undertaken. The total number of people from the general public included in the study was 750 (250 from each city). The purpose of the study and how the results arising therefrom would be utilised were fully explained to all participants. Written consent was then obtained from those who agreed to participate in the study. Questionnaires were distributed randomly to participants in primary health centre waiting areas, private hospital waiting areas, or dental or general public hospitals whilst they were waiting to see a clinician. The participants were then requested to complete the questionnaire on-the-spot. The completed questionnaire was collected by the researcher on the same day that they were provided. Of the 750 participants that were approached, 42 declined to participate in view of time constraints, 9 participants did not return the questionnaires, and 51 returned questionnaires that were excluded since they were incomplete. Hence, 648 participants completed the adequate questionnaires and their results are included in this study (86.4% of the total number of questionnaires, Table 3.2.1). The study was conducted from the 1st of April until the 4th of June, 2014.

Table (3.2.1): Response rate of questionnaires

distributed questionnaires	Refuse	Uncompleted	Not returned	Response Rate
750	42	51	9	86.4% (648)

3.2.2 Demographic information

The age profile of the respondents is presented in Figure 1 where it may be observed that most of the study population was in the 25-35 years age-band. At the time of the interviews, 12.2% of those questioned were below 25 years of age, and only few of participants were aged above 55 years because the majority of subjects in that age group were illiterate, so they could not and/or refused to participate. However, the next larger sub-group was the 36-45 years old.

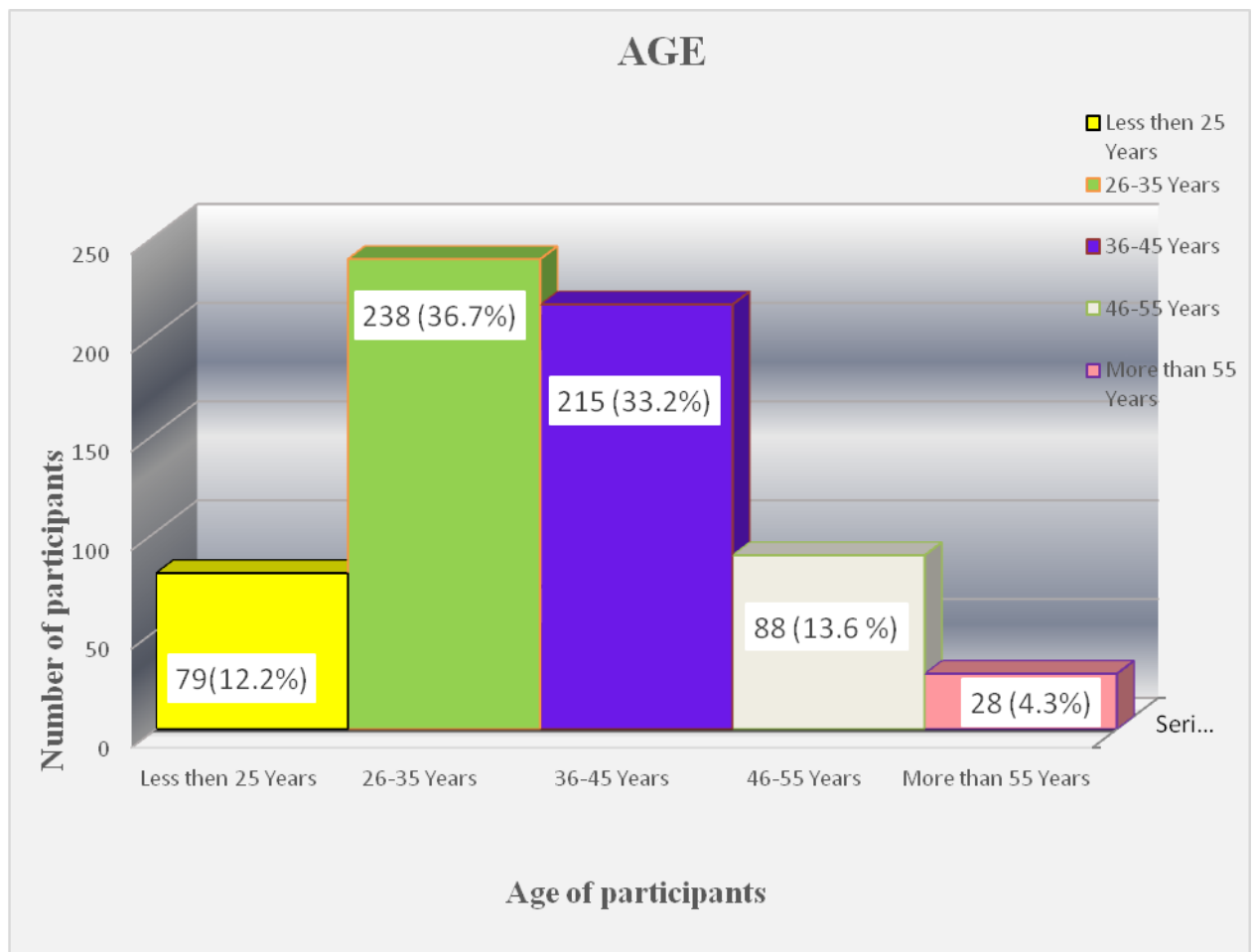


Figure (3.2.1): Distribution of the general public participants according to age.

3.2.3 Gender

As shown in Figure 2, a high number of the participants were male, and less than one-half of them were female.

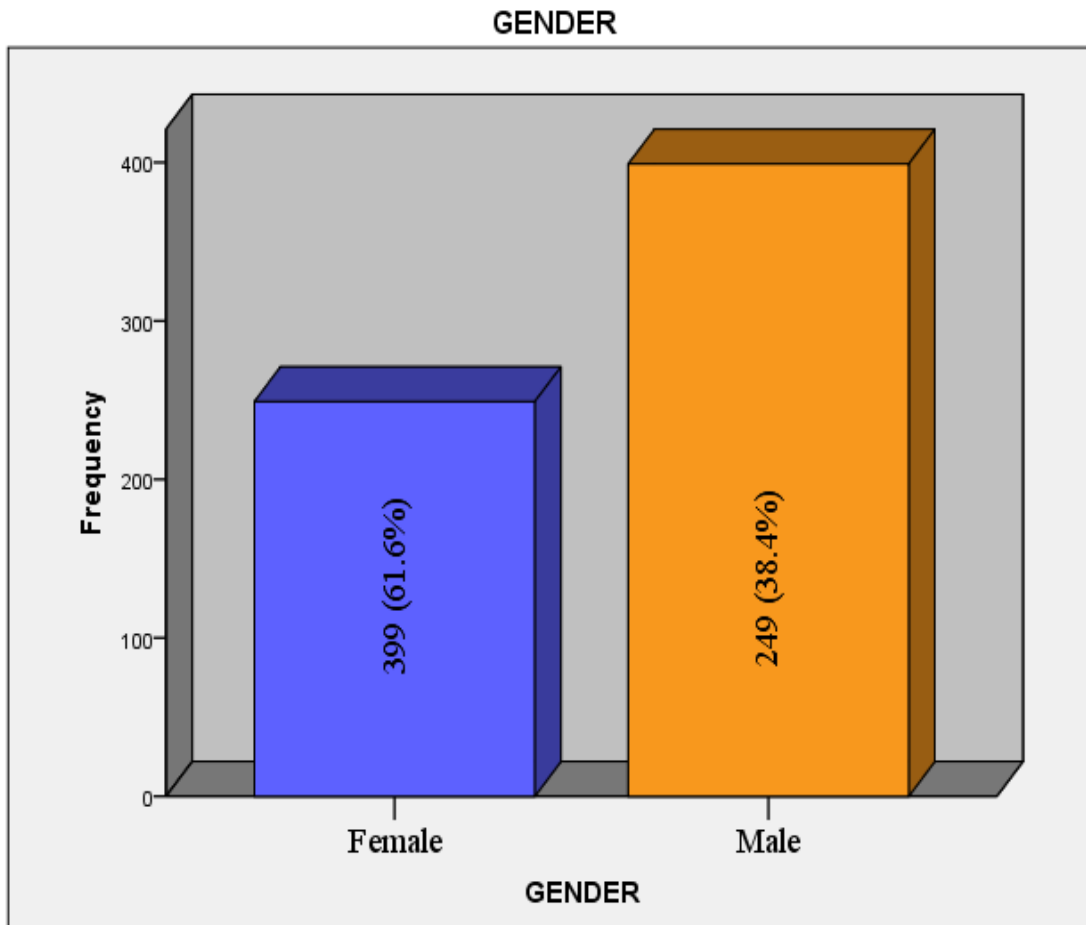


Figure (3.2.2): Distribution of the general public respondents according to gender.

3.2.4 City

Figure 3 below shows the distribution of the general public according to city. It should be noted that a high number of participants were from Sulaymaniya city, with sequentially lower numbers from Erbil and Duhok cities.

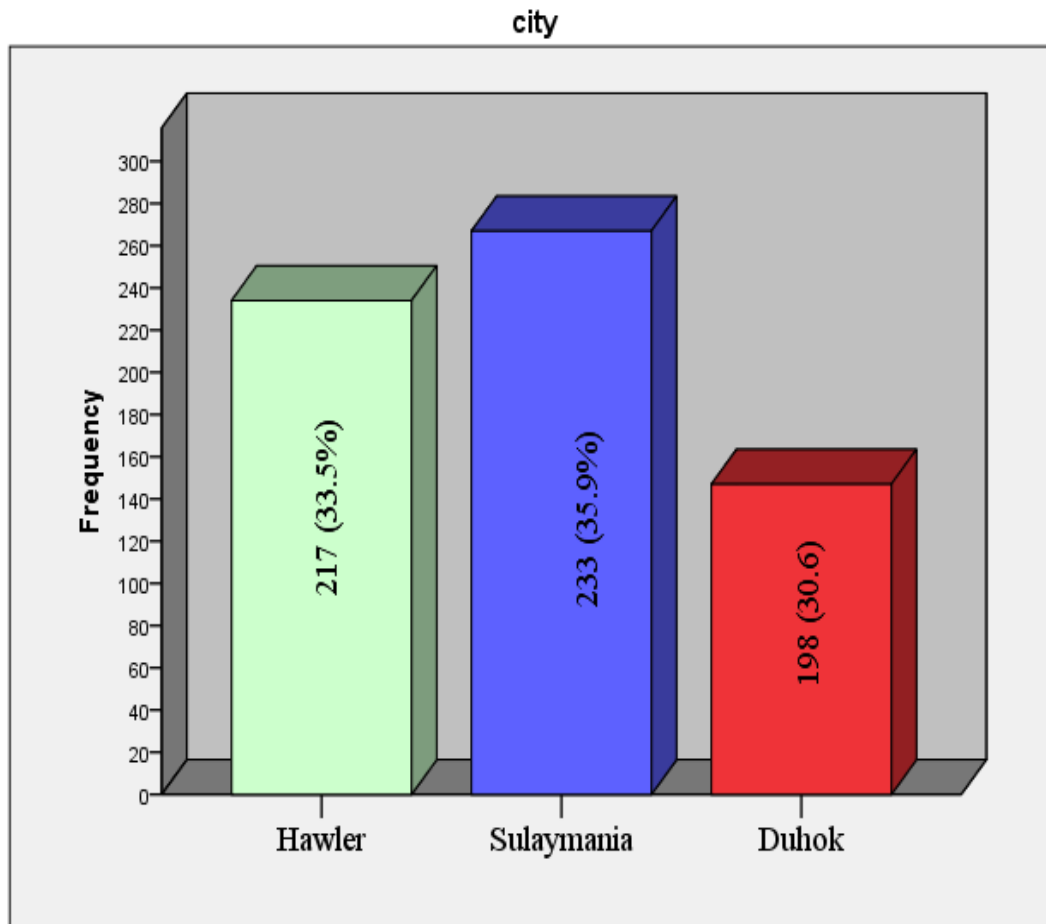


Figure (3.2.3): Distribution of the general public participants according to city.

3.2.5 Marital status

Figure 4 shows the marital status pattern of questionnaire respondents. Very few of this group were separated. The majority were married, but about one quarter of the study population was single and these were mostly in the lower age groups (< 25 years or above that). Overall, the pattern found here is a reflection of the population at large.

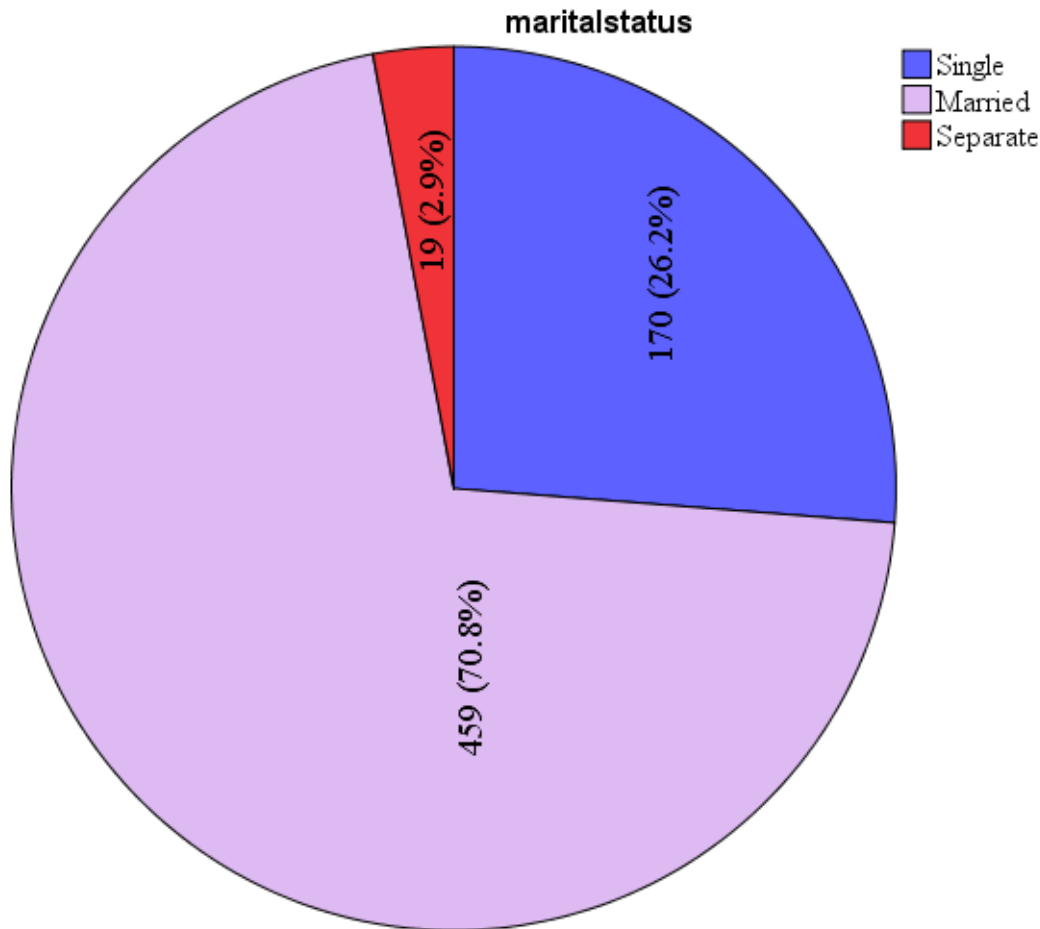


Figure (3.2.4): Distribution of the general public questionnaire respondents according to marital status.

3.2.6 Education

Figure 5 shows the distribution of the respondents according to their level of education. Those who had done no studying, or just primary or secondary school educations represented the largest fraction of this population. It was notable that those with a Diploma degree represented almost one quarter of those interviewed, only a few of those interviewed had a Bachelor's degree, or held a Master's degree. This is a very satisfactory level of education for a relatively new nation of Kurdistan. Overall, this education profile indicates a good level of attainment within the Kurdish population. This should therefore engender a responsible attitude by Kurdish citizens towards an understanding of their healthcare issues.

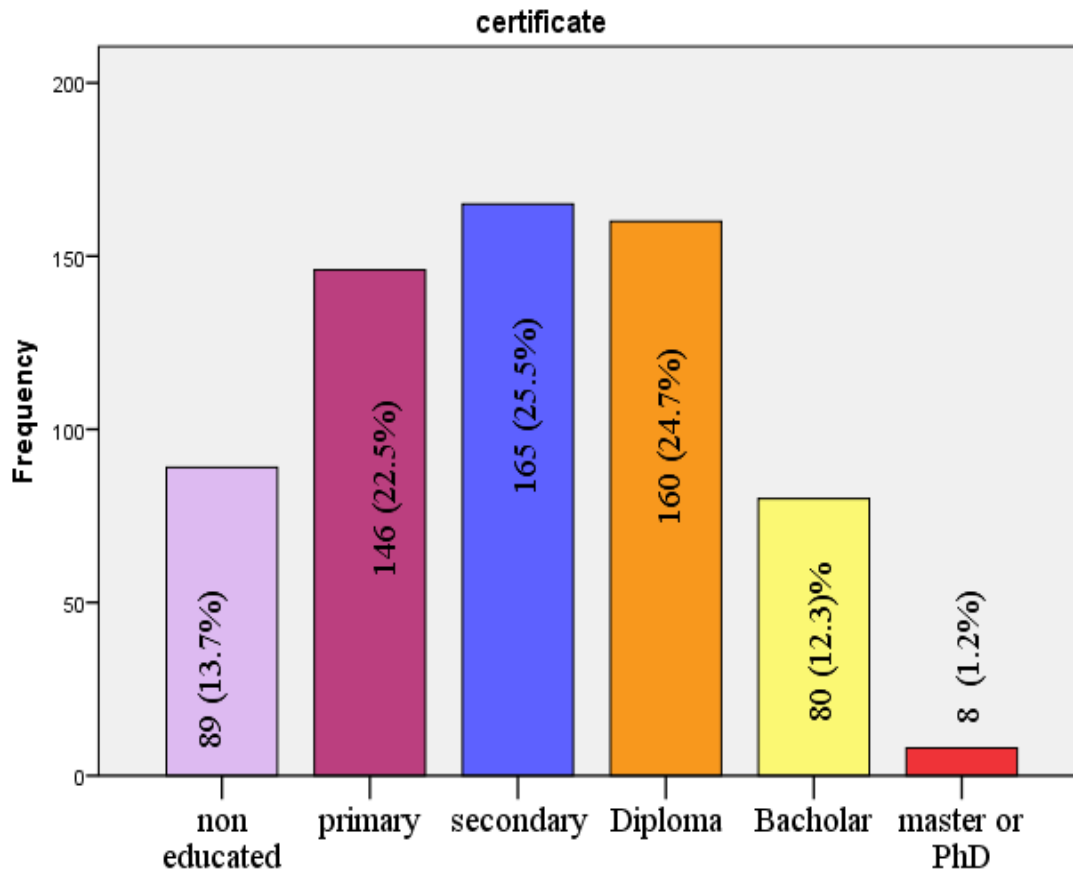


Figure (3.2.5): Distribution of the general public according to their levels of education.

3.2.7 Gender

Gender and health facility using for cure

Figure 6 below shows the health facilities being used for curing participants by gender. As shown in the figure, many of female participants were using a private hospital; this below the expected value, and Fisher’s exact test gave a p value of 0.0045; this value is significantly different from the expected value. Only a small number of male participants were using a private hospital, and this is greater than the expected value deduced from the Chi-squared experimental design model. There was an uneven split between those using private facilities, governmental hospitals and private health care centres, and most of the population who were using community pharmacies when they become ill. Governmental hospitals and primary healthcare clinics, charge much less, and their medicines are free of charge; this serves as the major reason for the population using them.

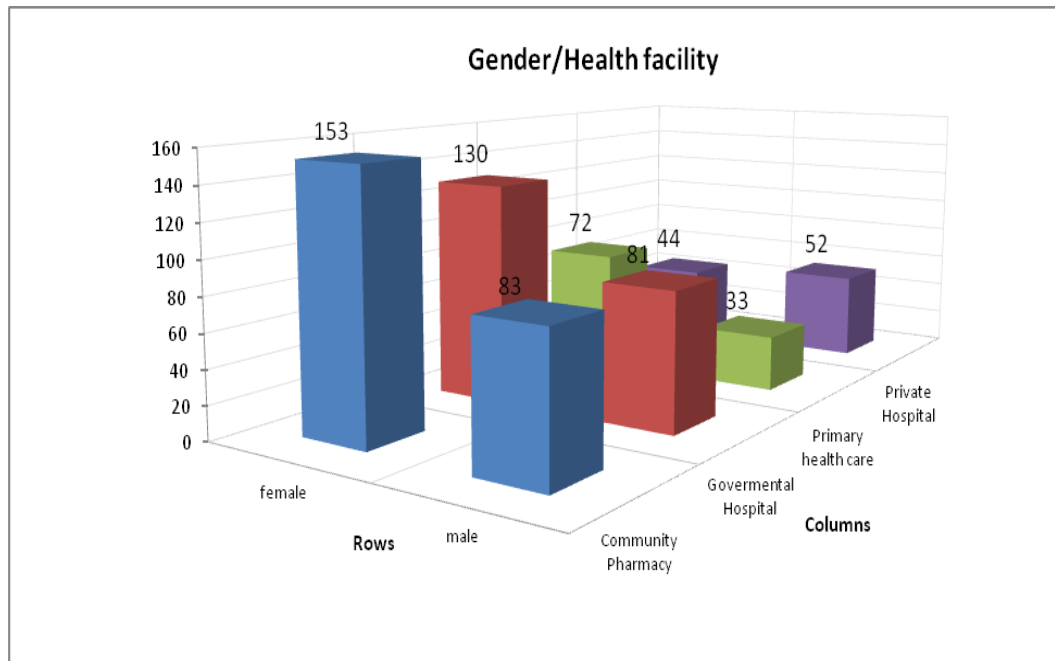


Figure (3.2.6): Health facility use by gender

Influence of gender on the switching of antibiotics

The table (3.2.2) below shows that 183 (28.3%) of participants switched from one antibiotic to another, with most of the female participants having switched when having allergic reaction or stomach upset due to the antibiotic before, therefore, having switched to another. The majority of participants sometimes switched antibiotics and this was also most of the female participants; the reason for it being that some time they had two different types of antibiotics left from their last course so they took 10 from one type of antibiotic and 11 from a different type of antibiotic to complete the course. In addition, some participants had never switched antibiotics.

Table (3.2.2): The frequency of participants switching from one antibiotic to another

Participants	Never	Yes, always	Yes, sometimes
Female	116	113	170
Male	76	70	103
Total	192	183	273

Gender/Reason for switch from one antibiotic to another

The table (3.2.3) below shows the reasons for participants having switched from one antibiotic to another. More than half of participants switched from one antibiotic to another, with most of them being female. The reason given was that the first had no effect as it could have been a fake antibiotic or one from China or India that was less effective. Also, some participants switched to another antibiotic because they had not purchased a full course of antibiotics in one go; instead, they first bought one sheet and then, sometimes, when seeking to purchase the subsequent one, they are unable to obtain it, so they receive a different one. Many participants could not afford the cost and therefore they switched to a cheaper one; most of these were female participants. Few participants switched to another antibiotic because of allergic reactions or side-effects (Fisher's exact test gave a p value of 0.002, and this result was significantly different from the expected, null hypothesis value.

Table (3.2.3): Reasons switch from one antibiotic to another based on gender

Gender	The former medicine did not work	The former medicine ran out	The latter one was cheaper	To reduce adverse reactions
Female	228	38	110	23
Male	138	33	77	1
Total	366(56%)	71(11%)	187(28.8%)	24(3.7%)

Gender/ For which of the following complaint (s) did you use an antibiotic?

The overuse of antibiotics, especially taking them when they are not even the appropriate treatment, promotes antibiotic resistance. Antibiotics treat bacterial infections but not viral infections. For example, an antibiotic is an appropriate treatment for strep throat, which is caused by the bacterium *Streptococcus pyogenes*. It is not, however, the right treatment for most sore throats, which are caused by viruses. When taking antibiotics whilst actually having a viral infection, the antibiotic is still attacking bacteria in the body that are either beneficial or at least not causing disease. This misdirected treatment can then promote antibiotic-resistant properties in harmless bacteria that can be shared with other bacteria. The table (3.2.4) below shows that majority of participants used antibiotics for sore throat, cough and runny nose, and most of these people were male. Some participants used antibiotics for pain caused by infection. few of participants used antibiotic for diarrhea; it was the opinion of most of the participants that when they have got diarrhea they would take flagyl (Metronidazole) without prescription. Some female participants used antibiotics for skin infection; according to Fisher's exact test this below the expected value and the p value obtained was 0.000024 which shows a significant difference from the expected value. Other female participants also used antibiotics for skin infection; according to the Fisher exact test this is above the expected value and there is significant difference from the expected value; this could be because of their employment in places such as a carwash. Few participants used antibiotics for other symptoms such as kidney infection or ear infection; according to the Fisher's exact test this was above the expected value and significantly different. Only 1 female participant took antibiotic for other infections; Fisher's exact test this was shown to be below the expected value and p-value was 0.000024 so therefore there was significant difference between this and the expected value.

Table (3.2.4): Distribution of participants according to use of antibiotics for their symptoms

Participants	Cough, Sore throat, Runny nose	Diarrhoea	Others	Pain	Skin infection
Male	230 <	51 <	25 >	71 >	22 <
Female	144 >	38 >	1 <	33 <	33 >
Total	374 (57.8%)	89 (13.7%)	26 (4%)	104 (16%)	55 (8.5%)

Gender/ Drugs proportions

The table (3.2.5) below presents information in more detail according to gender of the participants, and whether the purchase of medicine was with or without prescription; it is important to note that these questions relating to the number of drugs purchased per condition did not identify the number of times in the year this was an example of poly-medicine (use of multiple drugs to treat one or limited number of condition). About three quarters of participants took one antibiotic for a condition and most of them were male; this could be because, in general, men tend to seek treatment and go to doctors' offices more frequently than women do. As shown in column two in the table (3.2.5) below, according to Fisher's exact test, male participants took less multiple drugs than the expected value and the p-value of 0.004 and it demonstrates a significant difference. Female participants took multiple medicine more than the expected value. This is because males want to recover more rapidly and care less about their health; however, it should also be noted that few male participants can be seen to have taken poly-medicine for their condition; Fisher's exact test shows that this effect is above the expected value (p value 0.004). This presumably arises because they have more than one condition, and only one female participant took poly-medicine; this is below the expected statistical value, since less male participants have such multiple conditions.

Table (3.2.5): Distribution of the general public according to the number of drugs/proportions of medicines purchased during the previous year.

Participants	One	Two	Three
Male	296 >	88 <	15 >
Female	174 <	74 >	1 <
Total	470 (72.5%)	162 (25%)	16 (2.5%)

Gender/Purchasing antibiotics without prescription

The table (3.2.6) below shows opinion regarding purchasing of antibiotics without prescription against gender. In total, about half of participants believed the purchasing of antibiotics without prescription were an acceptable practice, and many of them were male participants; Fisher's exact test shows p-value for it to be 0.016, and so this is significantly different from the expected value. Some of them were female participants; the Fisher's exact test shows this as being above the expected value. Moreover, some male participants believed the purchasing of antibiotics without prescription is a good practice; this is significantly different and above the expected value.

Table (3.2.6): Opinion of participants regarding purchasing of antibiotics without prescription.

Gender	Acceptable practice	Good practice	Not acceptable practice
Male	174 <	69 >	156 >
Female	134 >	27 <	88 <
Total	308 (47.5%)	96 (14.8%)	244 (37.7%)

Influence of gender on when participants normally stop taking medicines

The table below shows that small number of participants (females and male) stopped taking their medicine a few days after they felt better and it showed that they did not care about completing the course of medicine in the case of some classes of medicine. Many participants stopped taking their medicine after a few days regardless of the results and few female participants stopped taking medicine after consulting their doctors; Fisher's exact test showed that this is below the expected value, and significantly different with a p-value of 0.00046. Some male participants stopped taking medicine after consulting their doctors; Fisher's exact test shows that this is above the expected value and significantly different. Many female participants stopped taking the medicine when it ran out regardless of whether they completed the course; this is below the expected value and significantly different and male participants stopped taking their medicine after it ran out; the Fisher's exact test shows that this is above the expected value and significantly different.

Table (3.2.7): When taking medicines are terminated: effects of gender

Gender	A few days after the recovery	After a few days regardless of the outcome	After consulting a doctor	After medicine ran out	After symptoms disappeared	At the completion of the course	the others
Female	49>	96>	41<	51<	76<	54>	32>
Male	28<	46<	47>	47>	50>	25<	6<
Total	77	142	88	98	126	79	38

Gender /Reason for purchasing medicine direct from pharmacy

The table below shows the purchasing of medicine direct from a pharmacy without a doctor's prescription. One- third of participants (both male and female) answered that convenience was the reason for purchasing their medicine that way and 20.1% of participants purchased medicine direct from pharmacy because of cost savings that they believed they would make in comparison with if a doctor had prescribed the same medicine. Most of the male participants answered that they received medicine fast rather than waiting in the long queue to get a prescription; the Fisher exact test shows this is below the expected value. Many of the female participants answered that they received medicine fast; this being below the expected value (p value 0.017).

Table (3.2.8): The variables of gender and reason for purchasing medicine direct from pharmacy

Gender	Convenience	Cost saving	Fast	Lack of trust prescribing Dr	others
Male	136>	90>	144<	26>	3>
Female	83<	46<	114>	6<	0<
Total	219 (33.8%)	136(20.1%)	258(40%)	32 (4.9%)	3 (0.46%)

Gender/ Decision of participants to choose their medicine

The table below shows some of the male participants were familiar with their medicine and they chose the medicine for themselves and Fisher's exact test shows that this is below the expected value. Many female participants were using their own experience for purchasing medicine; this is above the expected value and the p-value was 0.000018, so there was

significant difference. Few male participants chose medicine based on the opinions of a member of the family; this is above the expected value. Only a little of the female participants used the opinion of a family member in purchasing medicine; this is below the expected value and significantly different. One-third of participants chose the medicine recommended by the pharmacist. Most of the participants answered that doctors had previously prescribed the same medicine and that they had just repeated the doctor's prescription and then only a few of the male participants answered that they were choosing when they saw good advertisements for the medicine; this is above the expected value..

Table (3.2.9): The variables of gender and decision of participants to choose their medicine

Gender	my own experience	opinion of family members	opinion of friend	previous doctor prescription	recommendati on by pharmacist	the advertisement
Male	67<	47>	5>	133>	125<	22>
Female	67>	7<	3<	82<	89>	1<
Total	134	54	8	215	214	23

Influence of gender on taking the same medicine with two different brand names

The table below shows that a small number of participants answered that they have taken two medicines with the same name; this is because medication in Kurdistan comes from many different countries and, therefore, sometimes one medicine may have many different names and the majority of participants answered that they had not taken two medicines with same name.

Table (3.2.10): The variables of gender and the taking of same medicine with two different names

Gender	no	yes
Female	363<	36>
Male	231>	18<
Total	594 (91.6%)	54 (8.4%)

Gender /Action for adverse reaction

The table below shows that few female participants consulted a doctor when they got an adverse reaction from medicine; Fisher's exact test shows that this is above the expected value, with a p-value of 0.039, and hence there was a significant difference. Not many male participants went back to a doctor in the case of an adverse reaction; this was below the expected value. A high proportion of participants consulted the pharmacist in the case of any adverse reaction and this could be because of easy access to the pharmacist and the saving of time, but less than half of the participants stopped taking medicine when they experienced an adverse reaction from it and some participants switched to a different medicine.

Table (3.2.11): The variables of gender and action for adverse reaction

Gender	consult doctor	consult pharmacist	stop taking	switched to another
Female	35>	137<	155>	72>
Male	11<	107>	95<	36<
Total	46	244	250	108

Influence of gender on opinions regarding the number of community pharmacies

The table below provides opinion information about the number of pharmacies in Kurdistan. Most participants responded that they considered there was an adequate number of community pharmacies in their city. However, the majority thought that there were more than enough of such establishments. Only a few female participants believed the number of pharmacy was very few; Fisher exact test shows this is below the expected value. Some male participants answered that the number of pharmacies was very few, and this was above the expected value (p value 0.01), showing that there was a significant association.

Table (3.2.12): Influence of gender on opinions about number of community pharmacies.

Gender	Enough	I do not know	More than enough	Very few
Female	72>	154>	118>	55<
Male	35<	83<	72<	59>
Total	107	237	190	114

Effect of gender on assessments of the health service

Despite the deficiencies of the pharmaceutical services, a high proportion of respondents assessed the health services provided by the health service as being acceptable. many of female participants answered that the health service was acceptable; Fisher's exact test shows this is below the expected value. Only a few females and males answered that the health service is good. A lot of participants (65 females and 25 male) answered that the health service was poor and only few females answered that the health service was very good; this is below the expected value (p value 0.0001).

Table (3.2.13): Influence of gender on assessments of the health service

Gender	Acceptable	Good	I do not know	Poor	Very Good	Very poor
Female	182<	69>	57<	65>	11<	15>
Male	134>	20<	47>	25<	17>	6<
Total	316	89	104	90	28	21

3.2.8 AGE

Age / Health facility use

The Table below shows the health facilities being used by participants according to their ages. As shown in the table, the majority of participants were using a community pharmacy and were aged between 25-34 years, although some of them were aged between 35-44 years. One-third of participants were using the governmental hospital, and some of them were aged between 25 and 34 years, with a few of them aged between 35 and 44 years. Most participants were using primary health care, with ages from 25-34 years, although some of them were aged from 35-44 years; Fisher's exact test showed that, this was above the expected value, although this was not significant (p value 0.11). Few of them had ages that were below 25 years, and according to Fisher's exact text, this is below the expected value.

Table (3.2.14): Participant use of health facilities according to their age group.

Ages	Community Pharmacy	Governmental Hospital	Primary health care	Private Hospital
25-34	91>	82>	31<	35<
35-44	69<	66<	50>	30<
45-55	29<	28<	16>	14>
<25	34>	25<	7<	13>
>55	13>	10>	1<	4<
Total	236	211	105	96

Age / Purchased antibiotics

The table below shows the response of participants regarding the number of times that they purchased antibiotics with or without prescription. Indeed, less than one-half of participants purchased antibiotics without prescription, most of them being aged from 25-34 years. Also a high number of participants purchased antibiotics with a prescription, and some of them were aged from 35-44 years; Fisher's exact test shows this is above the expected value, although not significant (p value 0.19). The remainder of the participants did not purchase antibiotics.

Table (3.2.15): Age ranges of participants purchasing antibiotics

Ages	Not bought	Others	With Prescription	Without Prescription
25-34	55>	9>	80<	95>
35-44	47<	4<	92>	72<
45-55	21>	1<	31<	34>
<25	16<	5>	24<	34>
>55	7>	3>	8<	10<
Total	146	22	235	245

Influence of age on which of the following complaint(s) participants used antibiotics for

The table below shows that more than one-half of participants, most of whom were aged between 25-34 and 35-44 years old, used antibiotic for sore throat, cough and runny nose. Also, some of participants used antibiotics for diarrhea.

Many participants used antibiotics for pain because the pain could be related to infection; only a few participants were aged between 25-34 years old; according to Fisher's exact test this was significantly below the expected value (p value was 0.022). A small number of participants aged between 35-44 years old used antibiotics for pain and according to Fisher's exact test, this is above the expected value and there was significant difference from the expected value. Only a small number of participants used antibiotics for other symptoms such as kidney infection or ear infection, and then only 1 participant aged between 44-55 years; according to Fisher's exact test, (10^{-9}) this was above the expected value and significantly different.

Table (3.2.16): Influence of age of participants on the nature of complaints for which they used antibiotics.

Ages	cough , sore throat, runny nose, fever	diarrhoea	others	pain	skin infection
25-34	144>	32<	11>	30<	22>
35-44	114<	31>	5<	50>	15<
45-55	49<	15>	1<	16>	6<
<25	50>	7<	6>	7<	9>
>55	17>	4>	3>	1<	3>
Total	347 (53.5%)	89 (13.7%)	26 (4%)	104(16%)	55(8.9%)

Age and switching of antibiotic therapies

The table below shows that most participants switched from one antibiotic to another, with most of them aged between 35-44 years and some of them aged between 25-34 years, with a few of them aged above 55 years; Fisher's exact test shows this was below the expected value, but insignificant (p value 0.53). Most participants sometimes switched antibiotics and most of them were aged between 25-34 years old. The reason for them sometimes having had two different types of antibiotic was there were some left from their last course so they took

10 from one type of antibiotic and 11 from a different type of antibiotic to complete the course. Approximately one-third of participants had never switched antibiotics.

Table (3.2.17): Ages of participants and switching of antibiotics or medicines during the course of self-treatment.

Ages	Never	Yes, always	Yes, sometimes
25-34	72>	64<	103>
35-44	58<	71>	86<
45-55	24<	24<	39>
<25	28>	20<	31<
>55	10>	4<	14>
Total	192(29.6%)	183 (28.3%)	273(42.1)

Influence of age on participant's viewpoints regarding self-medication with antibiotics

The table below shows the opinion of participants regarding the purchasing of antibiotics without prescription. About half of the participants believed the purchasing of antibiotics without prescription was an acceptable practice, with most of them aged between 25-34 years of age and between 34-45 years of age. Many participants believed that self-medication with anti-biotic was a good practice, with few of them aged between 35-44 years of age; Fisher's exact test showed that this was significantly above the expected value (p value 0.02). Less than one-half of the participants (37.7%) believed that self-medication with antibiotic was not an acceptable practice.

Table (3.2.18): Age of participants and their views regarding self-medication with antibiotics.

Ages	Acceptable practice	Good practice	Not acceptable practice
25-34	116>	28<	95>
35-44	97<	47>	71<
45-55	43>	14>	30<
<25	38>	6<	35>
>55	14>	1<	13>
Total	308(47.5%)	96 (14.8%)	244 (37.7%)

Age/ When did you normally stop taking medicines?

The table below shows that some participants stopped taking their medicine a few days after they felt better and it showed that they did not care about completing the course of medicine, and these were aged between 35-44 years; Fisher's exact test showed that this was below the expected value, although not significant (p-value 0.14). Most participants stopped taking their medicine after a few days regardless of the results and few of them aged between 35-44 years; the Fisher exact test shows that this is above the expected value. 88 participants stopped taking medicine after consulting the doctor. A high proportion of participants stopped taking medicine when it had run out regardless of whether they had completed the course. Many participants stopped taking medicines after the symptom disappeared and only few participants completed the course of medicine. Some participants stopped taking medicines when they felt better and they thought that they did not need any more medicine and, therefore, they terminated it.

Table (3.2.19): Ages and when participants terminated the taking of their medicines.

Ages	A few days after the recovery	After a few days regardless of the outcome	After consulting a doctor	After medicine ran out	After symptoms disappeared	At the completion of the course	others
25-34	33>	47<	33>	36<	45<	31>	14<
35-44	18<	61>	29<	33>	43>	22<	9<
45-55	6<	19<	14>	16>	19>	10<	3<
<25	14>	13<	9<	11<	13<	10>	9>
>55	6>	2<	3<	2<	6>	6>	3>
Total	77	142	88	98	126	79	38

Age / Reason for purchasing medicine direct from pharmacy

The table below shows the purchasing of medicines direct from pharmacy without a doctor's prescription. One-third of the participants answered that convenience lead to purchase of their medicine direct from pharmacy and some participants purchased medicine directly from

a pharmacy because of the cost saving if they believed that the doctor would have prescribed the same medicine, with between 34-44 years old; Fisher's exact test showed that this is above the expected value, although the p-value obtained was 0.16, with only a few of them aged above 55 years of age. Most of the female participants answered that receiving medicine fast rather than waiting in a long queue to get a prescription was the reason; Fisher's exact test showed this is below the expected value. The majority of the participants answered the receiving of medicine fast. Only a few participants answered that they had a lack of trust of the doctor's prescription because many times they had received prescriptions that were useless.

Table (3.2.20): Ages of and reasons for participants purchasing medicines direct from pharmacies.

Ages	Convenience	Cost saving	Fast	Lack of trust of prescribing doctor	others
25-34	86>	45<	95<	12>	1<
35-44	67<	57>	84<	7<	0<
45-55	26<	19>	39>	2<	1>
<25	28>	13<	29<	8>	1>
>55	12>	2<	11<	3>	0<
Total	219	136	258	32	3

Age / Decision of participants to choose their medicine

The table below shows that many participants were familiar with their medicine and they used their experience to choose medicine. Few participants were choosing medicine based on the opinions of a member of the family. One-third of participants chose medicine recommended by a pharmacist. High numbers of the participants answered that doctors had previously prescribed the same medicine and they just repeated the doctor's prescription.

Only a few participants answered that they were choosing when they had seen good advertisements for the medicine and 8 participants answered that they were choosing their medicine on the recommendation of a friend, with aged below 25 years of age; Fisher's exact test showed this was significantly above the expected value (p-value 0.003). No participants were older than 35 years, and this observation was below the expected value.

Table (3.2.21): Decision of participants to choose their medicine and their ages.

Ages	my own experience	opinion of family members	opinion of friend	previous doctor prescription	recommendation by pharmacist	the advertisement
25-34	53>	15<	3>	82>	77<	9>
35-44	40<	24>	0<	66<	80>	5<
45-55	20>	11>	0<	28<	27<	1<
<25	14<	3<	5>	29>	23<	5>
>55	7>	1<	0<	10>	7<	3>
Total	134	54	8	215	214	23

Influence of age on changing the dose of medicine

The table below shows that most participants never changed the dose of medicine whereas some participants were changing the dose of medicine every time, with few of them aged between 35-44 years; Fisher's exact test showed that this is above the expected value, and with p-value 0.04, there was significant difference from the null hypothesis. None of them

were aged above 55 years of age; this below the expected value. One-third of participants were sometimes changing the dose of medicine.

Table (3.2.22): Participants changing the dose of medicine without consulting the doctor or pharmacist and their ages

Ages	no	sometimes	yes
25-34	146>	73<	20<
35-44	111<	71>	33>
45-55	49<	31>	7<
<25	51>	24<	4<
>55	20>	8<	0<
Total	377	207	64

Age / Taking the same medicine with two different names

The table below shows that 54 participants (8.4%) answered that they have taken two medicines with the same name; this is because medication in Kurdistan comes from many different countries and, therefore, sometimes one medicine can have many different trade names. With only a few of them aged from 35-44, Fisher's exact test showed that this was above the expected value (p-value was 0.003), and so there was significant difference from the expected value. Nearly all participants answered that they had not taken two medicines with the same name, with about one-half of them aged between 25-34 years; this is above the expected value and significantly different.

Table (3.2.23): Participants taking same medicine with two different names and their ages.

Ages	No	yes
25-34	222>	17<
35-44	185<	30>
45-55	83>	4<
<25	76>	3<
>55	28>	0<
Total	594 (91.6%)	54 (8.4%)

Age / Opinion about number of community pharmacies

The table below provides opinion information about the number of pharmacies in Kurdistan. Most participants responded that they considered that there was an adequate number of community pharmacies in their city, with approximately one-half of them aged between 35-44 years; Fisher's exact test showed that this is above the expected value and p-value 0.13. With only a few of them aged below 25 years of age, this is below the expected value. Only one of them was aged above 55 years and this was also below the expected value. However, the majority thought that there were more than enough of such establishments. Many participants believed the number of pharmacies were very few, and a high number of them answered that they have no idea about it.

Table(3.2.24): Opinion of participants of the number community pharmacies and their ages.

Ages	Enough	I do not know	More than enough	Very few
25-34	33<	91>	73>	42<
35-44	50>	70<	60<	35<
45-55	16>	29<	24<	18>
<25	7<	34>	25>	13<
>55	1<	13>	8<	6>
Total	107	237	190	114

Age / Assessment of health service

The high proportion of respondents assessed the health services provided by the health service as being acceptable. Some participants answered that health service was good, with aged between 25-34 years of age; Fisher test showed that this was above the expected value and with p-value of 0.015, there was significant difference from the expected value. With few of them aged between 35-44 years, the Fisher's test showed that this was above the expected value and there was significant difference. A small number of them were aged below 25 years and only one aged above 55 years; Fisher's test showed that both were below the expected value. Most participants answered that they had no idea about the health service. A lot of participants answered that the health service was poor. Some participants answered that the health service was very good, with 16 of them aged between 35-44 years; this is above the expected value and with p-value at 0.015, there was a significant difference from this.

None of them were aged above 55 years of age and this was below the expected value. Also, none of them were aged between 45-55 years and this was also below the expected value. Only a few participants answered that the health service was very poor, with none of them age above 55 years; this was also below the expected value.

Table (3.2.25): Idea of participants about health services and their ages.

Ages	Acceptable	Good	I do not know	Poor	Very Good	Very poor
25-34	121>	25<	41>	36>	10<	6<
35-44	95<	40>	28<	26<	16>	10>
45-55	41<	18>	12<	12<	0<	4>
<25	44>	5<	17>	10<	<2	1<
>55	15>	1<	6>	6>	0<	0<
Total	316	89	104	90	28	21

3.2.9 City

City /Purchased anti-biotic

The table below shows the responses of participants regarding the number of times that they purchased antibiotics with or without prescription in each city. Some participants were not purchasing antibiotics. Indeed, most participants purchased antibiotics without prescription, and participants were almost equally divided between the cities, with low numbers of them being from Dohuk city (Fisher's exact test showed that this was above the expected value), and Sulaymaniya (this was below the expected value, p value 10^{-9}). Participants purchased antibiotics with a prescription, and this was not equally divided between the cities, with most of them being from Sulaymaniya (this was above the expected value), and only a few were from Howler and Dohuk cities, both of which were below the expected value with a significant difference.

Table (3.2.26): The results for the variables of city and purchased anti-biotic

Cities	Not bought	Others	With Prescription	Without Prescription
Howler	96>	0<	42<	97>
Dohuk	21<	22>	32<	72>
Sulaymaniya	29<	0<	161>	76<
Total	146	22	235	245

City / Did you ever switch antibiotics?

The table below shows that 28% of participants had switched from one antibiotic to another, with most of them being from Sulaymaniya city, with Fisher's exact test showing that this was above the expected value. Few participants were from Duhok and Howler cities; this was below the expected value (p value 10^{-9}), so there was a significant difference. The majority of participants sometimes switched antibiotics, and most of these were from Howler city (135); Fisher's exact test showed that this was above the expected value.

Table (3.2.27): The variables of city and whether the respondent ever switched antibiotics or medicine during the course of self-treatment

Cities	Never	Yes, always	Yes, sometimes
Howler	96>	4<	135>
Dohuk	46>	30<	71>
Sulaymaniya	50<	149>	67<
Total	192	183	452

City / Why did you switch antibiotics?

The table below shows that the reasons for participants switching from one antibiotic to another, with the majority of participants having switched from one antibiotic to another with most of them being from Sulaymaniya city with the reason being because the first had no effect, and this could be because of a fake antibiotic; Fisher's exact test demonstrated that this was very significantly above the expected value (p value 10^{-9}). Also, a low proportion of participants were from Howler and Duhok city; both were below the expected value. Some participants switched to another antibiotic because they had not purchased a full course of antibiotics in one go and, instead, had first bought one sheet then on trying to purchase some the next time, they could not get the same one so they got different ones. Most of these participants were from Duhok city (this was above the expected value) and few were from Sulaymaniya city (this was below the expected value). The majority of participants could not afford the cost and, therefore, switched to cheaper ones, with most of them being from Howler city. Only a few participants switched to another antibiotic because of allergic reaction or side effect reasons and all were from Dohuk city; Fisher's exact test gave a p value of 10^{-9} . and so there was a significant difference from the expected values.

Table (3.2.28): Results for the variables of city and why did you switch antibiotics during the course of self-treatment?

Cities	The former medicine did not work	The former medicine ran out	The latter one was cheaper	To reduce adverse reactions
Howler	114<	25<	96>	0<
Dohuk	66<	33>	24<	24>
Sulaymaniya	186>	13<	67<	0<
Total	366(56%)	71(11%)	187(28.8%)	24(3.7%)

City / When did you normally stop taking medicines?

The table below shows that some participants stopped taking their medicines a few days after they felt better and it showed that they did not care about completing the course of medicine, with most of them being from Howler city, and only a few from Dohuk city; the Fisher exact test shows that both were above the expected value (p value 10^{-9}), and a small number of them were from Sulaymaniya; the Fisher test showed this was below the expected value. About one-quarter of participants stopped taking their medicines after a few days regardless of the results, with most of them being from Sulaymaniya city; this was above the expected value. Participants stopped taking medicine after consulting their doctors also participants stopped taking their medicine when it ran out regardless of whether they had completed the course. The majority of participants stopped taking medicine after the symptom disappeared and only few participants completed the course of medicine, with most of them from Sulaymaniya.

Table (3.2.29): When do participants normally stop taking medicines in each city.

Cities	A few days after the recovery	After a few days regardless of the outcome	After consulting a doctor	After medicine ran out	After symptoms disappeared	At the completion of the course	others
Howler	43>	2<	72>	46>	48>	22<	2<
Dohuk	26>	27<	2<	33>	13<	10<	36>
Sulaymaniya	8<	113>	14<	19<	65>	47>	0<
Total	77	142	88	98	224	79	38

City / Opinion regarding the number of community pharmacies available

The table below provides opinions of participants about the number of pharmacies in each city. Some participants responded that they considered that there was an adequate number of community pharmacies in their city, most of them being from Sulaymaniya city; this is above the expected value (p value 10^{-9}), and so there was a significant difference from the expected value. Only few of them were from Howler, and this is below the expected value. About one-third of participants responded that there were more than enough pharmacies in their city, with 100 of them being from Sulaymaniya; this is above the expected value. Few were from Howler which was below the expected value. However, high proportions of participants believed in regard to the number of pharmacies that there were very few in their city, with few of them being from Sulaymaniya and Duhok; both of them were below the expected value.

Table (3.2.30): The opinion of participants about the number of community pharmacy in each city

Cities	Enough	I do not know	More than enough	Very few
Howler	2<	96>	48<	89>
Dohuk	24<	68>	42<	13<
Sulaymaniya	81>	73<	100>	12<
Total	107	237	190	114

City / Consideration when selecting medicine

The table below shows the considerations of participants when selecting their medicine in each city. About one-half of participants preferred the branded medicines, with most of these people being from Sulaymaniya; this was above the expected value. Few of them were from Howler; this was below the expected value (p value 10^{-9}). A higher proportion of participants chose their medicines by price, with most of them being from Howler city (above the expected value) and few from Sulaymaniya (below the expected value). Most participants were selecting their medicine by other factors such as availability or because of less side effects.

Table (3.2.31): Considerations of participants in selecting medicine in each city.

Cities	brand name	others	price
Howler	68<	96>	71>
Dohuk	66<	48>	33>
Sulaymaniya	185>	60<	21<
Total	319	204	125

City and have you bought painkiller with or without prescription

The table below shows that more than half of the participants purchased medicine without a prescription, most of them being from Howler (above the expected value), and fewer from Sulaymaniya; this was below the expected value (p value 10^{-9}). A lot of participants purchased medicine with prescriptions, with most of them from Sulaymaniya which was above the expected value. Many of them answered that they had not purchased any painkillers.

Table (3.2.32): Results for the participants purchasing medicine with or without prescriptions in each city.

Cities	not purchased medicine in the last year	with prescription	without prescription
Howler	69>	11<	155>
Dohuk	38>	31<	78>
Sulaymaniya	4<	157>	105<
Total	111	201	338

City / Changing the dose of medicine

The table below shows that more than half of the participants had never changed the dose of medicine, most of them being from Howler city; the Fisher's exact test shows that this was above the expected value, others were from Duhok and Sulaymaniya city; both below the expected value (p value 10^{-9}). A high proportion of participants answered that sometimes they changed the dose of medicine, with most of them being from Sulaymaniya city; this is above the expected value, few of those participants were from Howler and Duhok; both of them were below the expected value. Some participants answered that they always changed the dose of medicine, with most of them being from Sulaymaniya city; this was above the expected value. Few of them were from Duhok and none of them from Howler city; this is below the expected value.

Table (3.2.33): The participant changing the dose of medicine without consulting a doctor or pharmacist in each city.

Cities	no	sometimes	yes
Howler	185>	50<	0<
Dohuk	104>	30<	13<
Sulaymaniya	88<	127>	51>
Total	377	207	64

City / How many different antibiotics did you take during a single illness?

The table below shows that only a small number of participants took three antibiotics for their condition and all of them were from Duhok city; this is above the expected value. None were from Sulaymaniya and Howler; this is below the expected value. However, a high number of participants took two antibiotics together, with most of them being from Howler; this is above the expected value. Few were from Duhok and Sulaymaniya city; both were very significantly below the expected value (p value 10^{-9}). The majority of participants were taking one antibiotic per condition, most of them from Sulaymaniya city (which was above the expected value) and fewer from Howler (which was below the expected value).

Table (3.2.34): The number of different antibiotics participants take maximally during a single illness in each city.

Cities	one	three	two
Howler	139<	0<	96>
Dohuk	103<	16>	28<
Sulaymaniya	228>	0<	38<
Total	470	16	162

City /Reason for purchasing medicine direct from pharmacy

The table below shows the purchasing of medicine directly from a pharmacy without a doctor's prescription. Most participants answered that convenience was the reason for purchasing their medicine direct from a pharmacy, the majority of them being from Howler city, which was above the expected value, and few were from Duhok city, which was below the expected value (p value 10^{-9}). Many participants purchased medicine direct from a pharmacy because of cost saving as they believed that the doctor would have prescribed the

same medicine anyway, most of them being from Sulaymaniya city; Fisher's exact test shows this was above the expected value. Only 2 of them were from Howler city which the Fisher's test showed was below the expected value. A high number of participants answered that the reason was the receiving of medicine fast rather than waiting in the long queue to get a prescription, most of them being from Howler city; Fisher's exact test showed this was above the expected value. Others were from Duhok and Sulaymaniya city; both of these numbers were below the expected value. Some participants answered they lacked trust in the doctor's prescription because many times they had got one which was useless - all of these were from Duhok city which, and this incidence was above the expected value. Only a few participants from Duhok answered otherwise because they did not want to listen the doctor's idea.

Table (3.2.35): The reasons for participants purchasing medicine direct from pharmacy in each city

City	Convenience	Cost saving	Fast	Lack of trust prescribing Dr	others
Howler	101>	2<	132>	0<	0<
Dohuk	40<	26<	46<	32>	3>
Sulaymaniya	78<	108>	80<	0<	0<
Total	219	136	258	32	3

3.2.10 Marital status

Marital status / Purchased anti-biotics

The table below shows the response of participants regarding the purchase of antibiotics with or without prescription. Many participants had not purchased antibiotics. Most participants had purchased antibiotics without prescription, some of them being single; Fisher's exact test shows this is above the expected value and with a p-value of 0.17 a value which was not significant. A high number of them were married. The majority of participants purchased with a prescription, and this was not equally divided between the groups. Many of them were married and a small number of them being single; Fisher's exact test shows this was below the expected value. Few participants answered questions on other factors such as shared medicine with others. None of them were separated; this was below the expected value.

Table (3.2.36): Participants purchasing of anti-biotic according to marital status

Status	Not bought	Others	With Prescription	Without Prescription
Married	107>	14<	174>	164<
Single	35<	8>	51<	76>
Separate	4<	0<	10>	5<
Total	146	22	235	245

Variables of marital status and for which of the following complaint(s) did you use antibiotics

The table below shows that more than one-half of the participants were married, and few of them were single that were using antibiotics for sore throat, cough and runny nose; Fisher's exact test shows this was above the expected value (p-value 0.003), so there was a significant difference from the expected value. Some participants used antibiotics for diarrhea, with only a small number of them being single; this was below the expected value.

Most participants were using antibiotics for pain because this could have been related to infection, many of them being married; this was above the expected value. Only a few of them were single, an incidence which was below the expected value.

Table (3.2.37): For which complaint participants purchasing antibiotic according to marital status.

Status	cough , sore throat, runny nose	diarrhoea	others	pain	skin infection
Married	255<	71>	14<	83>	36<
Single	110>	15<	12>	15<	18>
Separate	9<	3>	0<	6>	1<
Total	347	89	26	104	55

Marital status /Idea about self-medication with antibiotics

The table below shows the opinion of participants regarding the purchasing of antibiotics without prescription. In total, about one-half of participants believed that the purchasing of antibiotics without prescription was an acceptable practice, most of them being married and few of them single. Some participants believed self-medication with an antibiotic was a good practice, many of them being married; Fisher's exact test showed that this was above the

expected value (p value 0.007), and hence this was significantly different from the expected value. A high proportion of participants believed that self-medication with an antibiotic was not an acceptable practice, most of them married and a small number of them single.

Table (3.2.38): Marital status of participants and their idea about self-medication with antibiotics

Status	Acceptable practice	Good practice	Not acceptable practice
Married	218<	77>	164<
Single	82>	13<	75>
Separate	8<	6>	5<
Total	308	96	244

Marital status / Reason for purchasing medicine direct from pharmacy

The table below shows the purchasing of medicines direct from pharmacies without a doctor's prescription, the majority of participants having answered that convenience was the reason for them purchasing their medicine directly from a pharmacy, and most of them being married and few of them single. A large number of participants purchased medicine directly from a pharmacy because of cost saving, most of them married and a few of them single. A high proportion of participants answered that the reason for this was receiving medicines fast, most of them being married and a few single. Some participants answered that they had a lack of trust in the doctor's prescription, with most of them married; this is above the expected value and with a p value of 0.18. Also, a small number of them were single; Fisher's exact test shows this was above the expected value. None of them were separated; this was below the expected value. 3 participants answered with other responses because they were not wanting to listen to the doctor's idea. None of the participants were separated, and this was below the expected value.

Table (3.2.39): Marital status of participants and reason for purchasing medicine direct from pharmacy.

Status	Convenience	Cost saving	Fast	Lack of trust prescribing Dr	others
Married	152<	101>	187>	17<	2<
Single	62>	29<	63<	15>	1>
Separate	5<	6>	8>	0<	0<
Total	219	136	258	32	3

Marital status/ Decision of participants to choose their medicine

The table below shows that a high number of participants were familiar with their medicine and they used their experience to choose medicine, most of them being married and a few of them single. Some participants chose the medicine on the opinions of a member of the family, most of them being married and some of them single. A high proportion of participants chose the medicine recommended by the pharmacist, most of them being married and few single. Most participants answered that doctors had previously prescribed the same medicine and so they just repeated the doctor's prescription. Few participants answered that they chose their medicine when they saw good advertisements for it. Also, a few participants answered that they were choosing their medicines on the recommendation of friends, with 1 of them married; Fisher's exact test shows this is below the expecting value and the p-value 0.009 showed a significant difference from the expected value.

Table (3.2.40): How participants choose their medicine according to marital status.

status	my own experience	opinion of family members	opinion of friend	previous doctor prescription	recommenda tion by pharmacist	the advertisement
Married	101>	41>	1<	146<	156>	14<
Single	29<	11<	7>	64>	50<	9>
Separate	4>	2>	0<	5<	8>	0<
Total	134	54	8	215	214	23

Marital status / Assessment of health service

The table below shows that about one-half of participants assessed the health services provided by health service as being acceptable, most of them were married and a few single. Some participants answered the health service was good, with 1 of them being married and 12 single; Fisher's exact test shows this was below the expected value (p-value 0.0005), and so there was a significant difference from the expected value. A high number of participants answered that they had no idea about the health service, most of them married and some of them single; this is above the expected value. Many participants answered that the health service was poor, most of them married and a few single. Only 28 participants answered that the health service was very good, with none of them separated; this was below the expected value.

Table (3.2.41): Participants assessment of health services according to marital status

Status	Acceptable	Good	I do not know	Poor	Very Good	Very poor
Married	218<	71>	66<	67>	21>	16>
Single	90>	12<	37>	22<	7<	2<
Separate	8<	6>	1<	1<	0<	3>
Total	316	89	104	90	28	21

3.2.11 Qualification

Level of education /Health facility use

The table below shows the health facilities being used by participants according to their qualifications. As shown in the table below, a high number of participants were using community pharmacies, with 80 of them having a Bachelor's degree, 6 of them having a postgraduate degree and 148 of them having a Diploma; Fisher's exact test shows that all of them were above the expected value (p value 10^{-9}). Most participants were using a governmental hospital, and 81 of them had a secondary school level of education, and 130 had a primary school level of education. Many participants were using primary health care, of whom 10 had a bachelor's degree, and 29 had a Diploma, and had a primary school level of education; all were below the expected value and some had a secondary school degree, which was above the expected value. A high proportion of participants were using private hospitals, and of these 60 had a Bachelor's degree, which was above the expected value.

Table (3.2.42): The level of education of participants and health facility use.

Qualification	Community Pharmacy	Governmental Hospital	Primary health care	Private Hospital
Bachelor's	80>	0<	10<	60>
Diploma	148>	0<	29<	12<
Postgraduate	6>	0<	0<	4<
Primary school	2<	130>	16<	11<
Secondary school	0<	81>	50>	9<
Total	236	211	105	96

Level of education / Purchased anti-biotics

The table below shows the response of participants regarding the purchase of antibiotics with or without prescription. Some participants were not purchasing antibiotics, they were having a Bachelor's degree and a Diploma; the Fisher's exact test shows that these were highly significantly above the expected value (p value 10^{-9}), High proportion of participants purchased antibiotics without prescription, they were having a secondary school qualification and a Diploma; these were above the expected value and few of them had a primary school qualification; this was below the expected value. The great majority of participants were purchasing with a prescription, and these were not equally divided between the qualifications; they were had a Bachelor's degree, and had a Diploma; Fisher's exact test showed that these were very significantly above the expected value (p value 10^{-9}).

Table (3.2.43): Participant purchase of anti-biotics according to level of education.

Qualification	Not bought	Others	With Prescription	Without Prescription
Bachelor's	66>	14>	108>	0<
Diploma	80>	8>	79>	80>
Postgraduate	0<	0<	1<	0<
Primary school	0<	0<	29<	40<
Secondary school	0<	0<	18<	125>
Total	146	22	235	245

Level of education / Did you ever switch anti-biotics?

The table below shows that a high proportion of participants switched from one antibiotic to another, with most of them having primary and secondary school qualifications; Fisher's exact test showed that this was very significantly above the expected value (p value 10^{-9}). Most participants sometimes switched antibiotics and also most of them had a secondary school certificate; this was above the expected value. A few of them had a Diploma certificate and this was below the expected value. Some participants never switched from one antibiotic to another, with most of them having a Bachelor's degree and a Diploma certificate; this is above the expected value. A few of them had a primary school level of education and 18 had a secondary school certificate, this is below the expected value.

Table (3.2.44): Participant switching of antibiotics or medicine during the course of self-treatment and level of education.

Qualifications	Never	Yes, always	Yes, sometimes
Bachelor's	80>	0<	0<
Diploma	72>	0<	56<
Postgraduate	8>	0<	0<
Primary school	14<	94>	52<
Secondary school	18<	89>	165>
Total	192(29.6%)	183(28.3%)	273(42.1)

Level of education / Why did you switch antibiotics?

The table below shows the reasons for participants having switched from one antibiotic to another, more than half of the participants having switched antibiotics because the former did not work, with most of them having primary and secondary school certificates; Fisher's exact test showed that this was above the expected value (p -value 10^{-9}). Some participants switched to another antibiotic because they had not purchased a full course of antibiotics in one go at and they had first bought one sheet and then, for the next one, sometimes they could not get the same one so they got a different one, with 34 of them having a secondary school certificate and 37 having a Diploma, with both effects being above the expected value. Many participants could not afford the cost, and therefore they switched to cheaper ones, with most of them having a primary and secondary school certificate; Fisher exact test showed this to be above the expected value. A few participants switched to another antibiotic because of allergic reactions or for side-effects reasons, with 16 of them having a bachelor's degree and 8 having a postgraduate degree, with both being above the expected value.

Table (3.2.45): Participant switching of antibiotics during the course of self-treatment according to their qualification.

Qualification	The former medicine did not work	The former medicine ran out	The latter one was cheaper	To reduce adverse reactions
Bachelor's	0<	0<	0<	16>
Diploma	89>	37>	18<	0<
Postgraduate	0<	0<	0<	8>
Primary school	146>	0<	64>	0<
Secondary school	131>	34>	105>	0<
Total	366(56%)	71(11%)	187(28.8%)	24(3.7%)

Level of education / Number of different antibiotics

The table below shows that only a few participants had taken three antibiotics for their condition; 8 of them had a bachelor's degree, and 2 a postgraduate one; both of them were above the expected value. A few of them had a Diploma and none of them had a primary and secondary school certificate; this was below the expected value. A high proportion of participants took two antibiotics together with most of them having a secondary school level of education and a Diploma certificate; both were highly significantly above the expected value (p value 10^{-9}). A few of them had a Bachelor's degree, and this was below the expected value. Most participants had been taking one antibiotic per condition; 165 of them had a secondary school level of education, 146 had a primary school certificate, and 89 had a Bachelor's degree; all were above the expected value. 70 had a Diploma, and none were postgraduates; both were below the expected value.

Table (3.2.46): The number of different anti-biotics used during a single illness according to level of education.

Qualification	one	three	two
Bachelor's	89>	8>	12<
Diploma	70<	4<	90>
Postgraduate	0<	2>	0<
Primary school	146>	0<	0<
Secondary school	165>	0<	60>
Total	470	16	162

Level of education /Idea about self-medication

The table below shows the opinion of participants with regard to the purchasing of antibiotics without prescription. In total, about one-half of participants believed purchasing of antibiotics without prescription was an acceptable practice, with 139 of them having a primary school certificate and a somewhat higher number having a secondary school certificate; both of these were highly significantly above the expected value (p value 10^{-9}). A small number of them had a Diploma certificate and this was below the expected value. Some participants believed that self-medication with an antibiotic was a good practice, most of them having a Diploma certificate; Fisher's exact test showed that this was above the expected value and significantly different from the expected value. A large proportion of participants believed that self-medication with antibiotic was not an acceptable practice, 156 of them having a Bachelor's degree, and approx. half as many qualified with a Diploma; both were above the

expected value and none of them had a primary and secondary school certificate - this was below the expected value.

Table (3.2.47): Idea of participants about self-medication according to level of education.

Qualification	Acceptable practice	Good practice	Not acceptable practice
Bachelor's	0<	0<	156>
Diploma	4<	89>	80>
Postgraduate	0<	0<	8>
Primary school	139>	7<	0<
Secondary school	165>	0<	0<
Total	308	96	244

Level of education / Reasons for purchasing medicine direct from pharmacy

The table below shows the purchasing of medicine directly from a pharmacy without a doctor's prescription, most participants having answered that convenience was the reason for them purchasing their medicines directly from a pharmacy, and some of them having a primary school and secondary school certificate; both were very significantly above the expected value (p value 10^{-9}). Many participants purchased medicines directly from a pharmacy because of cost saving and they believed that the doctor would have prescribed the same medicine, and they had a primary school level of education and/or a secondary school certificate; both were above the expected value. A high proportion of participants answered that the reason was receiving medicine fast rather than waiting in a long queue to get a prescription; of these, many held a Diploma, and a smaller number a Bachelor's degree; Fisher's exact test showed that this was above the expected value.

Table (3.2.48): The level of education of participants related to reason for the purchasing of medicine direct from pharmacy.

Qualifications	Convenience	Cost saving	Fast	Lack of trust prescribing Dr	others
Bachelor's	0<	0<	53>	27>	0<
Diploma	0<	0<	160>	0<	0<
Postgraduate	0<	0<	0<	5>	3>
Primary school	99>	47>	0<	0<	0<
Secondary school	120>	89>	45<	0<	0<
Total	219	136	258	32	3

Level of education / Decision of participants to choose their medicine

The table below shows that some participants were familiar with their medicines and they used their experience to choose medicine, most of them having a Diploma; this was below the expected value. Few of them, however, had a Bachelor's degree or a secondary school certificate; both were very highly significantly below the expected value (p value 10^{-9}). Many participants chose the medicine on the opinions of a member of the family, some having a primary school level of education and more a secondary school certificate; both numbers were above the expected value. A high proportion of participants chose the medicine recommended by the pharmacist, with significant numbers having a Diploma and a primary school certificate; both were above the expected value. Only a small number had a secondary school certificate, and this was below the expected value. A high number of participants answered that the doctors had previously prescribed the same medicine and that they had just repeated the doctor's prescription - these had a Diploma or a Bachelor's degree; both of them were above the expected value. Only a few participants answered that they chose their medicines when they saw good advertisements for them, and of these 15 had a Bachelor's and 8 had postgraduate degrees; both were above the expected value. Few participants had a secondary school certificate and answered that they were choosing their medicines on the recommendation of a friend; Fisher's exact test showed that this was above the expected value.

Table (3.2.49): How participants choose their medication according to level of education.

Qualifications	my own experience	opinion of family members	opinion of friend	previous doctor prescription	recommenda tion by pharmacist	the advertisement
Bachelor's	20<	0<	0<	65>	0<	15>
Diploma	104>	0<	0<	150>	89>	0<
Postgraduate	0<	0<	0<	0<	0<	8>
Primary school	0<	21>	0<	0<	102>	0<
Secondary school	10<	33>	8>	0<	23<	0<
Total	134	54	8	215	214	23

Level of education / Changing the dose of medicine

The table below shows that a high proportion of participants had never changed the dose of medicine, they were having a Bachelor's, a Diploma, a postgraduate qualification and a secondary school certificate; all were highly significantly above the expected value (p value 10^{-9}). Many participants answered that sometimes they changed the dose of medicine, with most having a primary school certificate; this was above the expected value. Some of them had a secondary school level of education and this was above the expected value. Many participants answered that they always changed the dose of medicine, with all of them having a secondary school certificate; this was above the expected value.

Table (3.2.50): Participant changing of dose of medicine without consulting doctor or pharmacist and level of education

Qualifications	No	sometimes	yes
Bachelor's	80>	0<	0<
Diploma	160>	25<	0<
Postgraduate	8>	0<	0<
Primary school	0<	146>	0<
Secondary school	129>	36<	64>
Total	377	207	64

Qualifications / Opinion about the number of community pharmacies available

The table below provides opinion information about the number of pharmacies. Many participants responded that they considered that there was an adequate number of community pharmacies, most of them having a Diploma; this was above the expected value. The majority of participants answered that they had no idea, with 88 having a primary school level of education and 149 having a secondary school certificate; Fisher's exact test showed that this was above the expected value (p value 10^{-9}). A High proportion of participants answered that there were more than enough, and these had a Diploma and/or a secondary school certificate; both were above the expected value. Many participants believed the number of pharmacies to be very few, most of these participants having a secondary school certificate; this was above the expected value. Only a small number had a Bachelor's degree, and 11 had a Diploma too – these values were below the expected ones.

Table (3.2.51): Opinion of participants of number of community pharmacies and their qualifications.

Qualification	Enough	I do not know	More than enough	Very few
Bachelor's	0<	0<	0<	23<
Diploma	89>	0<	128>	11<
Postgraduate	0<	0<	0<	0<
Primary school	18<	88>	0<	0<
Secondary school	0<	149>	62>	80>
Total	107	237	190	114

Qualifications / Assessment of health service:

The table below shows that about one-half of the participants assessed the health services provided by the health service as being acceptable, with 118 of them having a primary school level of education and 165 having a secondary school certificate; both were above the expected value. Only a few of these had a Diploma, and this was below the expected value. Some participants answered that the health service was good, with 50 of them having a Diploma and 28 having a secondary school certificate; both were above the expected value. Only a small number of these had a Bachelor's degree; Fisher's exact test showed that this

was below the expected value (p value 10^{-9}). A lot of participants answered that they had no idea about the health service, most of them having a primary school certificate; this was above the expected value. Few of these held a relevant Diploma, and 8 held only a secondary school certificate; both were below the expected value. Many participants answered that the health service was poor, some of them having a Diploma; this was above the expected value. Fewer of these had a Bachelor's degree; this was below the expected value.

Table (3.2.52): Participant assessment of health services according to their qualifications.

Qualification	Acceptable	Good	I do not know	Poor	Very Good	Very poor
Bachelor's	0<	10<	0<	25<	0<	0<
Diploma	33<	50>	16<	65>	0<	21>
Postgraduate	0<	0<	0<	0<	0<	0<
Primary school	118>	0<	80>	0<	28>	0<
Secondary school	165>	28>	8<	0<	0<	0<
Total	316	89	104	90	28	21

3.2.12 Employment

Employment status /Health facility use

The table below shows the health facilities being used by participants according to their employment. As shown in Table (3.2.53), most participants in total were using community pharmacies, i.e. manual workers and the unemployed; Fisher's exact test showed that both of them were very significantly above the expected value (p value 10^{-9}). High number of participants used the governmental hospital, and these included office workers, salesmen and teachers; all participant numbers were above the expected value. Some office worker participants were using primary health care services; this was above the expected value. Many participants were using a private hospital, and these consisted of salesmen and the unemployed: these figures were above the expected values.

Table (3.2.53): Employment status of participants and health facility use

Employment	Community Pharmacy	Governmental Hospital	Primary health care	Private Hospital
Office worker	0<	40<	105>	0<
Others	0<	6>	0<	0<
Manual worker	121>	0<	0<	0<
Salesman	0<	85>	0<	81>
Teacher	0<	80>	0<	0<
Unemployed	115>	0<	0<	15<
Total	236	211	105	96

Employment status / Purchased anti-biotics

The table below shows the response of participants with regard to the purchasing of antibiotics with or without prescriptions. Many participants were not purchasing antibiotics, most of them being either manual workers and the unemployed; Fisher's exact test showed that these were very significantly above the expected value (p-value 10^{-9}). The majority of participants purchased antibiotics without prescription, and these consisted of salesmen and the unemployed; both of them above the expected value. Most participants purchased with a prescription, and this was not equally divided between the qualifications they had attained; the Fisher's exact test showed that these were above the expected value (p value 10^{-9}).

Table (3.2.54): Participant purchase of anti-biotics according to employment status.

Employment	Not bought	Others	With Prescription	Without Prescription
Office worker	0<	0<	145>	0<
Others	0<	0<	6>	0<
Manual worker	99>	22>	0<	0<
Salesman	0<	0<	4<	162>
Teacher	0<	0<	80>	0<
Unemployed	47>	0<	0<	83>
Total	146	22	235	245

Employment status / Ever switched antibiotics?

The table below showed that most of the participants switched from one antibiotic to another, and these were predominantly salesmen, 3 of them being teachers; Fisher's exact test showed

that both were above the expected value (p value 10^{-9}). A high number of participants sometimes switched antibiotics, and also most of them were manual workers; this was above the expected value. Many participants never switched from one antibiotic to another, with most of them being office workers and teachers; both numbers were above the expected value.

Table (3.2.55): Participant switching of antibiotics or medicine during the course of self-treatment according to employment status.

Employment	Never	Yes, always	Yes, sometimes
Office worker	121>	0<	0<
Others	0<	0<	6>
Manual worker	0<	0<	166>
Salesman	0<	145>	0<
Teacher	71>	38>	42>
Unemployed	0<	0<	59>
Total	192	183	273

Employment status and reason for switching antibiotics

The table below shows the reasons for participants having switched from one antibiotic to another. More than one-half of the participants switched antibiotics because the former one did not work - these were office workers, salesmen and teachers; the Fisher's exact test shows that all were above the expected value (p value 10^{-9}). Some participants switched to another antibiotic because they did not purchase a full course of antibiotics in one process; instead, they first purchased one sheet and then when buying the next time, sometimes they could not get the same one so they bought a different drug. They consisted of salesmen and the unemployed; both were above the expected value. Many participants could not afford the cost, and therefore, they switched to a cheaper product, and these customers consisted of manual workers and the unemployed; Fisher's exact test showed that both were above the expected value. Few participants switched to another antibiotic in view of allergic reactions or side-effects, with all of them being manual workers; this result was above the expected value.

Table (3.2.56): Employment status of participants and why they switched antibiotics during the course of self-treatment.

Employment	The former medicine did not work	The former medicine ran out	The latter one was cheaper	To reduce adverse reactions
Office worker	145>	0<	0<	0<
Others	6>	0<	0<	0<
Manual worker	0<	0<	97>	24>
Salesman	135>	31>	0<	0<
Teacher	80>	0<	0<	0<
Unemployed	0<	40>	90>	0<
Total	366	71	187	24

Employment status / What do you think about self-medication?

The table below shows the opinion of participants regarding the purchasing of antibiotics without prescription. In total, about one-half of participants believed the purchasing of antibiotics without prescription was an acceptable practice, and these consisted of salesmen and teachers; both of them were highly significantly above the expected value (p-value 10^{-9}). Some participants believed self-medication with antibiotics was a good practice, and all of them were office workers; Fisher's exact test showed that this was above the expected value. Many participants believed self-medication with an antibiotic was not an acceptable practice, and these were predominantly manual workers and the unemployed; both were above the expected statistic value.

Table (3.2.57): Idea of participants about self-medication with antibiotics and employment status of participants.

Employment	Acceptable practice	Good practice	Not acceptable practice
Office worker	49<	96>	0<
Others	6>	0<	0<
Manual worker	0<	0<	121>
Salesman	166>	0<	0<
Teacher	80>	0<	0<
Unemployed	7<	0<	123>
Total	308	96	244

Employment status /Reason for purchasing medicine direct from pharmacy

The table below shows the purchasing of medicines directly from a pharmacy without a doctor's prescription. About one-third of the participants answered that convenience was the reason for purchasing their medicine direct from a pharmacy, and these were mostly salesmen, and teachers; both incidences were above the expected value (p value 10^{-9}). A small number of them were office workers and others; both were below the expected value. Most participants purchased medicines directly from a pharmacy because of cost saving and they believed that the doctor would have prescribed the same medicine. All of these participants were unemployed, and this was above the expected value. The majority of participants answered that their reason was the receiving of medicine fast rather than waiting in a long queue to get a prescription, these predominantly being teachers and manual workers; Fisher's exact test showed that both were above the expected value.

Table (3.2.58): The reasons for the participants purchasing medicine direct from pharmacy according to employment status.

Employment	Convenience	Cost saving	Fast	Lack of trust prescribing Dr	others
Office worker	9<	0<	0<	0<	0<
Others	6>	0<	0<	0<	0<
Manual worker	0<	0<	86>	32>	3>
Salesman	124>	0<	42<	0<	0<
Teacher	80>	0<	130>	0<	0<
Unemployed	0<	136>	0<	0<	0<
Total	219	136	258	32	3

Employment status / Decision of participants to choose their medicine

The table below shows that most participants were familiar with their medicine and they used their experience to choose medicine, most of these being teachers; this was above the expected value. A small number of them were office workers and this was below the expected value. Some salesman participants chose their medicines based on the opinion of a member of the family; this was above the value (p value 10^{-9}). About one-third of the participants chose medicines recommended by the pharmacist, these being office workers and teachers; this is above the expected value. Also, one-third of the participants answered

that doctors had previously prescribed the same medicine and that they had just repeated the doctor's prescription - these were consisted of manual workers and the unemployed; both incidences were above the expected value. Some participants answered that they chose their medicine when they had seen good advertisements for it, and salesman participants answered they chose their medicine on the recommendation of a friend.

Table (3.2.59): Decision of participants to choose their medicine and their employment status.

Employment	my own experience	opinion of family members	opinion of friend	previous doctor prescription	recommendation by pharmacist	the advertisement
Office worker	13<	0<	0<	0<	145>	0<
Others	0<	6>	0<	0<	0<	0<
Manual worker	0<	11>	0<	98>	0<	23>
Salesman	0<	37>	8>	0<	0<	0<
Teacher	121>	0<	0<	0<	69>	0<
Unemployed	0<	0<	0<	117>	0<	0<
Total	134	54	8	215	214	23

Employment status / Changing the dose of medicine

The table below shows that more than one-half of the participants never changed the dose of medicine, these being office workers, teachers and the unemployed; all were above the expected value (p value 10^{-9}). One-third of participants answered that sometimes they changed the dose of medicine, the respondents being office workers and teachers; both incidences were above the expected value. Some participants answered that they always changed the dose of medicines, all of them being manual workers; this is above the expected value.

Table (3.2.60): Participant changing of the dose of medicine without consulting doctor or pharmacist and their employment status.

Employment	No	Sometimes	Yes
Office worker	121>	81>	0<
Others	0<	6>	0<
Manual worker	0<	0<	64>
Salesman	0<	40<	0<
Teacher	126>	80>	0<
Unemployed	130>	0<	0<
Total	377	207	64

Employment status / Taking same medicine with two different names

The table below shows that few participants responded that they have taken two medicines with the same name; this is because medication in Kurdistan comes from many different countries and, therefore, sometimes, one medicine can have many different trade names. All of them were manual workers; Fisher's exact test showed that this was above the expected value and (p value 10^{-9}). Nearly all participants answered that they had not taken two medicines with the same name, and these were salesmen, teachers, the unemployed and manual workers; all of them were above the expected value and significantly different from this.

Table (3.2.61): Participant taking of same medicine with two different names and their employment status.

Employment	No	yes
Office worker	91<	0<
Others	6>	0<
Manual worker	121>	54>
Salesman	166>	0<
Teacher	80>	0<
Unemployed	130>	0<
Total	594	54

Employment status and opinion about number of community pharmacy

The table below provides opinion information about the number of pharmacies. A high number of participants considered that there was an adequate number of community pharmacies, and all of them were office workers; this was above the expected value. About one-third of participants answered that they had no idea, most of them being manual workers and the unemployed; Fisher's exact test showed that both were above the expected value, and with a p value of 10^{-9} , this was clearly significant. About one-third of participants answered there were more than enough, most of them being teachers and salesmen; both were above the expected value. Many participants believed that the number of pharmacies were very few (most of them salesmen), and this was above the expected value.

Table (3.2.62): Opinion of participants about number of community pharmacies and their employment status.

Employment	Enough	I do not know	More than enough	Very few
Office worker	107>	0<	38<	0<
Others	0<	0<	6>	0<
Manual worker	0<	121>	0<	0<
Salesman	0<	0<	66>	100>
Teacher	0<	0<	80>	0<
Unemployed	0<	116>	0<	14<
Total	107	237	190	114

Employment status / Assessment of health service

The table below shows that almost one-half of participants assessed the services provided by health service as being acceptable, most of them salesmen and teachers; both were above the expected - some of these were office workers and the unemployed, and others; all of them were below the expected value. Many participants answered that health service was good, with all of them being office workers; Fisher's exact test showed that this was below

the expected value and the p-value for this was 10^{-9} , and hence this effect was very highly statistically significant. Also, some participants answered that they had no idea about the health service, all of them being manual workers; this was above the expected value. A total of 90 participants answered that the health service was poor, all of them being unemployed; this was above the expected value.

Table (3.2.63): Participants assessment of health service and employment status of participants.

Employment	Acceptable	Good	I do not know	Poor	Very Good	Very poor
Office worker	28<	89>	0<	0<	28>	0<
Others	6>	0<	0<	0<	0<	0<
Manual worker	0<	0<	104>	0<	0<	17>
Salesman	166>	0<	0<	0<	0<	0<
Teacher	80>	0<	0<	0<	0<	0<
Unemployed	36<	0<	0<	90>	0<	4<
Total	316	89	104	90	28	21

Conclusions

In conclusion, self-medication is widely practiced within the study site, Kurdistan, and the prevalence of self-medication is high amongst the all groups of respondents, despite the majority of them being aware of its harmful effects. Self-medication is largely preferred amongst the respondents because of its time and cost-effectiveness. The type of illnesses/symptoms reported, and the category of drugs requested for self-medication are very extensive, and not limited to minor illnesses and OTC products for Kurdistan, respectively. People of all socio-demographic categories practice self-medication. This study revealed a high percentage of inappropriate antibiotic knowledge and a high rate of self-medication with antibiotics amongst the Kurdistan population. Consumers' knowledge of drugs were also not adequate. In addition to this, even if self-medication is within its scope, it has to be accompanied with appropriate counselling and objectives, together with complete drug information, by the health care provider, particularly, the pharmacist.

CHAPTER 3: PHASE TWO RESULTS OF THE INTERVIEW STUDY

SECTION 3:

3.3.1 Introduction

Phase 2 of this research programme had the purpose of discovering further information regarding self-medication policy, factors behind self-medication, the current role played by community pharmacies with respect to self-medication, community pharmacy services provided to the Kurdistan community, and the opinion of various officials with regard to the regulation of pharmacists and community pharmacies; an exploratory qualitative study was employed for seeking and unearthing this information. It was decided to target questionnaire surveying of healthcare officials who were working for the Ministry of Health in a community pharmacy setting within three cities. Indeed, it was considered that these healthcare officials had the most relevance to the study and that the researcher could obtain both personal and official opinions with regard to the practices within community pharmacies from those operating in an official capacity, and who had the most interactions with community pharmacists. From the large sample in Phase 1 of the study and pharmacy inspectors, participants were selected randomly with the sample being divided into three groupings, i.e. pharmacy inspectors, pharmacists and the general public in accordance with community pharmacy service information.

Semi-structured interviews were conducted with the following objectives:

Semi structured interviews were undertaken with a number of objectives, as follows:

- a. Discovering the status of community pharmacies within Kurdistan;
- b. Acquiring knowledge of drug use and factors that influence self-medication amongst the population of Kurdistan, especially since this has importance for the adoption of appropriate policies;
- c. Identifying reasons for the rise in overuse and misuse of drugs in Kurdistan;
- d. Discovering healthcare official perspectives with regard to the efficacy of community pharmacies, in general, and that of the services that they provide to the community;
- e. To present information for assessment of the current roles that community pharmacies play with regard to self-medication in Kurdistan.

3.3.2 Interview results

In the section that follows, the themes that emerged from the thematic content analysis of the interviews. In identifying suitable themes, initial results from the first phase of study were also taken into account. Table 33 below provides a summary of which participants have been involved, and this provides some context for the study.

Table (3.3.1) Demographic information from the sample (n = 28)

Age	25-47 years
Gender	23 Male, 5 Female
Educational level	Pharmacist; Pharmacy inspector; pharmacy assistant; patient (teacher); patient with no formal education; primary- and secondary-educated patient.
Sulaymaniya	Two pharmacy assistants, two pharmacists, two pharmacy inspectors, and four patients.
Dohuk	Two pharmacy assistants, two pharmacists, one pharmacy inspector, and three patients.
Howler	Two pharmacy assistants, two pharmacists, two pharmacy inspectors, and four patients

The main classes of information that arose from the semi-structured interviews are as follows: -

- 1 An idea of the numbers of pharmacies in each of the three cities;
- 2 The community pharmacy services;
- 3 Who are running the community pharmacies?
- 4 Who is able to open a pharmacy?
- 5 What the pharmacist uses a computer for?
- 6 What happens when a pharmacist does not follow the regulations of the MOH?
- 7 Why patients buy medications directly from a pharmacy without consulting a physician?
- 8 What factors lie behind self-medication?
- 9 What types of medications pharmacists sell without prescription?
- 10 What type of reform of the pharmacies is required?

Of the ten different themes above, the first six listed relate to community pharmacy services with a focus on simple information with regard to the dispensing and regulation of medicine, its uses and the knowledge of people regarding its use. Themes seven and eight relate to the practice of medicine, particularly with regard to the practices of self-medication. Themes nine and ten relate to pharmacy regulations and the types of medicine sold without prescriptions, and also the perceptions of what reforms are needed. Participant quotes are used with a representative code, i.e. Pharmacist (Ph), Pharmacy inspector (Ins), Pharmacist assistant (Pha) and Patient (P). The total number of participants was $n = 28$.

Theme 1: An idea of the numbers of pharmacies in each of the three cities

(Question: What are your thoughts with regard to the number of pharmacies within this city?)

In general, interviewee responses began with ‘I’m not sure actually?’. Although numerous kinds of responses were made, most participants (18 out of 28) required clarification before giving an answer or paused for a while. Usual responses included ‘What do you mean by that question? Ah, the exact number of pharmacies here in the city? I don’t know’. Such a response was not a reflection of a lack of knowledge, more a case of a lack of information with regard to exact figures and awareness of the ratio of pharmacies to the population. The most common type of response (17 out of 28) was reductive in nature, with responses such as ‘more than enough’ being used by participants who were uneducated (11 out of 28) as shown for Interviewee 1 (see below).

Interviewee 1

There are more than enough community pharmacies to serve population needs within the cities (P:22/SHD).

A total of (9 out of 11) patients believed that there were more than enough community pharmacies to serve population needs within the cities.

Interviewee 2

There is no distribution plan for the pharmacies (Ph:33/SHD).

All of the pharmacists interviewed (28 out of 28) were of the opinion that there was no plan in existence for the distribution of pharmacies within each of the cities, with a number of pharmacies under-used and other areas having a high density of pharmacies therein; for

example, one district had 90% of the pharmacies of the city, and the majority of them were located on the same road.

Interviewee 3

The amount of pharmacies in the cities was about right (Ins:11/SH).

Other interviewees (4 out of 5 pharmacist inspectors) were of the opinion that the amount of pharmacies was 'about right'.

Interviewee 2

Most of the pharmacies in Kurdistan operate under the supervision of a pharmacist, with others being managed by a nurse or other paramedical staff, or a pharmacy assistant (Ph:21/SHD).

A total of 5 out of 6 pharmacists believed that whilst there were more than sufficient numbers of community pharmacies within Kurdistan, there were not enough pharmacists; they considered that a number of pharmacies were managed by a nurse or other form of paramedical staff or pharmacy assistant, rather than a pharmacist. Other pharmacists were of the view that there was no distribution plan for pharmacists across districts, despite them considering that there was an adequate number of them.

Interviewee 4

The number of pharmacies in Kurdistan is considered insufficient with pharmacies being run by pharmacy assistants (Pha:44/SHD)

All of the pharmacy assistants were of the opinion that there were not enough pharmacies in Kurdistan. Also, it was considered there was an insufficient number of pharmacists in the towns and townships, where most community pharmacies operate under pharmacy assistant supervision, and also within villages, where there were no pharmacists at all.

Interviewee 4

In the towns, townships and villages, all of the pharmacies were run by a pharmacist assistant with no actual pharmacists working in the townships and villages (Pha:42/SHD).

Within developing countries there is a likelihood that a considerable difference exists between the healthcare services that are available in rural and urban areas. Often this disparity arises from a lack of necessary pharmacists. Clearly, it is beneficial for pharmacies

to be supervised directly by a pharmacist in order to ensure good quality services and that pharmaceutical products are provided; when this cannot be achieved throughout the chain of distribution (because of a lack of pharmacists or people with some form of proper pharmaceutical training), patients may suffer. There has to be an acceptance that, for the time being, there continues to be a shortage of pharmacists in developing countries. Clearly, there is a genuine need for trained personnel, such as pharmacy technicians, to act in a supportive role; such personnel would probably operate in developed countries under direct pharmacist supervision. However, within developing countries, most of the time they would work alone without being supervised in a meaningful way. It may indeed be the case that workers do not have an appropriate level of training for their responsibilities and duties. Throughout Jordan, for example, there are over 2,800 community pharmacies in operation, and the number of pharmacies per person is approximately 1 to 2280; in comparison with other countries in the Middle East, this figure is high, and could serve as a reason for a high proportion of patients tending to lean towards self-medication (23- 40%). Furthermore, approximately half of patients in Jordan purchase their medications from community pharmacies without first seeking advice from a pharmacist or receiving counseling from one. Also, in the Middle East region, the United Arab Emirates (UAE) belongs to the group of Gulf Cooperation Council Countries, and the International Monetary Fund considers the UAE to be a high-income developing country. The number of pharmacies per person in the UAE has been estimated as being approximately one for every 1,650 people. The number of community pharmacies in Iraq is thought to be approximately one for every 6,000, and hence the ratio of pharmacies to population is similar to that of Jordan (approximately 1 pharmacy per 3,000 people). For Iraq, most of the community pharmacies in the country are located in the capital, Baghdad. It has also been reported that there is a poor quality of patient-focused care in Iraq, together with a high level of business competition. The number of pharmacists in Kurdistan has been found to be approximately 968, and so the number of pharmacies per person is *ca.* 1 per 4,100 people, with the three provinces of Kurdistan having a proportionately lower number of pharmacists than other parts of Iraq (Ali,A. 2013).

3.3.3 The community pharmacy services

Chemists and pharmacists play an important role in the provision of good quality healthcare for patients. Operating within hospitals, primary care centres and in the community, pharmacists employ their clinical specialist knowledge along with their practical skills for ensuring that medicines are supplied and used safely by patients and the general public. The World Health Organisation (WHO) considers pharmacists working in the community to be the most accessible of all healthcare professions, with them being able to supply medicines both with or without prescription (WHO, 1994). Pharmacists working within community practices in Iraq have either a BSc degree or higher qualification (Al Hilfy, 2007). It is also a legal requirement for a pharmacist to be present during the process of dispensing medications. In general, there is widespread use of community pharmacies within the Kurdish/Iraqi society for the purchasing of medicines or, alternatively, for seeking medical advice from a trusted pharmacist directly. The direct relationships between patients and pharmacists leads to varied opinions and perspectives on the services provided. As such, it is essential that information with regard to such perceptions, attitudes and views is gathered so that pharmacists and/or pharmacies can be enhanced and their roles expanded. Gathering views from the public with regard to community pharmacists and the provision of healthcare services can help establish baseline data to inform new public health strategies (Iversen, 2001). In Kurdistan, all of the interviewees (28 out of 28) had the same or similar opinions with regard to the quality of their pharmacy services. A total of 22 out of 28 respondents had negative perceptions, and sense that there was a lack of privacy whilst the process of dispensing was taking place. All of the patients were in agreement that, with regard to prescriptions, privacy wasn't being maintained by the pharmacist dealing with them; this was possibly because a consequence of a lack of a private consultation area within all of the Kurdistan community pharmacies. Furthermore, there was a belief that some of the paramedical staff working within the pharmacies did not have sufficient ability and knowledge to answer the questions of patients adequately, and therefore community pharmacy services to the public were considered inadequate. In the example below, the participant involved is of the opinion that their pharmacist is unable to answer the questions of patients, or indeed to provide a good service.

Interviewee 1

The pharmacist fails to provide an adequate service and does not answer all of the questions of the patient (P:22/DSH)

Interviewer (I): Is there a consulting room?

P: No, none of the pharmacies have consulting rooms. There doesn't seem to be a private area for consultations anywhere, so discussions with pharmacy staff can be overheard by other members of the general public (P:11/S).

By way of contrast, a number of participants (6 out of 28) had positive opinions and attitudes with regard to their community pharmacists, and were satisfied with the services that were provided.

Interviewee 1

The pharmacist can be spoken to in confidence without the need for a pre-arranged appointment, and with regard to even the most personal of symptoms. A patient can walk into any of the community pharmacies and request to talk to a pharmacist who may be able to talk directly to them for a while (Ph:33/SHD).

Pharmacists need to have operated in either a community pharmacy (local chemist's shop) or a hospital under the supervision of a qualified and experienced pharmacist for at least a one-year period, and have registered with the Syndicate of Pharmacists. It was considered that the majority of community pharmacies were providing adequate services; however, 6 out of 28 were of the view that many pharmacist assistants and pharmacists were not following the regulations of the MOH.

Interviewee 3

Most pharmacists working in the community were not giving a professional service since they were not following the regulations of the MOH and they were selling most POM-type medications without a prescription, and the majority of the drugs available were not stored correctly (Ins:22/SHD).

It was considered by 2 out of 28 participants that community pharmacies did not provide adequate services in Kurdistan since there was an expectation that the health progress of

patients should be monitored in order to ensure that medication was used safely and effectively.

Interviewee 3

Chemists and pharmacists can also provide advice regarding common problems, such as colds, aches and pains and coughs, as well as promoting healthy eating and cessating smoking habits. In addition, chemists and pharmacists can help with decisions over whether a visit to the doctor is needed (Ins:11/SHD).

One of the participants was of the view that the public had a lack of awareness of the various professional services that are supposed to be provided by a community pharmacist. Such a lack of awareness may stem from a lack of opportunity to try, evaluate or even use services that have not been provided by pharmacists in Kurdistan before.

Two of the participants gave a response that showed a belief that, in numerous countries, there is a requirement for community pharmacists to provide education to patients when prescribed medications are being dispensed. This is not the case in Kurdistan, with medication often dispensed by the pharmacist in the quickest way possible without proper labeling, and without sufficient time to listen to patients carefully and discuss their problems. There are two possible reasons for this - the large numbers of patients, and a lack of pharmacy personnel.

In addition, 4 out of 28 answers provided other reasons why sufficient services are not provided by community pharmacists, i.e. inadequate information in relation to the usage of medication, patient illiteracy, the heavy load of patients, and consultancy limits of doctors with respect to patient prescriptions and the lack of information accompanying them. Many of the community pharmacists in Kurdistan are of the view that a pharmacy is merely a trade rather than a true profession.

Interviewee 4

Many patients are illiterate and there is inadequate information with regard to usage of medication: this can make it very hard for those working in pharmacies to provide all the information needed by patients (Pha:33/SHD).

In addition, 3 out of 28 participants said that the pharmacy job was very difficult because of the workload and the limits of the consultations of doctors, which has led to there being

insufficient time for patients to receive an explanation of how their prescribed medicines ought to be taken. As such, it is left to those working in pharmacies to provide an explanation to patients.

Interviewee 1

Because of the heavy load of patients and limits to the consultancy of doctors, patients are not advised of how they ought to take their medications, and so it is left to the pharmacist to provide an explanation (Ph:22/H).

In general, there is a low level of understanding amongst the general public of what the role of the community pharmacist entails in the provision of information about drugs and the monitoring of drug therapies. The relationship between pharmacists and patients is based upon communication, mutual decision making, trust, cooperation, and caring, and involves the pharmacist working closely with the patient for the prevention of disease and the promotion of health, and so that safe and effective drug therapies can be ensured. With such a close relationship, it is essential for patients to understand the professional role of the pharmacist in providing pharmaceutical care and ensuring its successful implementation; this is especially the case with regard to patient consultations and monitoring whether drug regimens are appropriate, for example.

Problems may occur within pharmacist consultations when pharmacists and patients have differing expectations with regard to the role of the pharmacist and the services that a pharmacy ought to be providing. Patients who may fail to comply with advice regarding their medications may severely affect the outcomes of pharmacy services. Therefore, for the advancement of the practice of community pharmacy and the adoption of a pharmaceutical care model, there needs to be understanding of the perceptions of patients with regard to the role of pharmacists, and their use and view of the services of the community pharmacy.

3.3.4 Who are running the community pharmacies?

The Syndicate for Iraqi Pharmacists (SIPs) is a non-governmental organisation that works as the National Association for Pharmacists within Iraq (Al-Jumaili, 2013). In addition, the Syndicate for Iraqi-Kurdistan Pharmacists (SIKP) operate within the northern region of Iraq (Al-Jumaili, 2013). The SIP has the requirement that, before becoming a registered pharmacist, graduates of a pharmacy school have to attain one year of practical experience within a public sector hospital, and two years working within a health centre of the MOH in a

remote area (Al-Jumaili, 2013). Such postgraduate training has to be supervised by a pharmacist that is licensed; it ensures that, prior to commencing with their own independent practice, graduates are familiar with the field and practice for their future working lives (Al-Jumaili, 2013). The education for a pharmacist up to Bachelor degree level takes about five years. As long as a hospital is open during the morning, public sector pharmacies are also open. The majority of governmental pharmacies are, in fact, located within hospitals. In all the public sector pharmacies in towns visited by the researcher for this study, there were no personnel educated to the level of professional pharmacist; instead, workers were pharmacist assistants. However, in cities the majority of the public sector hospitals are staffed by a pharmacist and a pharmacist assistant. Private pharmacies are located in different areas around the cities and towns, and the earliest time that they tend to open is at 2 pm. All of the personnel within private pharmacies are nurses or pharmacist assistants. The pharmacies varied in age and size, with personnel with different educational backgrounds, i.e. a mixture of trained pharmacists, healthcare personnel and those without education; however, most pharmacies had personnel that included a nurse or pharmacist assistant. The same questions were posed to the various people during a total of 28 interviews, and so information could be verified. One pharmacist assistant during their interview stated that most personnel worked in the public sector pharmacies in the morning, and during the evening they worked in private sector pharmacies. A total of 19 out of 28 participants knew that, by law, pharmacies have to be staffed by a pharmacist all of the time.

Interviewee 2

According to the law, all pharmacies must be staffed by pharmacists (Ph:23/SHD).

It is an unfortunate fact that in almost all pharmacies there was found different healthcare professionals, teachers and even uneducated people selling drugs rather than just pharmacists. As such, some people are not even aware of the drug indication, and even though law restricts the sale of drugs in private clinics, the practice goes on. A key reason for this situation is that, since beginning in 1990, not many fully qualified pharmacists could be found in Kurdistan. Indeed, between 1991 and 2000, for the whole of Duhok city, there were only between 10 and 15 pharmacists in total. A number of participants also noted that pharmacies could be under the ownership of a pharmacist with other staff, such as pharmacist assistants, also working there.

Interviewee 1

It is possible for only a pharmacist to own a pharmacy; however, it is possible for them to be run by a pharmacist assistant, nurse or another form of paramedical staff. The law states that a pharmacist has to be present at all times within a pharmacy (P:13/SH).

Pharmacists are specialists in drugs and so, with such knowledge, it is encouraging that the law for Kurdistan states that all pharmacies should be run and operated by pharmacists. The reality, however, is different. A total of 8 out of 28 participants stated that pharmacists were selling their graduate degrees to rich members of the population since they could not afford to own their own pharmacies; example 4 below illustrates this.

Interviewee 4

Pharmacists sell their graduate degrees to richer subjects since they are unable to afford to run a pharmacy on their own (*Pha:12/SH*)

It is an unfortunate reality that pharmacies are staffed by more personnel that are uneducated than those that are educated. Since running a pharmacy is very expensive in Kurdistan, many pharmacists are unable to afford it. Some pharmacists have been selling their Bachelor's degrees to wealthy people who are able to afford to run a pharmacy. In addition to getting a salary from such people, pharmacists work within industry, hospitals and at many alternative places. It does not seem to be important whether the wealthy purchaser has a pharmacy education or not; they are, in effect, the real owner of a pharmacy, even though the pharmacist may be registered as such. The Ministry of Health is unable to take any action if a pharmacy is registered in the name of a pharmacist, and so a pharmacist can continue to receive a salary without necessarily working in the pharmacy in question. A total of 14 out of 28 participants stated that in the last ten years there were insufficient numbers of pharmacists in Kurdistan, and the government had, therefore, allowed any kind of paramedical staff to open a pharmacy; however, the government is now taking steps in an attempt to close down such pharmacies.

Interviewee 4

Since there are not enough pharmacists in Kurdistan, everyone is able to work within pharmacies; however, the law will be tightened up with regard to this (Pha:12/SHD).

As with the law in other countries, stricter rules ought to be introduced in Kurdistan with regard to pharmacists being present within pharmacies. The law for Kurdistan does state that pharmacies must be operated by pharmacists, and when a pharmacy is open, it has to be staffed by a pharmacist.

Interviewee 1

Many pharmacies were operated by a variety of people with nurses, teachers, pharmacy assistants, various types of healthcare professional and even uneducated people selling drugs in almost every pharmacy. Such people are not even aware of the indication for the drugs (P:32/SHD).

Most pharmacies were not run by pharmacists working in towns or the countryside. According to the law in Kurdistan, a person who is not a pharmacist cannot open a pharmacy; however, many pharmacies had been opened by various other health professionals and pharmacy assistants.

3.3.5 What does the pharmacist use the computer for?

The management of supplies in pharmacies has been improved through the use of computer technology. Medicines have containers with bar codes that enable the staff of pharmacies to record the drugs and agents that are available, and their quantities. These bar codes enable staff to confirm that the correct product is being delivered and stored, and also that customers have the correct drugs retrieved and dispensed to them. Numerous kinds of computer-controlled robotic devices have now arrived on the market, and these can be used to measure the doses of drugs that are given to customers (Jadhav, 2012). Pharmacies are businesses, and a computer facilitates the running of efficient business operations. Reports can be delivered regarding sales for the day, week or month by a computerised checkout system, and such data enables staff to keep track of which drugs are most requested, how efficiently such requests are being dealt with, and how effectively customers are being handled. A computerised system, therefore, makes the financial performance of a pharmacy much easier to analyse, as well as making it much easier to do routine tasks for the business,

such as paying bills and recording and tracking transactions (Jadhav, 2012). Computers are used within pharmacies for most activities such as the collection of customer/patient information, the dispensing of drugs, and improvements to service quality. For a pharmacy business to function well, medications need to be provided safely, and of sufficient quality and quantity to ensure all those in society who need them can receive them; computer systems are a successful method of facilitating such drug distribution.

Most of the respondents (23 out of 28) reported that pharmacies in Kurdistan had no computers, and that there were no guide books available. However, 5 out of 28 respondents noted that some pharmacies had computers, although only for the purpose of information and the checking of prices.

Interviewee 1

The pharmacies in Kurdistan and, indeed, all of Iraq are not using computers for the dispensing of medicines (P 22/SHD).

All prescription and dispensing information ought to be computerised with the prescription being clearly written with the name of the drug, its strength, the frequency with which it should be taken, and its indication. Efficiency and patient safety are assured through the use of electronic prescriptions, and this can avoid the problem of counterfeit paper prescriptions. Paper medical documents and handwritten prescriptions also give rise to drugs being dispensed from pharmacies, even after the treatment recommended by the physician has been completed. Also, pharmacists can be helped to operate in a smooth and expedient manner, and to avoid too many mistakes whilst also having more time for providing a service to the patient/customer. All of the respondents (28 out of 28) reported that pharmacies did not have computers and recorded documents for the patients.

Interviewees 1, 2, 3 and 4

Computer systems, patient documents and records and the internet are all absent from all of the pharmacies (P;Ph;Pha;Ins: 12/SHD).

In developed countries, all of the prescriptions are registered into a computer system so that a prescription can be electronically archived. Within Kurdistan, however, the only means is through the use of paper prescriptions. Archiving prescriptions within computer systems helps to increase patient safety with, for example, the opportunity to retrieve information with regard to what drugs a patient may have received in the past. Drugs are provided to

patients in developed countries with labeling to show information such as the name of the prescriber, the name of the patient, indication and so on, and this helps to monitor the situation if anything were to go wrong in the future. Patients in Kurdistan, however, are dispensed drugs from pharmacies without any labeling or information on the packaging. This partly arises because the prescribers do not write the drug indication, and partly because of the lack of a computerised system. If prescribers were to start to write the drug indication, it would be easier for pharmacists to provide information and label packages appropriately. A total of 12 out of 28 respondents gave answers referring to pharmacy personnel not having used computer systems previously.

Interviewee 4

The majority of pharmacy personnel have not used computers previously (Pha;55/SHD).

It is considered that teaching staff in pharmacies how to use a computer would present a large resource. Computer system programs are used in most pharmacies in developed countries, and if personnel are well educated, the dispensing of wrong medications can be avoided. If there is a lack of computer systems or educated personnel, as in Kurdistan, more mistakes will be made. The example below states how patient information is not being saved within pharmacies in Kurdistan.

Interviewee 4

All regulations and laws in Kurdistan are oral, however nothing is saved to the computer or documented on paper (Pha:11/D)

Patient safety problems can be reduced through the use of electronic health records, since incorrect information regarding the strength and dose of drugs can be avoided, as well as other potential problems such as the interactions of different drugs. A total of 18 out of 28 respondents were of the opinion that it was essential that prescription and patient information was computerised.

Interviewee 3

All dispensing and prescription information ought to be computerised (Ins:22/SHD)

The issue of computers is a big problem for all of Iraq. Indeed, most staff have no awareness of how computers work or how to use them. However, some computers are in place in some

pharmacies, though they are only employed for the checking of the costs and balances of drugs for the pharmacy. A total of 16 out of 28 respondents mentioned there was no connection between different authorities, and there was also a lack of a centralised computer system.

Interviewee 4

There is an absence of a centralised computer system for Kurdistan, and the network as it stands is extremely slow (Pha:33/SHD)

The biggest problem for Iraq, including Kurdistan, is the fact that there is no permanent electricity supply. Example 3 below has a focus on the unstable power supply within Kurdistan and Iraq.

Interviewee 3

For example, we have an electricity supply for four to six hours, then there is a break of between one and three hours. This problem is the one most requiring change if the pharmacies of Kurdistan are to be adequately computerised (Ins:22/SHD)

A big difference between Kurdistan and developed countries is that, in the former, regulations and laws are oral and nothing is saved to a computer or to paper, whilst in the latter, authorities have their own informative websites and all procedures and laws are offered as files for the public to access. Most information from developed countries is available from the websites of the authorities in question, whilst information regarding the routines and laws in Kurdistan has been acquired through interviews with the various authorities.

It is considered that information regarding regulations and laws that is acquired from interviews is not as reliable as that which can be acquired from guidebooks. Interviewees do not always provide reliable information, since many subjects can be forgetful, and information can be interpreted and provided incorrectly. Guidebooks, however, can be referenced with the possibility of returning to them. Interviews can, however, provide insights into how legislation is being implemented and employed in everyday life.

3.3.6 What happens when a pharmacist does not follow the regulations of the MOH?

As is the case in several other countries in the Middle East, in Kurdistan the pharmacist is often the first port of call for the diagnosis of a disease, especially for the lower socio-economic classes. Whilst pharmacists are not legally permitted to, it is often the case that they perform a diagnosis and prescribe the remedy. Whilst the majority of drugs are bound to requirements related to prescriptions, especially the preparations that can be habit forming, drugs that are, in theory, only legally available through prescription are, in reality, widely available without a prescription. A total of 5 out of 28 respondents provided an explanation of the governmental policies if pharmacies were not following the regulations of the NHS.

When a problem is identified at first, an inspection team of at least two people works on site for the reporting of a problem or incident.

Interviewer: What are the first steps taken if pharmacies are not following the regulations of the Syndicate?

Interviewee 3

First of all, at a first face-to-face meeting, the team gives a verbal warning to both the owner of the pharmacy and the pharmacist in relation to the infringement in question, and this is recorded or retained on file (Ins:11/SHD).

Interviewer: What happens if the pharmacist still does not follow the regulations?

Interviewee 3

If a problem has not been rectified by the time of the next routine visit of the inspection team, the pharmacist who is in charge has to write statement, with their signature, to state that the infringement in question will be corrected right away. The inspection team also gives both the owner of the pharmacy and the pharmacist another face-to-face verbal warning, and this second warning is also kept in file (Ins:11/SHD).

Interviewer: What happens if infringements still continue after a second warning?

Interviewee 3

During a third routine visit, inspectors determine whether or not the problem in question has been resolved. If rectification of the issue has not occurred, a warning of a fine will be put in

the report, with the inspection team selecting a penalty based on MOH guidelines, with fines ranging between 50,000-1,000,000 (?) Dinar. The Syndicate of Pharmacy and the MOH are then sent a comprehensive report for their approval to proceed with providing the pharmacy with a fine (Ins:11/SHD).

Interviewer: So what happens if the pharmacies continue to flout the regulations of the MOH, even after a fine has been applied?

Interviewee 3

During the fourth visit of the inspection team, the pharmacy will be notified that the place has to be closed for a period, which be anytime between a few weeks up to a few months. In notifying them of this, the owner of the pharmacy is given one final opportunity to comply with MOH regulations, and if this chance is not taken, the pharmacy license will be revoked (Ins:11/SHD).

No indication was given as to how often these penalties are applied.

It is clear that those convicted have to have stricter laws and penalties imposed upon them. Within the KRO, the rule of law is either absent or weak, and legal and political decisions tend to be rather arbitrary and in favour of the elite within the society. The habitual result of this is that regulations designed to counter the proliferation of counterfeit products in the KRI are unsuccessful. The actions and/or fines applied to pharmacies are unable to stop out of date or counterfeit medicines turning up within pharmacies. The medicine market within the KRI has become thoroughly international, and governments are frequently unable to regulate the production or sale of medicines perfectly well. Within the KRI, no law exists to enforce that items are copyrighted or pharmaceuticals trademarked. A method of preventing people selling unauthorised copies of medicines is to allow companies to register and then enforce a trademark with owners of trademarks, and consequently, having a strong incentive to maintain product quality so that their future profits and reputation are also maintained. If there is no enforcement of trademarks in the market for drugs, poor quality copies that are produced cheaply can limit the purchase or availability of drugs of a higher standard.

Interviewee 2

The Syndicate is unable to control the importation in Kurdistan of pharmaceuticals that are nearly expired and/or of poor quality. It is therefore important that the KRG does not allow such poor quality drugs to enter into the country. Clearly, if medicines have been checked by border officials controlling quality, and pharmacies have evidence of this, pharmacists cannot be blamed for the quality of the drugs being sold in their pharmacies (Ph:33/SHD).

Interviewer: Were all the medicines that were imported into Kurdistan checked at the border by staff from the office for quality control?

Interviewee 2

Some of the drugs imported into Kurdistan are checked by staff from the office for quality control. However, traders manage to import some drugs into the region illegally (Ph:21/SH).

Interviewer: When inspectors pay a visit to a pharmacy, what is it exactly that they are looking for?

Interviewee 2

Inspectors seek out any medicines that have not been checked by the office for quality control once they have reached Kurdistan, and the check for outdated medicines and/or those beyond their expiry date (Ph:33/SHD).

Representatives from the Syndicate of Pharmacists search pharmacies every two months to search for any out of date medicines, any fake medicines, or any pharmacies that are illegal or being run without the appropriate supervision of a pharmacist; such pharmacies may be fined or forced to close down. The searches that are made are not extremely effective, however, since when the Syndicate sends out a team to inspect a pharmacy, the owner instantly calls other stores to warn them, and counterfeit medicines are hidden.

Interviewee 2

Most members of the Syndicate of Pharmacists are in fact owners of pharmacies that are in the act of selling medications that are fake (Ph:33/S).

Blame for fake medications is passed from pharmacies to suppliers and from suppliers to importers. A pharmacist is of the opinion that ‘political’ support is given to importers that bring in out of date and/or fake medicines. Many companies that supply pharmaceuticals make special agreements with medical doctors, and this can be at the expense of patients. If, for example, a doctor is approached by a company and encouraged to prescribe a particular medicine for patients, the company may offer payment for a vacation; a pharmacist was of the opinion that lots of doctors accept offers such as these. The observation was made that these types of agreements between companies and doctors was not leading to any type of action by the Ministry of Health. There is a lack of regulatory frameworks and sound processes for monitoring and regulating supplier companies in Kurdistan. Since borders are crossed for the supply of drugs, there is a requirement to be close, with effective monitoring and regulation of drug distribution, and hence various agencies of law enforcement could play a key role in kerbing the widespread use of counterfeit medicines.

3.3.7 Why do patients buy medications directly from a pharmacy without consulting a physician, and what factors lie behind self-medication?

There are enormous problems associated with the issue of self-medication and the potential effects ought not to be underestimated. Self-medication leads to economic and social problems for society as a whole, and not just the individual involved. Urgent attention is required from various sectors because of the grave consequences that can ensue from self-medication problems. Burton (2012), noted how it is often the case that self-medication only provides temporary relief from an illness rather a permanent cure; masking and suppression of symptoms for a while may subsequently be followed by a relapse. Self-medication may also lead to drug addiction and drug resistance to sicknesses; this is particularly the case when the self-medication is intermittent. Self-medication may also lead to the correct diagnosis of an illness being delayed; without a thorough medical investigation, the root cause of the malady of a person may not be fully understood. Furthermore, organs in the body may be damaged if non-prescribed drugs are used consistently, particularly when they have not been administered properly or if there has been an overdose (Atohengbe, 2013). Constant use of paracetamol for treating headaches, for example, without their having been a

proper diagnosis, may lead to damage to the liver and result in death. It is also relevant here to note that, the practice of self-medication can indeed exert an impact upon the rate at which medical facilities are utilised, and therefore good quality facilities that could be catering well for the health of society may become neglected; more accessible channels such as drug hawkers and pharmacies selling counterfeit medicines may be employed rather than public and private sector health facilities such as dispensaries, clinics and hospitals. It is clear, then, that self-medication is an issue that has widespread implications for society. Negative effects can be devastating, and so it is vital that research is undertaken in order to establish what are the factors that lie behind the practice of self-medication. A total of 14 out of 28 interviewees stated that they do self-medicate since they go to a pharmacy to buy a medication that has been prescribed to them previously by a doctor, or a drug that is similar. There is a problem in this, however, since they do not know for sure that they are suffering from the same sickness. Interviewees were asked about the purchase of medications directly from a pharmacy, and approximately 50% of them were of the opinion that if they visited a doctor, he/she would prescribe the same medicine as previously and, therefore, prescriptions would be repeated or a similar medicine purchased.

Interviewee 1

If I feel ill and don't know what is the right medication to take, I visit the doctor and acquire some medication, and I see that this works for me without side effects, then the next time I suffer from the same problem, I don't bother visiting the doctor. OK? Instead, I return to the pharmacy and buy the same type of medication or something similar (P;22/SHD).

All of the interviewees (28 out of 28) were of the opinion that if you go to a pharmacy, there is always someone similar to a doctor who has knowledge about medicine, and if you go and consult that person, they are able to provide medication for your illness.

Interviewee 1

The pharmacist always knows what medicines are appropriate for dealing with your disease, and will always provide something (P;12/SHD).

A total of 23 out of 28 interviewees said that if someone had flu-like symptoms, they would go to a pharmacy and place a request for some form of antibiotic such as penicillin for purchase at the pharmacy.

Interviewee 2

If someone has flu-like symptoms, they visit the pharmacy to ask for some antibiotics (P;23/SH).

When interviewees were asked about the type of medicine that they purchased from a pharmacy without a prescription, the majority of them (25 out of 28) answered that they were able to buy all types of medicines from pharmacies without a prescription, and (3 out of 28) answered that strong medications such as narcotics could not be bought without a prescription, unless a relative or friend worked within a pharmacy.

Interviewee 2

Medications that are strong are controlled. As with narcotics, controlled drugs will not be sold without a proper prescription. However, antibiotics or any other type of medication for that matter will be sold without requesting the patient to handover a prescription (P;21/SHD).

Interviewee 1

They will not sell drugs to me. Instead, I buy them from relatives or friends that are working within pharmacies (P;12/S).

Interviewee 4

The majority of drugs are dispensed without medical supervision over the counter. It is often the case that people who are unable to afford clinical service costs use self-medication since it is a cheaper alternative (Pha;44/SHD).

Most interviewees (17 out of 28) stated that if they were aware that their illness would be suited to treatment with a particular medication, they did not see a reason for attending a consultation with a doctor which would give rise to further expenses.

Interviewee 1

If the sickness goes away by taking a medication, why should I go to the doctor? If I find that I'm still ill after taking a medication, then I'll decide to visit a doctor (P;33/S).

The reason self-medication is practiced is because of knowledge and experience of treatment for ailments that are similar to those previously available. This is the case whether medications were bought over the counter (OTC) or prescribed; if such medications had been

successful in improving symptoms or conditions previously, then self-medication seems an obvious choice.

Interviewee 1

If I am already aware of what my symptoms are and what medication will heal me, I will not go to a doctor to receive a prescription. If I visit a doctor, they will charge me and I will still be faced with the further cost of having to buy the prescription. If I already am aware of the type of medication that will work for me, I'll take the cheaper route and go ahead and buy it (P;22/SHD).

If a person suffers from high blood pressure or has a heart condition; this can be a fairly serious problem; however, self-medication can make matters worse. A total of 24 out of 28 respondents were of the opinion that it was cheaper to administer self-medication than receiving a proper diagnosis and appropriate treatment in a hospital, or from attending a consultation with a doctor. Those who practice self-medication often do not go for the necessary medical tests to understand the root causes of their illnesses; often, the required investigations such as X-rays, ultrasound, laboratory tests and so forth, are simply not performed.

Interviewee 4

People tend to go along with the practice of self-medication as it is more affordable than attending a hospital (Pha;31/SHD).

Interviewee 1

Without having any side-effects on my health, self-medication tends to be quicker (P;22/H).

It is difficult to separate disease and illness from culture in a developing country such as Kurdistan. There is a belief that the culture of people plays a significant role in affecting beliefs with regard to the treatment of disease and illness. Self-medication is practiced by people since they are of the opinion (in 6 out of 28 interviewees) that if they take more medications, their health will improve more rapidly.

Interviewee 2

One person noted that if 500 mg is considered good, then taking a 1000 mg dose will help them get better quicker, such as if they had an allergy, for example (Ph:33/S).

Interviewee 1

The first major aspect that has a bearing upon self-medication practice is the busy lifestyles that people have (P;22/SHD).

Before being seen by a doctor, a patient could spend between two and four hours waiting at an out-patient department or even longer. The duration of such a waiting time can vary from hospital to hospital and from city to city. There is also a difference in the average waiting time between public sector hospitals and private ones, with waiting times in private clinics always tending to be shorter. A total of 13 out of 28 respondents noted that self-medication was quicker than visiting a hospital or doctor.

Interviewee 1

Another factor when people use self-medication is that it is quicker than seeking medical care within a hospital (P;22/SHD).

Self-medication is also practiced in view of the high costs involved when visiting a doctor for a consultation; this was noted in particular for those with a relatively low income per month in relation to those visiting a private clinic. A number of simple conditions treated by drugs through self-medication did not warrant a visit to a doctor; however, other conditions did require supervision by a clinician in order to control further treatment and/or evaluation. Whether these are simple conditions or not, it is relatively simple for patients in Kurdistan to self-medicate, and in managing their conditions, such patients are able to obtain various different classes of drugs including not only OTC drugs, but also medications that ought to be for prescription only. The various reasons that people practice self-medication in Kurdistan include the following: their busy schedules; the nature of the sickness, and their knowledge of a drug to take; the lack of seriousness of the condition; to relieve symptoms more quickly; because of a lack of satisfactory medical facilities; hospital delays; medication without side-effects; addiction; medical professions having negative attitudes; difficulties in accessing hospitals; the relative cheapness; and inability to afford medical bills. In many developing countries, self-medication using antibiotics is common, and drugs may not be regulated well; it is, therefore, easier to acquire OTC and prescription medications without actually having a prescription. A total of 11 out of 28 participants gave responses indicating that there was an inappropriate use of antibiotics in practice in Kurdistan.

Interviewee 2

It is often the case that antibiotics are prescribed in inappropriate or irrational ways within Kurdistan; drugs can be prescribed with incorrect durations, frequencies or doses, they can be redundant, and they can potentially react adversely with other drugs that are being taken (Ph;44/SH).

The majority of people self-medicate with antibiotics for common bouts of flu and colds.

Interviewee 3

Most of the time, antibiotics are prescribed or purchased, particularly for diarrhoea and upper respiratory tract infections, with a blind diagnosis and an inappropriate indication (Ins;22/S).

There is a strong recommendation, therefore, that the general public ought to be encouraged to attend centres for primary healthcare more frequently, and that educational programmes ought to be initiated so that conditions that are treatable by self-medication can be specified. A further recommendation is that the nature of drugs which can be dispensed safely and legally without medical supervision from community pharmacies should be reinforced. The aforementioned measures could help reduce the negative consequences of the exaggerated or sub-optimal treatment of various conditions, and simultaneously reduce the risk of side-effects and misuse of particular types of drugs.

Nowadays, service users wish to take more personal responsibility for the status of their health and to acquire sound information from specialist sources, so that they can make suitable decisions with regard to healthcare. There is considered to be a high prevalence of self-medication in Kurdistan, and there is no correct pattern followed for drug use in this country. Efforts made to modify practice within Kurdistan have failed, and the medical system in the nation remains under pressure because of problems caused by self-medication and excessive consumption. In addition to drugs being prescribed by physicians, many patients go straight to pharmacies, and various drugs can be prepared and consumed for the prevention and treatment of diseases in an attempt to strengthen themselves, even though their own diagnosis can frequently be erroneous. In view of self-medication within the community, the rate of prescription of drugs is not consistent with the population and the status of diseases in epidemiological terms.

3.3.8 What types of medications do pharmacists sell without prescription?

The health professional that is most easily accessed by the general public is the community pharmacist; community pharmacists supply medicines with or without prescriptions, if legally permitted to do so. In Kurdistan/Iraq, pharmacists that work in community practice are graduates that have a BSc. degree or higher. It is a legal requirement for a pharmacist to be present when drugs are dispensed (Al Hilfy, 2007). In general, society in Iraq has a reliance upon community pharmacies for acquiring medications, or, alternatively, for seeking medical advice from a trusted pharmacist. Given the direct interaction between customers/patients and the pharmacist or other pharmacy staff, various views and opinions arise about the services provided. It is crucial, therefore, that accurate information is acquired with regard to such perceptions, attitudes and views so that the roles of pharmacists and pharmacies can be expanded (Iversen, 2001). Community pharmacies in Kurdistan/Iraq tend to be much less organised and formal than those in Western countries. Whilst in the markets of most developing countries, the separate prescription and the dispensing of medication has been legislated, in Kurdistan there is no formal integration of community pharmacies within the system for public health, and the government does not reimburse them for their services. There may indeed be an inappropriate use of non-prescribed antibiotics because of a lack of supervision by health professionals. The majority of interviewees (22 out of 28) made responses indicating that antibiotics and all other kinds of medications could be acquired easily from all pharmacies within Kurdistan without a prescription.

Interviewee 3

It is easy to access and purchase antibiotics without prescription from all pharmacies (Pha;17/SHD).

Pharmacies have thus far been functioning as regular stores, supplying drugs to patients for money without a prescription and without provision of adequate information regarding use of the drug. A total of 19 out of 28 respondents believed that when a pharmacist is paid sufficient, they will provide you with any drug requested.

Interviewee 1

Medications that are prescription-only and, indeed, any kind of medicine can be acquired if the customer pays for it (P;33/SHD).

With regard to the dispensing of prescription drugs, all pharmacies tend to have the same routines. Anybody may enter a pharmacy without or with a prescription for the purpose of acquiring a drug. Pharmacy personnel bring all drugs manually following the request of the patient/customer. Those people within communities with a low income who are unable to afford the combined costs of visiting a doctor and purchasing medicines, tend to prefer to acquire medications directly from pharmacies. Indeed, a total of 12 out of 28 interviewees who were pharmacists or pharmacist assistants responded that such pharmacy-users could not force patients to visit a doctor; however, they could help them to choose and use medicines appropriately.

Interviewee 3

If I am able to help a patient with an appropriate medicine, I will; however, I cannot tell them to visit a doctor (P; 22/S).

There are a lot of unlicensed outlets dispensing drugs without prescriptions. Example 4 below mentions that any amount of medications will be sold to a patient who requests them.

Interviewee 1

Incomplete antibiotic courses are often sold to the public by attendants in pharmacies (P;22/SHD).

Patients that do not dispose of left-over medicines often keep them for use another time. A total of 8 out of 28 respondents mentioned that pharmacies were entered by patients with some medicines that were leftover to ask a member of staff what the drugs were used for.

Interviewee 4

Left-over or unused medicines have also been being presented within pharmacies by patients to discover what use they could be put to (Pha;12/SD).

There are systemic flaws in the delivery of healthcare that leads to such incidences, with a total of 24 out of 28 respondents mentioning that all kinds of medications can be freely bought from pharmacies.

Interviewee 1

It is still possible to buy POM medicines off the shelf without having first acquired a prescription (P;22/SHD).

Interviewee 2

People with low levels of literacy have acquired medications from a pharmacist, whilst those with higher levels have used a previous prescription to acquire the same type of medications (Ins;21/S).

Patients have their own conceptual framework for understanding a disease that they may have, and hence everyone has their own feelings, thoughts and beliefs with regard to illness. Information is processed by a person, and they make their own decisions and act accordingly. A total of 7 out of 28 respondents had the belief that in many countries, POM medicines were dispensed without prescription.

Interviewee 3

In many other countries, POMs are being dispensed without a prescription (Pha;17/SHD).

POMs are only dispensed without a suitable prescription within developing countries, and the level of knowledge about the appropriate use of medications is generally low amongst the general public, as well as amongst some of the attendants of the pharmacies. To date, pharmacies have tended to function as regular stores, with customers being supplied drugs without prescription, and with the medications not having appropriate information to accompany them. Laws are gradually strengthened with increasing control of all the stages of distribution. Quality control and the security police work to maintain control of the drugs supplied in pharmacies, and these investigate counterfeit drugs and drug sustainability. If a pharmacy is run by a non-pharmacist, it is only permitted to sell eighteen types of medicine there that have been listed by the Ministry of Health. If a non-pharmacist is caught by an inspector selling POM medicines without proper prescriptions, they would be informed that they were not permitted to sell such kinds of medicine, and they would therefore be given a verbal warning primarily. If caught on a further occasion, the Syndicate would be informed so that penalties could be issued.

Interviewee 4

The sale of a POM had no punishment attached to it unless it had been a controlled type of drug and/or if there had been misuse and an error that had been life-threatening (Pha;33/SH).

There was considered to be flaws in the process of inspection and the manner in which infringements are detected in relation to POMs. Even if it had been agreed by the Ministry of Health, inspectors were without genuine authority to ensure that any fine was enforced. One of the inspectors interviewed said that "We could visit pharmacies anywhere in Iraq and get a load of anti-hypertensive and antibiotics" (Ins;21/S). People seemed always able to freely acquire drugs without a prescription.

Despite the problems with self-medication noted above, not all practices of self-medication can be considered as completely harmful. Over the counter drugs can be bought without a prescription, and often patients can save money and time. In most tribal regions and other isolated areas, and in most towns, there is an enormous shortfall in the workforce for human health, and patients still rely on the practice of self-medication for minor ailments. Most patients, however, are not very knowledgeable about self-medication, and workers in pharmacies fail to provide sufficient information with regard to the taking of medications. A total of 18 out of 28 interviewees had the belief that medicines were dispensed by pharmacists without the provision of sufficient labeling or relevant information.

Interviewee?

Drugs dispensed to patients in pharmacies in Kurdistan do not have labeling or information on their packaging (P;22/SDH).

The example below mentions that pharmacists do not provide clear instructions when medicines are prescribed for self-medication.

Unclear or inadequate instructions are given by pharmacists or healthcare providers, with them solely ticking medication boxes rather than providing clear written instructions (a single tick denotes that a medication should be taken once a day, whilst two ticks indicates that a medication ought to be taken twice daily, and so on) (P;12/S).

Based on the law, POMs ought to only be provided at licensed drug outlets and pharmacies with a prescription that is valid; however, weak enforcement by the authority responsible meant that it was still possible to buy POMs without such a valid prescription.

Overall, the opinions and views from other elements of healthcare support the questionnaire results that were gleaned from both the general public and community pharmacists. Although

valuable to the field of healthcare, the survey paints a picture of community pharmacies being, by and large, managed in an unprofessional way with the regulations of the Ministry of Health being blatantly infringed. Since virtually any drugs can be bought without the need for a prescription, the existing community pharmacies in Kurdistan are a source of drugs that can lead to practices that misuse them which can, potentially, be very dangerous. Within developing countries, where it is easy for regulations to be broken, the pharmacist is the key person with control over medications, and they ought to have the skill, alertness, care, knowledge, sense of humanity and honesty needed to dispense medications appropriately. The pharmacist ought to avoid giving POMs or any authorised medications to people who are without a prescription, and/or those who do not require the drugs. In addition, patients should be instructed in the correct use of medications in order to avoid any doubts and any potential side-effects. There is therefore a major need for community pharmaceutical services to be radically reformed to professionalise them, and so there is also a need for the Ministry of Health to act in a decisive way for the introduction and vigorous application of appropriate legislation so that it may act in a corrective manner.

3.3.9 What type of reform of the pharmacies is needed?

Many issues are required to be revised or improved with regard to the system for dispensing drugs in Kurdistan; however, it is most important to recognise that, in general, development of the healthcare system as a whole need to be made a priority. It is essential that low quality drugs are not allowed to enter Kurdistan. So that lives are not put in danger, the laws with regard to entry of drugs into the market need to be strengthened by the Kurdish government. There also needs to be stricter methods of investigation by via the implementation of Quality Control measures, and reductions in the numbers of errors occurring whilst drugs are being dispensed. The first important issue that requires change, however, is the situation with regard to prescriptions. There could be proper labeling on medicines that are dispensed, and more information provided with paper prescriptions. A pharmacist is seldom seen in pharmacies within Kurdistan, even though the law states that all pharmacies must have pharmacists staffing them. The law in Kurdistan is therefore required to be strengthened and more closely followed; however, pharmacy education takes five years, and there are not many fully-qualified pharmacists in this geographical region. I would therefore suggest that there should be a new form of education for pharmacists that more closely resembles the Bachelor's degree of developed countries. Achievement of this would increase pharmacist

numbers within Kurdistan, and there would be much greater opportunities for all pharmacies to be staffed by a pharmacist. A total of 7 out of 28 participants made strong recommendations that the general public should be encouraged to go to the centres for primary healthcare, and also that educational programmes should be initiated, i.e. those that specify which conditions can be treated successfully through practicing self-medication.

Interviewee 3

The population should be encouraged to visit the health centre instead of going directly to a pharmacy, and also educated in the practice of self-medication (Ins;12/SH).

The pharmaceuticals on sale in Iraq/Kurdistan are not controlled, and there are no reliable regulations. Medicines are purchased, and they may indeed not contain any therapeutic agents; clearly, then, improved regulations for medicine is required in Kurdistan with 18 out of 28 respondents believing that reforms are required that regulate the sale of medicines.

Interviewee 2

Kurdistan needs regulatory reform for the sale of medicines (Ph;23/S).

A further recommendation is for the reinforcement of the drugs that can be safely and legally dispensed from a community pharmacy under pharmacist supervision; this can reduce the risk of misuse and/or side-effects from particular kinds of drugs. A total of 16 out of 28 respondents stated that drugs ought to be dispensed safely under the appropriate supervision of a pharmacist.

Interviewee 3

The dispensing of drugs should be legal and performed safely with pharmacist supervision (Ins;22/SD).

There can be serious repercussions from poor medical knowledge and using common medicines improperly. Furthermore, the attitudes towards the use of medicines later in life may be formed at a much earlier age, and results have shown that Kurdish people have a poor basic level of knowledge about medicines, with negative attitudes and misconceptions. A

total of 18 out of 28 participants had the opinion that low levels of knowledge could be exposing people to problems with regard to their health.

Interviewee 4

Poorly informed people are more likely to use self-medication inappropriately (Pha;15/H).

A total of 8 out of 28 respondents mentioned the unstable situation in Kurdistan in political terms, and the impact that frequent changes of Ministers of Health would have upon reforms to the system for health.

Interviewee 3

A significant problem for residents in Kurdistan and Iraq is that the situation with the Minister of Health, who aimed to bring about positive change within a five-year time period; however, after two years a new Minister of Health was put in place, who wanted to completely change the previous plans regardless of whether they were suitable or not (Ins;15/S).

Medical professionals had, in general, a relatively negative perspective with regard to various aspects of the system for health within the region of Iraqi-Kurdistan; their views can illustrate where major improvements are needed, and illustrate the challenges faced by the system. Various problems and priorities have been identified for improvements to the health system that are required to be investigated more closely.

CHAPTER 4: RESEARCH FINDINGS FROM PHARMACIST QUESTIONNAIRES AND INTERVIEWS

SECTION 1:

4.1.1 Introduction

This section has the purpose of providing a full discussion of the findings that were gathered from pharmacists within Kurdistan. This chapter is split into two segments: The first introduces the chapter, the second lays out the primary demographic findings from the pharmacists who participated. A discussion of the main questions of the research performed in the group study is then presented. The research presents the self-medication practice within the population of Kurdistan and the behaviour of self-diagnosis and inappropriate medicine use amongst Kurdish people. There is also an exploration of factors that have a bearing on practice with regard to the taking of medicines and their inappropriate use.

4.1.2 The demographic findings of the pharmacist participants

The samples from the pharmacists were comprised of a total of 627 participants, of whom 28.1% were female and 71.9% were male; however, this proportion of females to males is not similar to the Iraqi gender distribution. The ratio of the number of pharmacists to the general population within Iraq is about 1 to 2,887 people. Unfortunately, no accurate data exist relating to the ratio of female to male pharmacists within Iraq. The majority of pharmacists that graduated from 1990 to 2003 are male, since the policies for admission at pharmacy colleges at the time had lower admission score requirements for men than they had for women. Moreover, not all of the universities had a School of Pharmacy, and the reluctance of women to live away from their families to study had an impact on the numbers of female students recruited (Ali, 2013). At the time of interviewing, participants ranged in age from 22-60 of years. The biggest proportion of the population of the study was aged from 25-35 years of age (45.6%). Only 10.5% of the participants were over 55 years of age, a reason for this being that the majority of older pharmacists were not actually at work at the time of the survey, and were rather owners of the pharmacies concerned and employing other younger pharmacists. The next biggest sub-group was those participants aged from 26-35 years of age (45.6%), since these people were recent graduates actively seeking work; this observation was similar to that observed in a study by Mohamad (2014), wherein amongst

Iranian pharmacists, 68% of participants were aged over 31 years of age. This research showed that around 286 participants were aged over 26 years of age, which appears to be logical, since clearly those in that age group were able to move and look for a job than older people.

Within this research, there seemed to be a logical distribution of participants in relation to the population of the cities, with 25.7% of participants hailing from Duhok city, 32.9 % from Erbil city, and 41.4% from Sulaymaniyah city. Unfortunately, ease of comparison to other studies is not possible, since no other study has been undertaken within all of the cities of Kurdistan. Since most study participants were over 30 years of age, most of them were married (77.5%). A proportion who were single (20.6%) were predominantly in the age groups of those below 30 years of age. The patterns shown here are, overall, a good reflection of patterns within the general population. Within the research, the majority of the respondents were found to be married, especially since people are encouraged to marry at an early age within the Kurdistan population in view of traditional and religious influences.

4.1.3 Discussion of findings

This chapter section has a discussion of the primary findings from the two primary methods of data collection, i.e. the Phase 1 questionnaire survey, and the Phase 2 interviews. There follows an interpretation of these main findings, along with a presentation and discussion of the major aims of the research performed.

4.1.4 Discussion

As with the majority of surveys of this nature, general information has to be provided that provides a definition for, and description of, the population of the study. In this case, this has been undertaken through having questions with a demographic element. It should be noted that a number of the questions within this section were unnecessary; however, whilst the questionnaire aims did not require the direct application of some of the answers to the assessment of pharmaceutical practice, it was considered that they were helpful in putting the participant at ease when commencing completion of the questionnaire. Indeed, the aim was to have a style of questioning that, from the outset, appeared non-confrontational and that would allay any fears of participants. All of the pharmacists in the sample were Kurdish, and were

employed in either a governmental hospital, within the private sector, within a private hospital, a community pharmacy or a clinic. As such, the study population employed in this research was a reasonable reflection of the general population. Many pharmacists in Kurdistan have two jobs, perhaps employed at a hospital from 8 am until 3 pm, before working for the remainder of the evening at a community pharmacy. Community practice is operated and managed from private pharmacies rather than chains (unlike the U.S.A., where most pharmacies represent part of a chain). A pharmacist in Kurdistan may only have a license for one privately run business in addition to employment they may have in a hospital. There are very specific laws and specifications required by a privately run pharmacy, such as those controlling the pharmacy size, the appliances and utilities that are available on site, and the distance between pharmacies. The criteria listed as being prerequisites include those related to refrigeration and air-conditioning, sewage, electricity and water supplies, the compounding bench, official labeling, a personal computer and bar-code scanner, and also a means for ensuring adequate furniture is provided for the visiting patients. It is also a requirement that all technicians practicing in a pharmacy have to have a two year diploma (Al-Jumaili, 2013). This researcher did note, however, that numerous pharmacies were not in compliance with the policies of the MOH. The questionnaire answers showed that only 39.2% of those interviewed had a Bachelors degree in Pharmacy, whilst 57.2% of participants had the Diploma in Health Institution (this was the case even though affiliation such as this was not a prerequisite for licensing as a pharmacist within Kurdistan). The findings are similar to those of research undertaken within Kurdistan by Akthiar Zebari in 2013, which showed that according to law, all pharmacies must be staffed by pharmacists. It is unfortunately the case that drugs are being sold in pharmacies by not only other types of healthcare professionals, but also teachers, and personnel who are uneducated and do not have knowledge of the drug indication. Although the law forbids it, private clinics have also been active in the sale of drugs (Zebari, 2013). A reasonable hypothesis is that pharmacists with only a modest sense of professionalism towards practice and standards would be of the belief that professional membership has importance for indicating a commitment to their professional field, and that it would be useful for the continuance of relevant education. However, even amongst participants from the population in the study, there were cases where affiliations to the profession appeared to be merely cosmetic.

All of the interviewees in Kurdistan (28/28) were of the same opinion or similar when asked about the pharmacy service quality therein. There was the belief that the majority of the

community pharmacies were operated under the supervision of pharmacy assistants, with one of the interviewees stating that it is possible to find drugs being sold in almost all pharmacies. A total of 42.7% of respondents stated that they had membership of the Kurdistan Pharmaceutical Society, whilst none of the participants had membership of the GB Royal Pharmaceutical Society. The remainder of the participants that were employed as pharmacists for the dispensing of medicines stated that they did not have membership of any pharmaceutical society, although they had either been employed in a hospital for a considerable time or had the Diploma in Health Institution. Furthermore, it was disappointing to discover that just about 40% of the participants who were employed in pharmacies were actually pharmacists. The findings showed that 59.1% of the pharmacists made the claim that visiting customers went to their pharmacies regularly; respondents believed that customers could visit to request the same product a number of times a week. The responses given highlight that pharmaceutical services within the community have a high degree of use and a high level of demand. Upon reflection, the finding that all of the pharmacists (100%) stated that they had sold a particular OTC medicine to individual customer's numerous times within a week was, therefore, hardly surprising. Numerous elements of practice are reflected here, including the fuelling and satisfying of customer demand for medication. Most of the community pharmacies in Kurdistan are licensed on name of pharmacists (with the pharmacist being paid to have his name upon the license); however, non-pharmacists are the actual pharmacy owner with non-pharmacist staff working for them. This finding is similar to that of a study undertaken by Mandouh in 2000 of community pharmacies in Saudi Arabia. Many community pharmacies in the country were found to be in the ownership of businessmen who are non-pharmacists, and act as guarantors and sponsors of employees that are expatriate. With these arrangements there is considerable pressure upon the 'pharmacist-in-charge' to fully exercise the retail function of the business (Mamdouh, 2000).

Eight of the 28 participants that were interviewed stated that pharmacists, unable to afford a private pharmacy, had sold their degree to a wealthier man. It is an unfortunate reality that there are more uneducated personnel staffing pharmacies than educated ones, and the high cost of running a pharmacy in Kurdistan restricts the ownership of them by pharmacists. Wealthy people pay salaries to the pharmacists who also have paid work in industry, hospitals and numerous other places. The reality is that pharmacists are registered as pharmacy owners, whilst richer subjects are the real owners. Every month, pharmacists

receive their salaries even when they have not worked at the pharmacy, and the MOH cannot take action when the majority of pharmacies have been registered in the name of the pharmacist. It appears that lax and poor attitudes amongst the study population were the principal factors involved in this. Furthermore, evidence pointing to the attitudes of the pharmacy owners could have made a contribution to the situation. Whilst visiting the selection of community pharmacies available, this survey revealed that the majority of pharmacy owners were not, in fact, pharmacists. Evidently, pharmacy owners saw their business merely as retail outlets, and profit within a commercial business strategy was of a paramount importance to them. Several of the pharmacists who were interviewed mentioned that the attitude of the owner brought a significant degree of pressure upon them to have a focus upon sales volume rather than the exercising of professional judgement. There was also a worry amongst pharmacists that failure to meet the retail-focused expectations of the owners could result in them being sent home and their contract terminated. Similar pressures may have been felt by other pharmacists within the study population, and this may have contributed to the poor attitude that was apparent when presented with the questionnaire for this study. In relation to the answers regarding questions put to them on controlled drugs, 22 participants with a postgraduate degree, 127 participants with a Diploma in Health Institution and 232 participants with a Bachelor's degree gave responses to say that they had awareness of controlled drugs, but none of these were keeping records for the sale of controlled medicine. However, the health system in Kurdistan does not make requests for the keeping and maintenance of records for any prescriptions, uncontrolled or controlled drugs; Fisher's exact test revealed that this was very high statistically significant (p-value 10^{-9}). The researcher also noted that it was clear that some of the participants did not understand the question in relation to controlled drugs; this may have been because they believed that it involved an infringement of the drug regulations. A simpler, alternative explanation may be that there had been a failure to fully understand what they were being asked and hence put forward answers in error.

4.1.5 The maintaining of a record of purchase

There was the hypothesis that a conscientious pharmacist would be keeping records with details of both the purchase of drugs and dispense/sale of them. This ought, at least, to serve as a basis for keeping control of stock used and, at best, be a representation of a therapeutic

audit index. The findings from the question related to this matter of items that were non-controlled, including OTC preparations and POMs, showed that a 68.7% percentage of participants were in agreement and had a preference for keeping records of medicines dispensed; however, they had not been keeping record of any medicines purchased, since that was not a compulsory task stipulated by the health authority. It was shown that while most pharmacists preferred keeping a record of the drugs that had been purchased, it was not requested of them by their health authority. However, 20.7% of the participants disagreed with the keeping of records for drugs dispensed, since they stated that the health authority had not requested them to do so and considered it to be a time-consuming task to record all of the medicines dispensed. Hence, *ca.* 20% of the participants had no awareness in relation to this particular aspect of the practice of professional pharmacy. There are guidelines to aim for ideal pharmacy practice that are issued as part of the health authority regulations for Kurdistan; however, there is no actual handbook for pharmaceutical practice as such. Some pharmacists, however, use the BNF as an information source to guide them.

4.1.6 Access to Computers

The analysis of data acquired in this study provides detailed confirmation that the questionnaire information had been entered into computer used within detailed the pharmacies. All interviewed pharmacists were found to have a computer or laptop within their pharmacies. A total of 85.3% of pharmacists employed their computer to deal with general information, with 20.7% of them being female and 64.6% of them being male; Fisher's exact test revealed that this extremely significant (p -value of 10^{-9}). A 14.4% proportion of the pharmacists used their computers for checking up on drugs and their interactions, with a nearly equal proportion of females to males using the computer for finding information on the drug interactions. Only 0.3% of the participants who were female used computers for the purpose of labeling. The majority of respondents that were interviewed (23/28), noted that there were no guide books available within the pharmacies. Also, a total of 5/28 responded that there was a computer in some of the pharmacies; however, it was only being utilised in order for the checking of information and prices. *Pharmacies in Kurdistan and all Iraq no using computer for dispensing medicine (P 22/SHD).*

4.1.7 Advice provided to patients

It was discovered that 82.5% of the community pharmacists surveyed responded that they occasionally advised customers/patients on the drugs that they had acquired from a pharmacy, and that they gave advice about medicines acquired to a customer when asked for it, although if the customer had not said anything, they would not volunteer advice to them. No respondents made the claim that they had never given counseling or advice to a customer, and 17.5% of participants stated that they always provided patients with advice. However, most responses stated that they sometimes offered advice. Whilst the pharmacists may have believed that the information leaflet inserted into the packaging would be sufficient to inform the patient, practice guidelines ought to have made them aware that it was necessary to verbally reinforce the health message to the patient. Other problematic issues are apparent in relation to this; although most inserts in packages are printed in both English and Arabic, there are times when only one of these languages is on the insert, and in reality, some of the patients are unable to understand Arabic (most patients/customers were unable to read English). Clearly, in situations such as this, there is an ineffective use of drugs, or misuse of them. The fact that so many pharmacists fail to provide customers with advice is incredible. Across the world, counseling or advice is seen as an essential element of the role of the community pharmacist, and it is enhancing their professionalism, as well as provides the individual customers with an improved, safer service. In addition, 3/28 of the interviewed participants stated that the patient load, and the limit to the consulting time of doctors, render the task of the pharmacist very difficult; doctors do not have sufficient time to provide the patient with an explanation of how medicines that they have been prescribed ought to be taken, and pharmacists are left to explain this to their customers. Without asking the pharmacist for advice, the customer is unlikely to receive freely volunteered advice and information regarding the medicines from busy pharmacists. There is a poor level of understanding amongst the public of what the role of the community pharmacist actually entails in terms of the provision of information about drugs and the monitoring of drug therapies. The relationship between the pharmacist and the patient is a basis in trust, care, cooperation, and communication. Also, this relationship is based on the making of mutual decisions through the pharmacist working very closely alongside the patient for the prevention of disease, the promotion of health, and for ensuring that drug therapies are both

effective and safe. With such a close relationship, in order for pharmaceutical care to be implemented successfully, there is a need for patients to have a reasonable understanding of the professional role of the pharmacist, particularly with regard to patient consultations and checking on whether drug regimens are appropriate, as well as other activities related to pharmaceutical care. A total of 18 of 28 interviewees had the belief that medicines were being dispensed by pharmacists without sufficient labeling or information.

4.1.8 Drug Categories

For groups of controlled drugs (stimulants and barbiturates), a 95.5% proportion of pharmacists stated ‘yes’ on being asked whether they sold them over the counter. A total of 169 female pharmacists and 430 male pharmacists responded ‘yes’ that they had been selling medicines that were controlled as over the counter medicine without a prescription; Fisher’s exact test showed that this figure was extremely significant (p -value 10^{-9}). Only 4.5% of the pharmacist participants gave ‘no’ responses, stating that they had not been selling the controlled drugs without there being an appropriate prescription issued by the physician. A total of 7 female and 21 male pharmacists gave ‘no’ answers indicating that they had not been selling such drugs without a prescription; this figure was similar to those for codeine and other types of prescription-only medicine (POM). In relation to POM groups, a question had the intention of providing some insight into various facets of misuse of these substances that could have been facilitated by the practice of the community pharmacy. Indeed, it was evident that all of the groups of drugs could be acquired without prescription from the majority of pharmacies. On this basis, all of the pharmacists sold formulations containing codeine and steroids. Controlled groups of drugs, barbiturates and other types of sedative and stimulant, were, however, being sold by the majority of the pharmacists without a prescription. Therefore, the drug group rankings were the same in relation to the requests of customers to purchase them, and the response of the pharmacists in selling them.

Of the 627 pharmacists that had been selling steroidal drugs without being presented with a valid prescription, the majority were discovered to have sold oral contraceptive pills, female sex hormones and topical corticosteroids. In addition, it was shown that the majority of those pharmacists that had been selling codeine without an appropriate prescription also sold various combinations of analgesic drugs that contained codeine, or, alternatively, codeine

within cough syrups. The findings show that, within Kurdistan, there is an on-going high proportion of illegal over-the-counter sale of controlled drugs. The implication is that there must have been an illegal purchase of these drugs by the pharmacies in the first instance. This evidence gives support to the view gleaned from these questionnaire components that there is a failure of pharmacists to practice in a way that is in full compliance with the regulations of the Ministry of Health because of the weak control by MOH. The indication is that a large proportion of pharmacies have been selling what has been requested from the customer without giving due care for regulations. The fact that customers have requested drugs from these controlled groups is an indication of either an expectation that purchase of them from the pharmacies would be easy and/or they had little appreciation of the legal status of such products. Theoretically, without an authentic prescription, none of those POMs ought to have been sold to customers over-the-counter.

It is well-recognised that, in general, there are discounts and other advantages when buying in bulk, and there is no exception for wholesalers and medical representatives. A form of discount might be a free product if ten packs of a particular drug are purchased. Deals such as this may be leading to a philosophy in practice that there is a degree of negotiation involved in relation to deals over drugs, and this may, in some instances, apply to the supply on POMs that non-CD. The availability of non-CD POMs, being sold as products over-the-counter, appears to be fuelling, and profitability enhanced through these deals. The most sold of these types of drugs are steroids with respect to both the sale of them without a valid prescription, and in terms of customers requesting them from the pharmacist. Indeed, only two of the female participants stated that they had never sold such drugs without a valid prescription. Very nearly all (99.7%) of the pharmacist respondents made the claim that they had been selling topical corticosteroids the most, followed by oral contraceptives, oral cortecosteroids, anabolic agents and parenteral corticosteroids. It was expected that topical cortecosteroids and oral contraceptives would be placed as they were in that ranking; nowadays, topical cortecosteroids are widely available in many countries, and small sized packs of hydrocortisone may be purchased as a medicine without a prescription. Many pharmacists and people in general within the population of Kurdistan are likely to be aware of this pattern of use and availability of the drug; as such, the observed behaviours of ‘asking’ and ‘selling’

are facilitated in this context. Oral contraceptives are also widely available across the world where they have a status as POMs. However, despite the MOH having classified them as POMs within Kurdistan, oral contraceptives were being bought without a valid prescription because of a lower cost. So, there is a possibility that both the public in general, and pharmacists in particular, have the practice of treating them as OTCs; oral contraceptives were one of the most frequently requested steroids with a total of 275 pharmacists answering that oral contraceptives were the steroid that they sold the most. Despite not many pharmacies selling them, anabolic steroids could also be bought over-the-counter. An inspector who was questioned stated that "You and I could visit any pharmacy anywhere across Iraq and get a bag full of antibiotics and anti-hypertensive" (Ins;21/S); a reason for this is that people in the area have always been able to acquire such drugs without a prescription.

4.1.9 Day-time and midnight customers

In relation to the patterns of pharmacy opening hours within the study, the participants were asked to provide details of 3 periods of the working day, i.e. morning, afternoon and at night. The findings show that 29 of the male pharmacists worked at pharmacies that opened at night, 422 participants worked at pharmacies that were open during the afternoon, and none of the male participants worked in pharmacies that were open during the morning; these findings were extremely significant (p -value 10^{-9}). A total of 170 female pharmacist participants stated that they worked in a pharmacy that was open in the afternoon; 6 of the female participants worked in pharmacies open in the morning and none of the female pharmacists worked in a pharmacy at night ($p = 10^{-9}$). Interestingly, it was noted that for the citizens of Kurdistan, the favourite shopping times were during the afternoon period from 14:00 to 18:00 hours; this was because it was a time when the temperature outside was bearable, and it was a time when Kurdish families tended to be together. The majority of pharmacy staff also tended to work within governmental hospitals from 08:00 to 13:00. Presumably, the difference noted between night time and daytime customers was attributable to the experience of the pharmacist of working in the night time period. In the light of the numerous inconsistent cases or low level of reliability in answering the questionnaire questions, the decision was made to check the records of the answers given, and it was confirmed that none of the pharmacies were open for 24 hours periods.

4.1.10 The sale of medicines containing stimulants without a prescription

There were ‘yes’ answers from pharmacists in all age groups in relation to the sale of stimulant medicines as an OTC medicine without a prescription (p-value 10^{-9}). Only 21 participants gave a ‘no’ answer, since they stated that they had not been selling the stimulants without a suitable prescription from a physician; this observation was very similar to that noted in relation to codeine and other POM medicines.

4.1.11 The number of qualified pharmacists

Information was requested with regard to the number of pharmacists that were employed in pharmacies that were qualified. A total of 496 pharmacists gave responses to indicate that their pharmacy had only one qualified pharmacist employed in it (p-value = 10^{-9}). A total of 34 female and 97 male pharmacists gave responses that their particular pharmacies were operating without such a qualified pharmacist; this figure was statistically significant. The remaining responses indicated that there was no more than one qualified pharmacist in each pharmacy; a figure that was lower than the expecting value.

4.1.12 The pharmacist assistants

A pharmacist assistant is a post that is similar to that of a dispensing assistant in community pharmacies in the United Kingdom, or a pharmacy technician. A total of 549 pharmacists gave responses that there was only one pharmacy assistant in employment in their particular pharmacy ($p = 10^{-9}$). A total of 46 pharmacists gave responses that there were 2 pharmacy assistants in employment in their respective pharmacies. Cross-tabulation of this question, along with the previous one regarding the number of pharmacists who were qualified, showed that the majority of pharmacies employed extra-pharmacy assistants within them. A total of 19 out of 28 interviewed participants had awareness that the law required that their pharmacy had to be staffed by a pharmacist at all times. Indeed, as interviewee 2 stated, ‘Pharmacists must staff all pharmacies according to law’ (Ph:23/SHD). It is unfortunate, however, that many pharmacies are in Kurdistan are operated by just a pharmacist assistant, and it is also the case that healthcare professionals can be found working as pharmacists selling drugs in a pharmacy.

4.1.13 Pharmacy opening hours

The hours of opening of pharmacies were studied amongst the population of the study to seek any significant patterns. The participants were questioned regarding the opening hours for 3 periods within the day, i.e. morning, afternoon and night time. The results are noted where it can be seen that at night time, 29 of the male pharmacists stated that they worked in pharmacies that were open during that time. A total of 422 participants stated that their pharmacies were open during the afternoon, and none of the male pharmacist respondents mentioned that their pharmacy was open during the morning period ($p = 10^{-9}$). A total of 170 of the female pharmacists worked in pharmacies that were open during the afternoon period ($p = 10^{-9}$) and with none of the female pharmacists working at night and 6 of them working in the morning. Interestingly, it was noted that for citizens of Kurdistan, the most popular shopping times were in the afternoon, i.e. in the period from 14:00 to 18:00 hours. This was because at this time of day the temperature outside tends to be bearable and it is a period of the day when families tend to be together. In addition to these factors, the majority of pharmacy staff tend to work within a governmental hospital during the period from 08:00 to 13:00.

4.1.14 Frequencies of customer visits to pharmacies

An assessment of the frequency of pharmacy visits by customers was performed through the questioning of pharmacists regarding what proportions of their customers were visiting their pharmacy more than once a week. The findings, showed that 169 female pharmacists and 433 male pharmacists gave an answer of from between 1 to 50 visitors ($p = 10^{-9}$). A total of eleven of the male pharmacists made the indication that a proportion of from 51 to 100 of customers had been visiting their pharmacy more than once a week, and for 4 of the female participants, the frequency of visits by customers to their pharmacy was noted as being more than once time a week for from one to 50 customers; this was much lower than the null hypothesis expected value.

4.1.15 Indication of three medical conditions for which medicaments are predominantly sold

Another questionnaire question that was put to the participants was that in relation to the activities of pharmacies regarding drug sales, with the participating pharmacists asked to rank the volume of sales of medicines for the management or treatment of common ailments. As well as identifying five disorders, namely fever, colds, infection, headache and skin disorders, the participants were asked to select the 3 reasons that were most common for these sales. From the responses to these questions, it should be noted that according to male pharmacists, the most common types of disorder were headache, followed by cold and then infection (from 90 responses – $p = 10^{-9}$). In relation to the responses from the female pharmacists, the ranking order was headache most common, followed by fever and then cold. Sales were believed to be highest for remedies for headaches and for infection. Many of the respondents noted on the questionnaire response that the sales related to such items that were viewed as arising from seasonal ailments. Indeed, a total of 23 of 28 of the participants interviewed noted that people with flu or flu-like symptoms attended their pharmacies to request an antibiotic class of drug, which was usually penicillin (or they bought penicillin in an injectable form from the pharmacy). Interviewee No.2 stated that “When someone has flu, or flu-like symptoms, they visit the pharmacy to ask for antibiotics” (P;23/SH). When interviewees were asked for their responses with regard to what type of medicine can be purchased without a prescription from pharmacies, the majority of them, i.e. 25 out of 28 stated that any type of medicine could be purchased from pharmacies without a prescription. Furthermore, 3 out of 28 responded that controlled medicines, such as strong narcotics, could not be purchased without a prescription unless a relative or friend was working within a pharmacy.

A total of 24 out of 28 participants thought that it was cheaper to administer through self-medication than to attend a hospital for more appropriate diagnosis and treatment, with the opinion that self-medication was practiced by people since it was cheaper than going for a consultation with a doctor. Often, people who practiced self-medication did not have the medical tests that would have been considered necessary at a hospital, such as Ultrasound, X-rays, laboratory testing and so forth. Usually, such investigations were left undone. There is the belief that the culture of a people places a huge bearing on the beliefs with regard to healthcare, and also the manner in which diseases and illnesses are treated. Self-medication is

practiced by people since they consider that the taking of more medicine(s) will give rise to a faster recovery; six out of the 28 interviewees gave responses with the belief that there will be a faster recovery from taking more medicines. Also, 13 out of 28 respondents stated that self-medication was more rapid than attending a consultation with a doctor and/or visiting a hospital, with it being shorter still in a private clinic.

4.1.16 The professional relationship of pharmacists with physicians

With regard to the relationship of pharmacist to physicians within the area, a total of 241 pharmacists responded that they had mutual professional relationships with physicians. On the other hand, a total of 242 pharmacists questioned responded that there was little relation to physicians (p value = 10^{-9}). A total of 136 pharmacist respondents noted that there were insufficient relationships with physicians, and 8 of the pharmacists stated that they had no relationships to physicians to speak of; this figure was lower than that according to the null hypothesis. This research shows that in Kurdistan there are relatively poor relationships between community pharmacists and physicians; clearly, this factor of Kurdish life is very negative, and needs to be remedied as a matter of urgency.

4.1.17 Awareness of controlled drugs?

Of the respondents that answered the question regarding awareness of controlled drugs, 49 female pharmacists and 143 male pharmacists did not have any awareness of what controlled drugs were, and they were asked to give an answer regarding whether or not they maintained records related to the dispensation/sale of them. It was noted that 54 of the participants did not make a response to this question since they did not understand what was meant by the expression 'controlled drug'. Furthermore, 102 female pharmacists and 279 male pharmacists gave a 'yes' response to awareness of controlled drugs, although they had not been keeping records for the sale of them. Findings with regard to questions related to the maintenance of records of the dispense and sale of controlled medicines revealed that several participants did not have a clear understanding of the question, and may have felt that they were in infringement of the regulations for the drugs. Another explanation could arise from a lack of understanding of the question, and also the provision of answers in error. At the beginning of this study, the researcher had stressed that the study was confidential and that the identity of the pharmacist participants and the location of the particular pharmacy would not be

registered. Also, there was no requirement for the signature of the pharmacist on the finished questionnaire. Given these confidentiality measures, the manner in which the questionnaire was completed by some was quite mysterious. The admittance by the pharmacist that they were not in possession of a Pharmacopoeia, or were selling controlled drugs over the counter without a suitable prescription, would in fact serve as an admission of having broken the law which could undermine their credibility and lead to them being reprimanded and punished. Although potentially undermining themselves, the participant responses give rise to questions over the role played by the community pharmacy owner in providing directions to the practices of their pharmacist employee - such admissions could have been viewed as risky. The owner could, for example, have been directing a pharmacist to sell their stock of POMs without the customer presenting a relevant prescription. There is therefore a major requirement for a thorough investigation of this matter. There is a hope, however, that a law that requires the owners of pharmacies to actually be a pharmacist will eventually lead to an improvement of such a potential influence. There is evidently considerable progress to be made in implementing the law properly, especially since the researcher learned of a 'non-pharmacist' who had opened a total of nine new pharmacies in Sulaymaniya city between 2013 and 2016.

Whilst this study result's validity was reduced by this inconsistency phenomenon, the general impression given of community pharmacies and the practice of pharmacists was confirmed by the questionnaire results when applied to officials of the Ministry of Health, the general public and also from the general observations of the researcher himself. Overall, an impression was given of a service for healthcare that was being driven, to a large extent at least, by considerations that were retail-focused, and that there was very little attention being given to standards of professionalism and ethics for the practice of pharmacy. Hence, it was revealed that the regulations of the Ministry of Health were, in the main, ignored and only rarely enforced. Apparent purchase of POMs without a valid prescription was widespread, including the purchase of drugs that were controlled, such as CNS depressants and benzodiazepines.

This study, with its focus upon community pharmacies, has given clear support to the view that whilst Ministry of Health regulations with regard to governance of drug sales do exist, by and large the law is flouted in this context. There are likely to be many potential reasons for this situation. However, an important factor that was identified in this research was that

regulations in relation to POMs were only weakly enforced by Ministry of Health officials. A result of this situation is that it appears that many pharmacists are willing to sell any of their medicines to customers secure in the knowledge that such a legal infringement is unlikely to be challenged for any of the parties involved. Earlier research conducted by Bawazir (1992), had found that pharmacy regulations were being poorly enforced, and the confirmation of this state of affairs in this study of Kurdistan shows that these earlier studies had not given rise to significant improvements in this key element of the practice of pharmacy.

Clearly, the community pharmacists within the population of this study are under tremendous pressure to focus on the retail side of profit maintenance under the close scrutiny of the pharmacy owner who, in the majority of cases, is not a qualified pharmacist. Therefore, if a pharmacist is requested to sell a customer a POM without a suitable prescription, for example, the temptation to agree is strong, since the potential customer would just move on to a different pharmacy if they were unable to purchase what they wanted, and that would represent a lost sale. A further possible element to the pressures involved is that in the mind of the customer the pharmacist may be considered as merely a salesman. Hypothetically at least, in a situation such as this, a pharmacist may wish to avoid any confrontation with the customer in question and just take the easier route of proceeding towards a sale of the requested product. This point may also provide an explanation for why the questionnaire survey showed that a number of pharmacists, having spotted that a prescription was forged, simply refused to dispense the drug but did not proceed with pursuing the matter via making a report of the matter of infringement to a police officer.

From the findings of the questionnaire survey with healthcare officials from the Ministry of Health, it could also be noted that the inspectors of community pharmacies did not meet the expectations of their role. An example of an explanation for this is that the MOH undervalued the role that they were supposedly playing, and also some of the officials may have had the view that inspectors seemed to be inadequately trained and/or lacking in knowledge in relation to their function, even though a number of them held a degree in pharmacy. In the context of what seems a weak health inspectorate, it could well be the case that the 160 participants of the study cohort of community pharmacies.

From the responses given to numerous questionnaire questions, it could be inferred that there was a background of a low base level of knowledge of the practice and fundamentals of the

field of pharmacy amongst the community pharmacists that were interviewed. As such, a total of 378 participants did not have membership of any society or association related to pharmaceuticals, and a total of 473 out of 514 respondents were not involved in any form of programme for continuing education. This contrasted sharply with that of many other countries, especially those in the West; in other settings, in order to address the challenges of advances in pharmaceutical and medical science and pharmacy practice development, there has been a recognition for many years that pharmacists have to keep their knowledge and practice updated by some form of continuing education. There is a further reason why making a move such as this would be timely for Kurdistan; worldwide, national healthcare systems have been changing significantly, and this has stimulated a more critical examination of how education and training for health professionals is undertaken, with a greater focus on what is learned and how this is conducted. As noted by the WHO (1998), all health professionals have to be adequately and appropriately prepared for supporting a global health policy framework. In future, pharmacists have to be in possession of the particular skills, knowledge, behaviours and attitudes to support their important roles. As noted by Abahussian (1999), "The seven star pharmacist must be a care provider, decision maker, communicator, community leader, manager, life-long-learner and teacher". A key aspect of the underpinning of this strategic approach is the placing of an emphasis upon the methods of education within the faculties and schools of pharmacy in national universities. Since review of the input of such academic institutions is viewed as pivotal for appreciating the impact upon the processes of health, the education and research provided has to be judged against the four health compass core values of equity, relevance, quality and cost-effectiveness (Hisham, A et al 2015).

The process of intervention and the measurements of outcome for pharmaceutical care have to be informed, at their foundation, by therapeutics and physiology, pharmaceutical science, social sciences, pharmacoeconomics and pharmacoepidemiology. There is the conclusion that a pharmacist has to serve society as best he or she can, and to also demonstrate that this is being performed (Abahussein). There is a need for continuing post-qualification training or education for health professionals and pharmacists who wish to keep up-to-date in a profession that is constantly evolving (Abahussian, 1999).

It was anticipated, by way of contrast, that the male members of the general public would have expressed an interest in sharing their opinions on issues of healthcare, and would not be

threatened by engaging in this type of survey. As such, there was an expectation that the question responses should represent a correct reflection of assessments of the pharmaceutical services by the customer, and therefore be able to deliver a valid viewpoint that was independent. It is believed, from consideration of the collected demographic data, that the population sample used in the study was an acceptable representation of this general public gender which is the ideal sample size for the population 2400 participants.

The findings with regard for pharmacies and healthcare do, overall, support the view gleaned from the community pharmacists that there is ready availability of POMs over the counter, and that public requests for the purchasing of most drugs are rarely refused. There are, however, examples of certain drugs that pharmacists have refused to sell to customers, such as stimulants and codeine; this refusal was an encouraging sign that regulatory and ethical practices were being exercised by some pharmacists at least. In addition, a few pharmacists were identified as being fully aware of how medicines should not be sold for use that was improper. It was revealed that many respondents considered that their pharmacist had never requested information with relevance to the issue of self-medication for the customer. Closely related to this issue was the finding that many respondents considered that inadequate advice was given to them by pharmacists when they were purchasing medicines. Even though these shortcomings were noted, the majority of respondents appeared to have satisfaction with regard to the health services that were being provided to them in community pharmacies.

In countries in the West, the style of community pharmacy service revealed by this research would be considered to be of an unsatisfactory standard. However, the assessment of the service provided is more tolerant in Kurdistan, given the customs and culture. In part, this attitude relates to pharmacies being viewed in a retail context where, for the right price, anything can be bought – an attitude that is common to all of the countries in the Middle East. The acceptance of a knowledge that the majority of medicines can be bought from a pharmacy without having a suitable prescription ought to also be understood from a further financial perspective. Many citizens with access to free medical services through the provisions of various Ministries have the belief that there are service defects such as delays in receiving examinations or treatments. Private hospital treatments are very expensive, and there is a perception amongst the public is that there is frequent encouragement to have

therapies or investigations that are unnecessary, and so the alternative is self-medicating. Hence, a pharmacy service that allows a broad range of medicines to be available is very appealing to many subjects. Cross-tabulation showed no obvious trends when general public responses to the healthcare style that they would choose for their families and themselves (private *versus* public) was compared to monthly income and educational levels. This has led to fewer drugs being dispensed or prescribed for free. Conversely, there is the expectation amongst patients that many of the medications that they require have to be purchased from the community pharmacies, with or without a prescription. Whilst this state of affairs has, primarily, been affecting out-patients, there are examples of in-patients also having to purchase their own medications, such as antibiotics and analgesics. A further impact upon the use of community pharmacies has arisen because of the long waiting times that patients experience within primary healthcare centre clinics. Indeed, many patients had the perception that time would have been wasted if they have waited to be informed by a physician that all they need to receive is an antibiotic, cough linctus or antipyretic, when they were aware that, within minutes, the medicines could have been purchased directly from a community pharmacy in any case.

Chapter4: Discussion of the main findings from the questionnaire

Section 2:

4.2.1 Introduction

This Chapter has the aim of providing a comprehensive discussion of the main study results; in order to achieve this, the chapter has been divided into four main sections. Firstly, there is an introductory section with a sub-section focused on the primary demographic findings. Secondly, there is a section with two main groups related to the participants from the general public and the participants who were pharmacists, together with a discussion of the major study research questions for each of them. The third section encompasses a review of the triangulation results, and the fourth has a conclusion and study recommendations, along with a note of the study limitations, and also recommendations for further research. The overall research performed aimed to provide an examination of the existing medical practice and the self-diagnosis amongst people within Kurdistan, and also to provide an exploration of factors that could serve to enhance both the practice of medicine and inappropriate medicine usage.

4.2.2 Findings for the demographics of general public participants

The sample from the general public was composed of a total of 647 participants, of whom 38.4% were female participants and 61.6% were male. This distribution of gender is different to that within Iraq in general. In 2011, for example, there were 49.8% of females and 50.2% males within Iraq (IKNS 2011). Similarly, research has been undertaken in Baghdad with 38% female and 62% male (Jasim, A. et al., 2014). Within this study it was discovered that respondents who were male practiced self-medication to a greater degree than female respondents. Whilst being consistent with another study result, this result contradicted some results from other research studies (Jasim, A. et al., 2014). A possible reason for this result could be that male relatives accompany females when they leave their home, and so females are less likely to obtain their self-medication from a community pharmacy. Also, the results show that within developing countries, most of the time women remain in their homes, with men being sent to buy medications where possible.

Participant ages ranged from 18 to 70 years , though the population study group with the highest number of participants was in the 25-35 years' age bracket (36.7%). Only 4.3% of research participants were over 55 years old as such people are illiterate and refused to participate. The next largest sub-group of participants within the study were those aged between 36 and 45 years of age (33.2%). This was because within that age bracket, people are expected to have routine check-ups; similar can be seen in the study of Jasim of Baghdad city of 2014 with an average of 41 years of age (Jasim, A. et al., 2014). This study showed that those between the ages of 20 and 55 years of age formed 94% of the population of the study; this is a logical proportion, given that such individuals are more able to move and more likely to look for medications because of them having fewer incidences of cardiovascular disease or joint problems when compared to older people. Within this research, a 12.4% proportion of the study cohort had been educated up to the level of a university degree. Also, approximately a quarter of the study sample (24.7%) had a Diploma certification. On the other hand, 22.6% of the study sample was classified as having no formal education as they had finished school at primary level however they were still able to read. For the purpose of this research, people in this group were classified as being illiterate. Approximately 39% of the study participants had been educated to secondary school level though they hadn't obtained a degree by the time of the study. For a relatively new nation such as Kurdistan, such an education level is very satisfactory and, overall, the profile of education indicated a good attainment level within the Kurdish population in general. Such an education level ought to, therefore, mean a responsible approach towards having an understanding of issues of healthcare is engendered amongst Kurdish citizens. Most study participants (70.8%) were married, however approximately a quarter of the study population were single, and most of these were in the age group of less than 25 years of age. Overall, the patterns found within the sample did reflect the general population. Most study participants were married which was to be expected given the traditional and religious encouragement of marriage at an early age. Within the study sample, a total of 35.9% of the study participants hailed from the city of Sulaymaniya, which had the largest population of the three cities in question. The other two smaller cities of Erbil and Duhok (in fact, the smallest cities of Kurdistan) had figures of 38.4% and 30.6% for the study participants. There have been no other studies conducted within all cities of Kurdistan to enable comparison.

4.2.3 Reasons behind the increase in self-medication observed

Patients nowadays like to have a greater role in maintaining their health, and it is often the case that they have the competence to manage uncomplicated chronic and recurrent illnesses effectively. It is understandable that there is an unwillingness to give in to the inconvenience of a visit to a doctor when they may feel, quite rightly, that, with sufficient information, they are able to manage an illness by themselves. Sherazi (2012), undertook studies in Pakistan that showed that an increase in self-medication arose from numerous factors including socio-economic ones, such as lifestyle, ready access to drugs, and a greater potential for certain illnesses to be managed through greater availability of medicinal products and self-care. Patient contentment with the providers of healthcare, the cost of drugs, level of education, gender, age, and long waiting times are other significant factors that had a bearing on self-medication (Sherazi, 2012). A common reason for resorting to self-medication was the expense of a consultation with a private doctor. There was the potential for this to be much worse in distant rural parts where there was social, economic and educational deprivation and where the health facilities were inadequate (Sherazi, 2012).

The WHO report of 2016 on ‘Promoting Rational use of Medicine’ stated that facilitation of self-medication could also occur in a number of particular situations such as:

- When the public is poorly informed with regard to matters of self-care and health;
- When profit motives override professional requirements and regulation and/or the implementation of regulations on pharmacy practice and the prescription of drugs is poor;
- When there is a high burden of diseases with many of them having symptoms that overlap, such as fever, pain, depression and insomnia; these are common symptoms for various different conditions that may call for different types of medication. Only through consultation for diagnosis with a medical practitioner can the appropriate medicine be determined;
- When poverty is such that the costs of professional health care services are beyond the reach of people to afford to pay them;
- When access to desirable health care is poor due to discriminatory policies, long distances and high costs;

- When the advertisements are overzealous in making claims regarding the scope of use and efficacy of medications though conceal potential adverse effects (WHO, 2006).

In a study undertaken by Jasim L. A, in 2014 in Baghdad city, which has the largest population of any city in Iraq, the primary reason for the practice of self-medication for 2 thirds of the population of the study was their experience and knowledge of treatment from having had similar ailments. An explanation for this was the ability of people to remember those medications, whether over the counter (OTC) or prescribed, that were used when they previously had similar conditions, particularly when those medications had been successful in bringing about improvement to such symptoms or conditions (Jasim, A, 2014). The second significant reason that was mentioned by 59.2% of respondents was when there was a simple ailment that did not call for a consultation with a physician. Other reasons for the practice of self-medication included the remoteness of centres for health care (5.2% of the study population) and the high costs for consultation with a private clinic doctor (10.3% of respondents); the latter of these two reasons was particularly the case with subjects that had a monthly income that was relatively low. The reason that was the least common was for chronic or recurrent conditions; this was because most patients who had such conditions had regular supplies of chronic medications from Public Health Centres distributed throughout the city of Baghdad which supplied drugs at costs that were lower than those at private pharmacies (Jasim, A. et al 2014).

Doctors can also help source better medicines than those when people source their own. There are several factors, however, that have a bearing on the overuse of medicine and self-medication without the consultation of doctors amongst the Kurdish population, as explained below.

4.2.4 Self-diagnosis and illnesses

Self-medication for minor conditions, non-prescription or over the counter (OTC) drugs are dispensed without the need for a prescription (Abdelmonein, 2008). As Abasaheed (2009) noted, self-medication is not restricted to only drugs that are OTC. It is common for prescription drugs such as antibiotics to be used to self-medicate in lots of countries without strict regulations (Abay, 2010). In a developing country like Kurdistan, prevalence rates of

self-medication are suspected as being high, however there are only a limited number of studies undertaken in the region. Moreover, within developing countries, poor drug policy implementation means that prescription medications are accessible as a product without a prescription. The importance of strict and controlled use of self-medication has been stressed by The World Health Organisation. Inappropriate use of self-medication can lead to adverse drug reactions and other serious health hazards, drug dependence and prolonged suffering and resource wastage. Self-diagnosis can be considered as the act of diagnosing a health related condition and self-medication is the act of taking medications following such a self-diagnosis; in effect, the two go hand in hand and if there is a failure in one of those medical vices then the probability of faulting in the other is high. As Almalak (2014), notes, such failings can prove to be very dangerous to overall well-being. In lots of developing countries more than 80% of all drugs are bought by people without prescription for their own or their family members use. Even if there was a health care provider consultation, the subsequent drug use can occur in a manner that depends upon the decisions and degree of understanding of the individual consumer in question. As such, so that drug use can be improved, there is a fundamental need to understand the attitude that people have towards medicine. Research has shown that the decisions of drug consumers are affected by their beliefs, their perception of the value of drugs, the surroundings, their income, personal characteristics, their symptoms, cultural and social attitudes, the information available and the promotion of drugs (WHO, 1997). Antibiotics, when used appropriately, are amongst the most important of drugs. However, if there is inappropriate use or overuse, there can be an increase to the problem for patient care of the further development of antimicrobial resistant pathogens. The great number of requests for antimicrobial drugs by respondents in order to self-medicate is beyond adequate justification (Sturm et al., 1997). In terms of the effect of gender on the buying of non-prescribed antibiotics, a total of 404 participants (62.3%) believed the purchasing of antibiotics without a prescription was an acceptable practice with 161 of them female (39.9%) and 243 males (61.1%). Self-medication was practised by 14 of 28 interviewees through purchasing the same medication or medicine similar to that which had been prescribed by a doctor for particular symptoms previously; there is the belief that if they had gone to the doctor then he would have prescribed the same medicine and so they chose to buy their medication without prescription directly from the pharmacy. There was the belief with 28 of the 28 interviewees that there was always a person who was knowledgeable about medicine at the pharmacy who could advise and give medication for the disease in question.

A cross-sectional study has been undertaken for the evaluation of the knowledge and behaviour in regard to antibiotic self-medication amongst Iranian students in Ahwan, with the data collection done through use of self-administered questionnaires with a mixture of open and closed ended items. Of the 195 participants in the study, 49.7% were males and 50.3% were females, however the pattern of self-medication showed no significant variation between female and male students with both using antibiotics without medical advice or prescription (Sarahroude, 2010). This result is reasonably similar to that of this research in regard to the ratio of female and male participants. According to the age of participants, and their opinions with regard to buying antibiotics without a prescription, for those believing it was an acceptable practice there were 38 participants below 25 years of age, 213 participants aged between 25 and 44 years of age, 43 participants were aged between 45 and 54 years of age, and 14 participants were over 55 years of age. So, there was an indication that the most participants who practiced self-medication were middle aged. In comparing the cities, the purchasing of antibiotics without prescription was considered to be an acceptable practice by 155 participants from Sulaymanya, 74 participants from Duhok and 175 participants from Howler. There was equal practice of self-medication according to population for almost all of the cities. In comparing the opinion of participants with regard to the purchase of antibiotics without prescription according to qualification, a total of 308 participants believed it was acceptable with 305 of them having a low education level. Approximately half of participants had practiced self-medication using antibiotics without a prescription from a doctor and a figure of $p=0.01$ shows a significant association between education level and the practice of medicine. Ali et al. undertook research for estimation of irrational self-medication with antibiotics by people in Annjaf in Iraq. Their study showed a consistent association between prescribed use and self-medication with antibiotic drugs. Prevention of self-medication through education of patients and through giving doctor's greater awareness that the prescribing of drugs for minor ailments could increase self-medication risk. A key step for enhancement of knowledge of the public in relation to antibiotics is for restriction of prescriptions of them when they are not really necessary and to, thereby, establish expectations about treatment from antibiotics that is evidence-based and education about appropriate use of antibiotics that is more effective (Ali et al., 2010). In accordance with the study in Annjaf by Ali, participant knowledge in relation to self-medication with antibiotics had similar results to those of this study with approximately half of participants with low levels of knowledge were practicing self-medication. In accordance to the status of

employment, the opinion of participants with regard to the purchasing of antibiotics without a prescription, a total of 308 participants had the belief that it was an acceptable practice of which 80 were teachers, 166 were salesmen and 49 of them were office workers. A total of 96 participants had the belief that self-medication with antibiotics was a good practice; all of whom were office workers. Salesmen formed the largest group of the population that practiced self-medication which could be due, in part, to their knowledge levels or economic status. It is easy to access nearly all kinds of medication within Kurdistan. The pharmacy practice regulations of Kurdistan do strongly advocate the legal and proper sale of medications; however, as with lots of other less developed countries, nearly all types of drug that are available within the market in Kurdistan can be bought as OTC medication. Lots of patients in Kurdistan buy medications directly from community pharmacies as they can be accessed easily and quickly and they are less expensive than initially going to the clinic of the doctor. In village areas with inadequate medical services, this tendency is even more obvious. Within this research, self-medication was practiced extensively amongst the population under study, an explanation for which could be the status of employment, age, education level, and gender. It has been discovered that amongst those who have a low level of education, there is a greater prevalence of self-medication and amongst the middle-aged. Also, it was found that the prevalence was higher amongst the Kurdish population in comparison with rates reported from elsewhere.

4.2.5 The drugs requested

The most common illnesses, within this study, that had led to self-medication were fever, runny nose, sore throat, and cough. The largest category of drugs requested were analgesics/antipyretics and antibiotics.

Antibiotic resistance is promoted by overuse of antibiotics, especially when they are taken when they were not even the suitable treatment. Bacterial infections are treated by antibiotics though viral infections are not. For instance, for a strep throat caused by the *Streptococcus pyogenes* bacterium, antibiotics are an appropriate treatment; however, for most types of sore throat caused by viruses, antibiotics are not the appropriate treatment. If antibiotic is taken though there is actually a viral infection, then the drug keeps attacking bacteria in the body that are not causing disease and that could even be beneficial. Such misdirected

treatment may then lead to promotion of properties of antibiotic resistance in bacteria that are harmless which can then be shared to other bacteria (Thomson Gale, 2006). In regard to gender, in this study, 144 of the female participants and 230 of the male participants had used antibiotics for cough, fever, runny nose and sore throat. Also, 33 female participants and 51 male participants had used antibiotic for diarrhea with most of them having elected to use flagyl (Metronidazole) without having acquired a prescription. With regard to skin infections, 33 female participants used antibiotics for them and 22 male participants had ($p = 0.000024$); i.e. there was a significant variation between the taking of medicines between females and males as females tended to care more about their health rather than just take medication in order to recover from symptoms. A cross-sectional study was undertaken in Ethiopia by Abay in 2010 concerned with assessing the practices of self-medication amongst health science, pharmacy and medical students at Gondar University. Of the 414 students included in the study, at least one illness episode was reported by 213 of them, and 82 had practiced self-medication. Headache and fever were the most common illnesses reported (24.8%), closely followed by the common cold and cough (23.9%). The conclusion of the study was that the practice of self-medication was done with a variety of drugs from antibiotics to conventional analgesics (Abay, 2010). With self-medication found to have been practiced for treatment of the most common of illnesses such as the common cold, fever, headache and cough, this conclusion is similar to the findings of this research study which also found self-medication was practiced for treatment of runny nose, fever, cough and sore throat. With regard to participant age, 258 of the participants were aged between 24 and 45 years of age and used antibiotics for cough, fever, runny nose and sore throat. The same symptoms were also addressed using antibiotics by 17 participants above 55 years of age and 50 participants below 25 years of age. As such, over half of the participants, i.e. 53.5% had used antibiotics for cough, runny nose, fever and sore throat. These findings are similar to the research undertaken in 2003 in Jamma city in Ethiopia where 57.9% of the participants were aged 30 years and over that had self-medicated for cough, fever, headache and diarrhea. It is probably a demonstration that those types of disease symptoms act as a signal to people to self-medicate (Sturm, et al 1997).

With regard to the city in question, use of antibiotic for sore throat, cough runny nose, and fever was done by 156 of the participants from Sulaymanyia city, 138 participants from Howler city and 80 participants from Duhok city; as such, the ratio of participants meant

there was no real significant variation between the taking of antibiotics for those diseases in the cities. No other research exists of a similar nature in those cities in order to make further comparison. DuY, K. H. (2009), conducted a descriptive study into self-medication in Germany in 2009 in order to investigate prevalence and correlations related to the issue. From the findings of the study, it could be seen that self-medication was highly prevalent in Germany, particularly amongst families with higher socio-economic status, with 21.6% of participants having used drugs for skin, 32.1% having used drugs for their respiratory system, 4.7% of participants having used cough and cold medicines and 4.4% having used analgesics (DuY, 2009).

With regard to qualifications, 45.7% of participants were in the group classed as having a low level of education who had used antibiotics for cough, sore throat, fever and runny nose. A study undertaken by Kriss in Bangalore in 2010 indicated that the increase in self-medication meant that there needed to be an expansion and improvement to the education of both health professionals and the public to help avoid irrational drug use. It was considered that without appropriate action, there could be an increase in the dangers from side effects and drug interactions (Kriss, 2010). Self-medication is practiced by around half of the Kurdistan population with low levels of education. A narrative study that was undertaken in Malaysia on the practice of self-medication with non-prescription medication amongst students from the University Sains Malaysia library by Almasdy in 2011. Common medications used were vitamins or minerals, cough and cold remedies, anti-allergy medications and analgesic and antipyretic products, with the study showing that there were many potential problems with the practice of self-medication (Almasdy, 2011). The illnesses treated by antibiotics using self-medication were mostly the same as within this study, with sore throats, the common cold, fever, pain, skin allergy and runny nose being targeted.

With regard to status of employment, a total of 44.5% of participants were salesmen, manual workers and unemployed who practiced self-medication for cough, runny nose, fever and sore throat. A study by Salah Mogali in Yemen in 2015 indicated that 57% of participants who practiced self-medication were unemployed or in high school level of education or lower (Mogali et al., 2015). In another study on self-medication with antibiotics undertaken in Indonesia by Aris in 2013, it was shown that numerous antibiotics such as Ampicillin, Amoxicillin, Tetracycline and Ciprofloxacin were used for the treatment of a variety of

symptoms including cough, headache, sore throat, itching, fever and the common cold, with such antibiotics being used, in the main, for just one or two days (Aris, 2013). Similarly, in this research, it was revealed that some participants had not purchased complete courses of medication, with 22 out of 28 interviewees believing that the pharmacy serves as a regular store with the patient using their money to buy the type and quantity of tablets that they want. Eight out of 28 interviews gave responses that indicated that pharmacists had been selling incomplete courses of antibiotics.

Another cross-sectional study, undertaken for assessment of the extent of the practice of self-medication amongst a random sample of students at the An-najah national university in Palestine, involved a total of 1,581 students enrolled at various faculties at different academic levels. The study indicated that 98% of respondents had reported they practiced self-medication, with decongestants, antibiotics and analgesics being the most commonly reported classes used in self-medication (Sawalha, 2007). These findings are similar to this study as most of the participants were found to like taking two types of medication, i.e. one for pain and one for infections. Moreover, for those antibiotic types that are not available from the hospital, patients could have to pay for them. The primary reason for not visiting a doctor was that the participant claimed that he or she had previously suffered from a similar condition and they considered that their condition was mild and that it would be appropriate to use a repeat of the previous prescription or to use a similar type of medicine. Other reasons given included that pharmacies did not involve considerable waiting times and they were low cost alternatives when compared to other facilities for health care. As the pain in question could be related to an infection, a total of 104 (16%) of the participants had used antibiotics for the pain. With pain potentially related to infection, 30 of the participants were aged between 25 and 34 years of age and, in accordance with the Fisher exact test, this was lower than the expected value with a p-value of 0.022 showing a significant difference from the value expected. Also, 50 of the participants were aged between 35 and 44 years of age and had been using antibiotics for pain; this was also, according to the Fisher exact test, above the expected value with a significant difference from it. A total of 26 of the participants had been using antibiotics for other symptoms.

4.2.6 Sources of information /advice

When having an episode of illness, it is common for individuals to seek out advice and information from networks of referral. A study by Jasim, Ali et al. (2014), noted that the primary information source with regard to self-medication was previous prescriptions; this was a self-medication reason given by the majority of patients who had experience of the same condition previously. Another key information source that 51.7% of patients represented was the community pharmacist. This finding was in agreement with this research study and provides evidence of the importance of community pharmacies with regard to the widespread practice of self-medication within the community. It was shown in another study by Ghosh et al. (2010), that, as well as nurses, pharmacists and physicians, other family members and close friends play an important role in providing good advice about drugs used for self-medication as they may have experienced the same sort of conditions themselves previously. As well as pharmacists and physicians, other medical staff members could represent an information source for some patients as there was a prevalence of them and ease of access to them within Baghdad city (Jasim, A. et al 2014). In relation to gender, 67 of the female participants and 67 of the male participants used their own experience and knowledge when buying medicine from the pharmacy directly as they had familiarity with the medicine ($p = 0.000018$). The opinion of a family member is used when purchasing medicine directly from a pharmacy by 54 female participants and 47 male participants as the family member was trusted as having previous experience with the medicine in question. The previous prescription of a doctor was just repeated by 215 female participants and 133 male participants, and 8 female participants and 5 male participants used the experience and opinion of a friend when buying medicine from a pharmacy. Only 214 female participants and 125 male participants had medication recommended to them by a pharmacist. It was reported that medicine was purchased from a pharmacy because of having seen a good advertisement for it by 23 female participants and 22 male participants.

In a study undertaken in Ethiopia in Jimma town in 2003, most patients practiced self-medication with a basis for their behavior in their previous experience of the medication and having had a prescription previously. A further reason for the widespread practice of self-medication was television advertising. Also, irrational practice was guided by friends in the case of 17% of cases (Worku, 2003). Similar sources of knowledge and advice for self-

medication by both female and male participants was recorded so, within the study, there was similarity in behavior of participants based on gender. In relation to age, 134 participants had familiarity with their medicine and used their experience when choosing it and 54 of these people were in the age group for 25 to 44 years of age, 3 participants were below 25 years of age and 1 participant over 55 years of age chose medicine on the basis of the opinion of a family member. Medicines were chosen based on the recommendation of a pharmacist by 214 participants, most of whom who were in the age group of 25 to 44 years of age, with 7 participants above 55 years of age and 33 participants below 25 years of age. A total of 215 participants, the majority between the ages of 25 and 44 years, with 10 aged over 55 years and 29 below the age of 25 gave answers that pointed to doctors having prescribed the same medicine previously and that they just had a repeat of that prescription. Also, 23 participants answered that their choice was influenced by advertisements for products. Sonam et al. (2011), conducted a study in Ikeja city in Nigeria that showed that information sources or knowledge of use of drugs for self-medication was held by general medicine dealers, pharmacists, household members, general and private medical practitioners, friends and relatives, product information leaflets and media advertisements; the largest prevalence was shown by surveys to be from the pharmacists and by prescriptions that had been given to respondents previously. Likewise, the same sources of knowledge and advice with regard to self-medication was in evidence in Kurdistan. Based on comparison of cities, familiarity with their medicine and use of their experience in the choosing of medicine was reported by 30 of the participants were from Duhok city, 45 were from Sulaymanya city and 59 of the participants were from Howler city. The opinions of family members were the basis of choosing medicine by 8 participants from Duhok city, 20 participants from Sulaymanya city and 26 participants from Howler city. The recommendation of a pharmacist for the choosing of medicine was the basis of decisions for 64 participants from Duhok city, 478 participants from Sulaymanya city and 72 participants from Howler city. The repeating of a prescription of a medicine previously prescribed by a doctor was the answer for 46 participants from Duhok city, 73 participants from Sulaymanya city and 96 participants from Howler city. The observing of good advertisements as a basis for choosing a medicine was an answer provided by 12 participants from Sulaymanya city, 8 participants from Howler city, and 3 participants from Duhok city. A study amongst students undertaken by (Kumar, N. et al 2013), in Papua New Guinea asked them to give an indication of all the sources that led to them obtaining various medicines that they had acquired in order to self-medicate. The main

sources of medicine for use by the students for self-medication was from friends (53.8%), pharmacy shops (52.6%) and supermarkets (43.1%). Other information sources were previous prescriptions (54.5%), relatives (28.1%), friends (37.2%), and news media (13%) were the other sources of information. Promotion of self-medication was due to medicine retail shops, relatives and friends. There was an indication that students from Waigani campus had been prescribed too much medication or had not taken the prescribed medication dosage because they had been using medicines that were leftover from previous visits. A significant role in control of certain factors that promote self-medication can be played by the presence of pharmacists in all of the medicine retail outlets; this was similarly evident in Kurdistan where relatives and friends and the prescribing of too much medication within medicine retail shops and by doctors were responsible for the promotion of self-medication amongst the study participants. Self-medication was similarly practiced in all of the cities.

Hisham et al. (2015), undertook a study of Riyadh city with regard to attitudes, knowledge and perceptions of self-medication amongst consumers who attended community pharmacies. Almost half of the medications that were bought from community pharmacies by consumers and that were purchased without a prescription were actually medications that were intended for prescription-only dispensing; in addition, participants had not told the pharmacist what prescribed medication(s) were being used at home. The majority of participants, overall, had a positive attitude, poor knowledge and negative perceptions towards self-medication. It was most common for information with regard to medications to be obtained from a pharmacist and physician, and medicine pamphlets, and these were followed by family and friends and sources online.

A study by Abahussain (2005), of Kuwait, a country that neighbours Saudi Arabia, was an investigation of self-medication amongst adolescents and it noted that the primary information source regarding medications was their parents. This finding was consistent with the research findings from this study within which friends and family were found to be one of the primary sources of information with regard to medication.

In relation to education level, 104 of the participants had a diploma certificate, 20 participants had a bachelor degree and 10 of the participants had a level of education up to secondary school and they used their previous experience to inform their decisions with

regard to medicine. The opinion of family members was noted from 33 participants of secondary school education level and 21 participants at primary school education level. Answers referencing that doctors had previously prescribed a medicine and the participant had merely repeated the prescription of the doctor was noted from 65 participants who had a bachelor degree and 150 participants with a diploma certificate. A medicine recommended by a pharmacist was the basis for choosing a medicine by 125 participants with low levels of education and 89 participants who had a diploma certificate ($p = 10^{-9}$). The research demonstrated a relationship between the age, status of employment, gender, qualification and the practice of self-medication and having an income per month that was lower than 500 Iraqi Dinars (with a statistically significant association test of $p < 0.05$). It was shown that there was a greater likelihood of self-medication practice for respondents who were younger than 35 years of age. Graduates who are energetic and young, with the strength to cope with massive job demands tend to be highly practiced in self-medication. The findings showed that low levels of education and unemployment were factors influencing the seeking of advice from relatives and friends and the pharmacy prior to practicing self-medication. Also, it was noted that workers who earned less than six million Iraqi Dinars each year, which is low income in Kurdistan, were self-medicating more than workers who earned 12 million Iraqi dinars or more per year, which is a high income; such worker categories were manual workers, such as drivers, tellers, cleaners and so on, and salesmen and they are, usually, unable to afford to avail of private medical facilities and, in not being able to afford private medical services, they resort to self-medication.

Further research undertaken by Jain (2011), also is in agreement that the family medicine cabinet was a self-medication source. However, the most common sources of stocks for the household are the pharmacy, the supermarket, the chemist, friends and relatives, and clinics/hospitals. Within developing countries, it is common for antimalarials that are used for self-treatment to be sourced from village shops and vendors in the street and this may account for 50% of the distribution of antimalarial drugs; recent research undertaken in Cameroon and Nigeria is in agreement with this, with findings showing that the most common sources were the pharmacy/hospital, patent/road side dealers of medicine, native healers and local hawkers/ mobile vendors of drugs. In deciding which is the most appropriate medicine to purchase from a chemist shop, there was a reliance of people on the advice of print media, friends and family, the pharmacist, general and private medical

practitioners and the sales clerk within the chemist shop. Amongst younger people, the sources of knowledge with regard to drugs included peer group, family members and the illegal market. Within a study of secondary school level pupils in Hong Kong, the sources of knowledge were shown to be in the order that follows: members of the family, experience of illness previously, pharmacy shops, nurses or doctors, radio or television, magazines or newspapers, friends and their teachers (Jain, 2011). This was also similar to this research study, as with most other pieces of research, with the indication that the same knowledge sources are responsible for the promotion of self-medication amongst participants.

In relation to the status of employment, 121 teachers and 13 off worker participants had familiarity with their medicine and they used their experience when they came to decide upon which medicine to take. The opinions of family members were an influence upon the decision over medicines for 37 salesmen participants and 11 manual workers. Medicines were chosen according to the recommendation of pharmacists by 145 office worker participants and 69 salesmen participants, and 98 manual workers and 117 unemployed participants provided answers that referred to their doctors having prescribed the same medicine previously and they had merely been repeating the prescription of the doctor ($p = 10^{-9}$). A study undertaken by Anyanechi (2014), in Nigeria showed that participants from a lower social class had a significant association to self-medication; the main reasons given for this are time constraints for attendance at a clinic due to a work schedule that was busy, the time wasted prior to consultation and diseases not being considered serious.

The fact that most respondents had acquired information from patent medicine dealers had consistency with studies undertaken previously. As respondents got younger, however, there was a tendency for participants to rely upon other information sources such as adult members of the family, advertisements and mass media, peer groups and previous experiences of illness; potential reasons for this could be the younger participants were more easily influenced by the means listed. Most respondents acquired medications from patent medicine dealers/stores instead of from the pharmacy/hospital or local hawkers. This stands in contrast to the findings from other studies which had mentioned pharmacies, local hawkers and dealers of general medicines (0.36). A positive correlation existed between the obtaining of medications from a pharmacy or hospital and education, and a negative one between education and the obtaining of medicines from local hawkers and patent medicine stores; these findings are consistent with those of studies done previously. The findings ought not to

be surprising as respondents who are educated could feel that the pharmacies and hospitals have personnel who are trained professionally for dispensing drugs, as opposed to patent dealers of medicine who are not trained professionally. With the unrestricted and easy access to medications from pharmacies in the community, however, and the lack of advice from pharmacists, there is considerable risk for self-medication without a consultation from a provider of health care. Estimation of self-medication prevalence, and the ascertaining of reasons for it, can enable community pharmacists and policymakers in ensuring that consumers use medications safely. The most important information source for self-medication that was reported within this research was previous prescriptions which may have relationship to the reason for needing self-medication by two thirds of the participants who had experience of the same condition previously. The other key information source noted from the patients was information from community pharmacists – a result that is in agreement with the findings of previous research and that provides further evidence of the importance that community pharmacies have for the broad pervasion of the practice of self-medication within the community. This research has, similar to others, managed to reveal the importance of the roles that other members of the family and close friends play in being good sources of advice in relation to drugs used for self-medication due to their previous experience with conditions that are similar. Meanwhile, other important sources are nurses, pharmacists or physicians. Members of medical staff other than pharmacists and physicians represented the information source for a fifth of respondents because of the prevalence in all of the cities and the ease of access. Other sources which were seemingly less important included drug directions and advertising presented through mass media.

4.2.7 Insufficient knowledge of drug efficacy

In regard to drug efficacy, the majority of participants believed that foreign branding and a high price came with the implication that a drug had strength, whilst the converse applied with domestic brands and low prices which to them implied a drug was weak. Some of the participants believed that the drugs provided by public doctors or the hospital for outpatients were also weak, whilst stronger drugs were sold by private practitioners or in private drugstores. A perception also existed that drugs that were strong could quickly relieve symptoms. The majority of participants believed that drugs for injection had strength and that

patients would recover more quickly when they were in receipt of a strong drug (Le, T.H. 2011). The drugs provided by hospitals were considered weak; so, if a strong drug was desired, people would purchase it from a private pharmacy outside the hospital. Weak drugs and those that come from developing countries tend to cost less, whereas stronger, more expensive drugs tend to come from a European country.

There was also the belief that severe illnesses require drugs that are strong, i.e. drugs from a foreign country; otherwise, there was the perception that recovery can be quick if the dose is increased (Le, T.H. 2011). With regard to gender, 115 female participants and 204 male participants noted that when buying medicine, they would purchase branded medicines as they were believed they were stronger and that they could recover more quickly than if they had used cheap medicines that had come from India or China. On the other hand, 77 female participants and 127 male participants purchased medium-brand medicines that they considered were fairly priced as they could not manage to pay for the more expensive branded version though did not want to buy very cheap medicines that they perceived to be poor quality. Cheaply priced medicines were selected for purchase by 57 female participants and 68 male participants as they were not able to manage payment for the more expensive branded medicines.

With regard to city comparisons, 85 participants from Sulaymamyia city, 68 participants from Howler city and 66 participants from Duhok city noted that in buying medicine they went for branded medicine to aid in speedy recovery. Also, it was noted that 48 participants from Duhok city, 60 participants from Sulaymamyia city and 96 participants from Howler city, bought medium-branded medicine that had come from an Arabic country. Further to this, the findings showed that 33 participants from Duhok city, 21 participants from Sulaymamyia city and 71 participants from Howler city only thought about price when it came to buying medicine.

In regard to qualifications, branded medicines were bought by 146 participants who had a diploma certificate, 89 participants with a bachelor degree and by 84 participants with low levels of education as they believed that they would help them make a speedy recovery and that buying medicines that were low quality was simply a waste of money. On the other hand, 116 participants with a low level of education and 180 participants who had a diploma certificate purchased medium quality medicine as they could not manage to pay for

expensive branded medicines though they had not wished to buy very cheap medicines of low quality. However, it was also found that 81 participants with low levels of education and 44 participants who had a diploma certificate selected cheaply priced medicines as they simply could not afford to pay for medicine that was branded.

With regard to employment status, branded medicines were purchased by 88 participants who were salesmen, 145 participants who were office workers, and 80 participants who were teachers (no unemployed participants commented that they bought branded medicines). Meanwhile, 83 participants who were salesmen and 121 manual worker participants purchased medicines of medium quality, and 78 unemployed participants with a diploma and 47 participants who were salesmen chose medicines that were cheaply priced. Self-mediation was found to increase due to the combined impact of low quantities and quality of drugs available within public health facilities, as well as the large variety of branded medicines that were available in private pharmacies and drugstores. Tackling the ease with which potent drugs could be acquired is a high priority for attempts at curbing drug misuse, in particular the misuse of antibiotics; extensive improper use of drugs is a part due to the ease of access to them and so this study confirms the need for better drug control. Also, the situation is a reflection of the need for health services to be planned better in order to meet population requirements. The discrepancy that exists between what can be acquired in the private market and what has been advocated within public health facilities is considerable and shows the need for improved collaboration between the public and private sector.

4.2.8 Poor dose compliance

The study found that there were poor levels of compliance to the prescribed dosage recommended by the sellers of the drugs or medical staff. A number of consumers of medicine stated that they had a tendency to alter the medicine dose each time, with 64 participants, in fact, noting that they would change their medicine dose each time with 33 of those participants aged between 35 and 44 years of age ($p=0.04$). A total of 207 participants changed their medicine dosage with 144 of those participants being aged between 25 years and 44 years of age who believed that recovery from a disease would be speedier if the dose was increased.

With regard to city, the dose of medicine was changed every time by 127 participants from Sulaymaniya city which is larger in population than the other two cities under consideration. The study showed that 19.6% of the population did, at some time, change their medicine dosage, through either decreasing the dose due to concerns over the harmful side effects or increasing the dose if it was considered that the desired effect was not happening quickly enough.

With regard to education level, 146 participants changed the medicine dosage at some point, with 6 of those having only a primary school level of education and 100 of them having a level of education that was secondary. These findings showed that the education level did relate to the changing of medicine dosage as those who were less educated did not have much knowledge with regard to medicines and appropriate doses. Also, if at any particular time they had forgotten to take their medicine, they occasionally made compensation for this through taking a double or extra dose on another occasion.

With regard to gender, 97 male participants and 174 female participants changed their medicine doses each time; more female participants changed their dose, perhaps because they had lower knowledge in regard to dosage of medicines. Medicine dosage was changed by 120 participants who were salesmen and 145 participants who were manual workers with these population groups also being educated to a lower level with little or no knowledge of medicine dosage and, therefore, they increased medicine doses with the purpose of having a more speedy recovery. Research undertaken by Abdul-Mohsin Jassim (2010), in Basrah city in Iraq showed that education level did have a bearing upon the compliance with dosage, drug exchange and the storage of drugs that had expired. It is suggested that the medicines prescribed by the doctor are taken in line with the dosage that he or she suggested and to not take any more or less; this was because the advice was individual related to the weight, gender and age of the patient. It is clear that patients need to believe in their doctors as they are there to help and their advice is sure to enable illnesses to be combated more easily.

4.2.9 Purchasing direct from the pharmacy

The law for pharmacy practice in Iraqi Kurdistan required that all prescription medications are sold on the basis of their having to be a prescription (Lafta, J. 2011). Because of economic and political instability, however, there is loose application of the law for pharmacy practice within the region. Moreover, Kurdistan lacks a well-established system of

health care that is able to provide health service at a cost that is reasonable. As such, the situation has encouraged the establishment of health and pharmacy practices that are irrational and that, unfortunately, are encouraged by both community pharmacists and patients. Occasionally, self-medication is one of those irrational practices in the case of diseases that are seriously infectious. The sale of a broad range of medication products as OTC drugs is another practice that is irrational. In actual fact, no official and clear list of medications that are over the counter (OTC) has been issued by the Kurdistan Ministry of Health and so the door is open for community pharmacies to sell a broad range of medications as products for sale OTC.

Consequently, due to their faster and less expensive service than private or public clinics, community pharmacists have broadened the range of OTC medicines available and increased involvement in self-medication of both minor and moderate illnesses. Studies of drug utilization in Kurdistan is very rare and, moreover, no background information is available related to the practices of community pharmacies and the role they play with regard to self-medication amongst the people of Kurdistan.

With regard to the purchasing of medicine from a pharmacy directly without a prescription from a doctor, a total of 33.9% of the participants (83 females and 136 male) noted that it was a convenient way in which to buy their medicines and 20.1% of the participants bought medicines directly from a pharmacy as they believed the doctor would have prescribed the same medicine anyway so they went directly to the pharmacy in order to reduce costs. A total of 144 male participants answered that they went for the receipt of medicine quickly instead of having to wait in a long queue in order to obtain a prescription; the Fisher's exact test showed that this was below the value expected and 114 female participants responded the receipt of medicine quickly which was below the expected value and the p-value of 0.017 differs significantly from the expected value. A total of 26 male participants responded that they lacked trust in the prescriptions of the doctor because on many previous occasions they had received prescriptions that were of little or no use. Fisher's exact test demonstrated that this is greater than the expected value and the difference is significant. A total of 6 female participants did not trust the prescriptions of the doctors and this was below the expected value and significantly different. Other answers were given by 3 male participants as they did not want to listen to the ideas of the doctor. These findings are similar to a research study that was descriptive undertaken by Jassim (2010), in Basrah in southern Iraq that estimated self-

medication prevalence with regard to antimicrobial and found that 66% bought antibiotics that were acquired from private pharmacies.

4.2.10 Factors that have an influence upon self-medication

Problems from self-medication exist across the world; the practice of treating oneself with medications without having consulted a doctor can be hazardous and is a very apparent problem for public health. In developing countries such as Kurdistan, self-medication systems flourish because of a variety of socio-economic factors and issues of lifestyle. Also, if a patient has previous experience of the treatment of an illness that is similar and they have ready access to drugs, there is a greater potential for mild illnesses to be managed by self-care. The problems of self-medication do not only relate to the individual patient but also to the wider society. However, self-medication is a cheaper alternative for those who are unable to afford the clinical service costs and these contribute to self-medication spreading more widely (Phalke, 2006).

With regard to gender, 83 female participants and 136 male participants had been buying their medicines directly from the pharmacy without a prescription from the doctor as it was a convenient way in which to buy their medicine. In fact, 46 female participants and 90 male participants bought medicines directly from the pharmacy as they believed the doctor would have prescribed the same medicine and so they went for the cheaper source. A total of 114 female participants and 144 male participants responded that they preferred to receive medicine more speedily than they would have done if they had waited for a prescription in a long queue. A total of 6 female participants and 26 male participants responded that they lacked trust in the prescription of the doctors as it has often been the case that the prescriptions have been useless. A total of 3 male participants made other responses as they had not wanted to listen to the ideas of the doctors. In total, 38.5% female and 61.5% male participants partook in a self-medication practice for one of the aforementioned reasons.

In comparison to the study of Jain (2011), undertaken in India, similar reasons were found for why people practiced self-medication; for all the types of reason, the ratio of female participants was lower than that of males due to the lack of family support and the

expectation that females do the domestic housework and have less access to self-medication (Jain, 2011).

In relation to participant age, 153 participants (23.6%) aged between 24 and 45 years of age, 28 participants (4.3%) were aged under 25 years of age and 12 participants (1.9%) aged over 55 years of age bought medicines from the pharmacy directly because of it being convenient. In addition, 102 participants (15.7%) in the same age groups purchased medicines from the pharmacy directly as they believed that the doctor would prescribe the same medicine and so they went for the cheaper option. A total of 179 participants (27.6%) aged between 24 years and 45 years of age answered that they preferred receiving medicines speedily rather than having to wait for a prescription within a long queue. In addition, 19 participants (2.9%) aged between 24 years and 45 years of age stated that they lacked trust in the prescription of the doctor. So, it was shown that the majority of participants who had been taken medicines through self-medication practice were aged between 24 years and 45 years of age and the reason given for self-medicating was the receipt of medication speedily (39.85% of participants) followed by 33.8% of participants who practiced self-medication because they considered it to be convenient. These findings are similar to those in the research of Sawair FA (2009), undertaken in Jordan where, from 180 participants that practiced self-medication, a total of 66 of them were aged between 25 and 39 years of age. It is unfortunate that no data is available with regard to the practices of self-medication amongst the Kurdistan general public; this makes comparison of the extent of self-medication amongst the general public in Kurdistan to other research of the public within the region difficult.

According to the city of the study, 78 participants from Sulaymaniya, 101 participants from Howler and 40 participants from Duhok city that bought their medicines from the pharmacy directly without a prescription from the doctor because they considered it a convenient way in which to acquire the drugs they felt they needed. In addition, 26 participants from Duhok, 108 from Sulaymaniya and 2 participants from Howler had bought medicine directly from a pharmacy as they believed the doctor would have prescribed the same medicine and they preferred to save on costs. A total of 46 participants from Duhok, 80 participants from Sulaymaniya and 132 participants from Howler provided answers to indicate their preference for acquiring medicines quickly rather than waiting for a prescription in a long queue. In general, self-medication was practiced in all of the cities, however in the city of Howler,

participants cared less about the cost though showed they acted with a belief in convenience and speed when getting their medicines.

In relation to qualifications, a total of 219 participants (33.8%) who had low levels of education bought their medicines directly from pharmacies as they considered it a convenient way for acquiring medicine. In addition, 136 participants (20.9%) with low levels of education bought medicines directly from pharmacies as it helped save on costs. A total of 213 participants (32.8%) who had a high level of education bought medicines directly from a pharmacy as it helped in saving time and medicine could be received quickly instead of having to wait for a prescription in a long queue. In comparison with a study undertaken by Mogali (2015), in Yemen in 3 different hospitals, it could be seen that of the 500 participants that practiced self-medication, 262 participants had a low education level, 108 were educated to bachelor degree level, and 69 had a diploma; these findings were very similar to the results of this study (Mogali et al., 2015).

In relation to status of employment, 80 teacher participants and 124 salesman participants bought medicine from a pharmacy directly without having acquired a prescription from the doctor as they considered it a convenient way in which to buy their medicines. A total of 136 unemployed participants had been buying medicines from a pharmacy directly as it was a cost saving way in which to acquire their medicines. A total of 42 salesmen participants, 130 teacher participants and 86 manual worker participants stated that they preferred receiving medicines quickly instead of waiting to get a prescription within a long queue.

There are numerous reasons why self-medication is preferred by the Kurdish public including their perceptions of convenience, time and the illness itself, attitudes of the medical staff working in public health, poor control of the market for prescribed drugs, and the lack of sufficient supplies to public health facilities. Many of the participants stated that convenience and time were factors that had a bearing upon them self-medicating and that long waiting times had an impact. It was also shown that perceptions of the high costs involved when visiting a doctor tended to lead to self-medication.

The reasons for, extent and types of self-medication may vary from country to country which could be because of the methodologies that were used to study the issue and also because of the variety of socio-economic and demographic factors in different places.

The odds of self-medication practice being undertaken can be seen to be higher for patients which could be due to them having a lack of a medical background and, consequently, they could end up utilising numerous medications for relief of a single symptom; knowledgeable patients, on the other hand, would undertake self-medication using the right medicines from the initial time. An important role could be being played by pharmacists in helping those who are looking to self-medicate. Those people who do practice self-medication may not have an adequate amount of knowledge to make a sound judgment when selecting a drug and/or when making decisions over dosage or over how long any particular treatment ought to continue.

Within the current context in Kurdistan of an open and relatively unregulated market for pharmaceuticals, people could be encouraged to acquire any sorts of medications if they consider no barriers existing to stop them. Moreover, in explaining the existing situation, the time saved in utilising processes of self-medication could be encouraging people to directly acquire their medications without spending time and money at clinics. A further reason for self-medication is that the economics of their purchase mean that several low price medications could be acquired for the same price as prescribed medication of high cost. The higher than average consumption of medications amongst the population of Kurdistan is worthy of further investigation.

4.2.11 Inappropriate treatment durations

The study participants made replies related to drug administration (including the use of antibiotics) for two or three days with some of the patients only asking for a two single capsules of antibiotic to give them relief from the symptoms. Of the participants, 77 of them ceased to take their medicine a few days after starting them and when they felt better without them showing a wish to complete the full course of their medicine. Most of those participants were aged between 25 and 34 years ($p = 0.14$) and a total of 142 participants ceased to take their medicines after just a few days regardless of the outcomes with 61 participants aged between 35 years and 44 years of age. A total of 88 participants stopped taking their medicine following a consultation with their doctor. A total of 98 participants stopped taking their medicine when their supplies ran out whether or not they had completed the course of them and most of these were aged between 25 years and 34 years of age.

A total of 126 participants stopped taking medicine once the symptoms had disappeared and, in fact, only 79 participants completed their medicine course. A total of 38 participants ceased taking a medication if they felt better and they have decided that no more medicine is necessary. Most of the participants within the age group of 25 years of age to 44 years of age did complete their courses of medicine. In a study undertaken by Omolase (2007), in Nigeria, it was considered that various human behaviours such as indiscriminate drug use, incompleteness of courses of drugs and inadequate dosing have contributed to resistance to certain drugs spreading through the country.

Similar to the participants in this study, people buy doses of medicine that are inadequate and the majority of participants do not complete their medication courses and these factors amongst the population have a bearing on the spread of resistance to antibiotics. One of the primary reasons for people not completing the full antibiotic course was not one of economic constraint but the poor knowledge that the purchaser has about antibiotics. Analysis indicated that length of symptom, age and the type of treatment that was used previously could all be employed as variables that were predictive with regard to decision over the purchase of antibiotics instead of alternatives. Antibiotics tend to be used if an illness has lasted over a week and no medicine has been taken up to that point.

In general, the participants in all three of the cities being studied were not taking medicines on a regular basis; a total of 77 participants stopped taking medications just a few days after starting once they felt better. There seemed to be a lack of care with regard to finishing an entire course of medicine, with 43 participants from Howler and 26 from Dohuk ($p=0.000000001$), as well as 8 participants from Sulaymaniya. A total of 142 participants stopped taking medicines after a few days regardless of the results they were having with most of these people being from Sulaymaniya city. A total of 98 participants stopped taking medicines once they had run out, whether or not the course had been completed or not, with 19 participants from Sulaymaniya city, 33 participants from Duhok and 46 participants from Howler. A total of 224 participants stopped taking medicines after the symptoms disappeared with only 79 participants completing their courses of medicine, and most of these were from Sulaymaniya city. A total of 38 participants stopped taking medicines when they felt improved and they thought that they did not need any more medicine, and therefore stopped taking them; most of these people were from Duhok and none of them were from Sulaymaniya. In total, 266 participants from Sulaymania city, 211 participants from Howler

city, and 111 participants from Duhok stated that they wouldn't have completed a course. So, it was shown that participants within all of the cities would not take medicines for the appropriate course duration and, within the population of Kurdistan, if symptoms have disappeared, people stop taking their medicines regardless of the outcome and results.

In relation to the education level, 235 of the participants who were educated to primary school level ($p = 10^{-9}$) and 115 participants who had education to secondary school level would not complete their course of medicine which shows, then, a relationship between education level and completion of courses of medicine. The data findings show there are important misconceptions amongst members of the public with regard to antibiotics, with participants with a lower education level being drug users who were misinformed with possibly incorrect knowledge about health.

The results of this study show that, whilst there are inappropriate attitudes and poor knowledge within the Kurdish community, a lack of awareness of the issue of antibiotic resistance, and the adverse effects of it, are a problem for everyone who participated within the survey. This shows that the majority of people still are not completely aware that excessive antibiotic use has an association to serious risk for individuals and the entire ecosystem. This finding was also confirmed by the sellers of the drugs who noted that it is often the case that patients buy only one or two days' worth of drugs – just enough to get better to the point where the symptoms have disappeared and then they would stop taking the medication in question with the belief that the drugs had been effective and that they had fully recovered because the symptoms could no longer be seen. Many of the drug sellers advised the patients to take at least 3 days' worth of drugs; however, in reality, lots of people purchase only one day's worth of drugs and they will cease to take any more if they improve and could buy more if they had not improved. This reality was mentioned by both the pharmacist and another seller of drugs; patients take medicine for perhaps one or two days and if they have not recovered then they may switch to taking another kind of drug. Some patients, for instance, had, over the course of 5 days, already taken 2 or 3 different types of drugs for their condition.

These studies of the Kurdistan population have shown that even younger people are at risk of some of the problems from practicing self-medication and this shows the need for an emphasis to be placed on the creation of awareness of the issue. Inappropriate practice with

regard to medicine is the case for all groups where unsafe practice can occur with medicines such as antibiotics in particular. There could be increased risk of use that is inappropriate and resistant bacteria may develop with self-medication using antibiotics. In general, there is the implication, from the association between self-medication and prescribed use, that antibiotics that have been prescribed for one particular disease/symptom could be used for self-medication for both other disease(s)/symptom(s) and for (repeated) episodes of the same disease/symptom as previously.

It could be hypothesized that respondents that had a low level of education had less awareness of the potential consequences of repeating the prescriptions of doctors for another disease or symptom or even for the same disease or symptom. This finding was confirmed as well by the sellers of drugs who made the observation that drugs are often bought by patients for use for one or two days in order to feel better though stopping to take the drug once symptoms disappeared. There was the belief that drugs had had an effect and with disappearance of the symptoms there had been recovery; this was the case even though many drug sellers had advised patients that the drugs in question ought to be taken for 3 days or more. However, with an expectation or hope for improvement within a day, many buy just one day's worth of drugs with the potential to buy more later on if necessary. The pharmacist and other drug seller mentioned this situation of patients taking medicine for only one or two days, with patients wanting to change to use of another drug if they don't feel better. Some patients, for instance, had already, over the course of five days, taken 2 or 3 different kinds of drugs. This research about the population in Kurdistan demonstrates the fact that even the young are at risk of problems associated with the practices surrounding medication, and this places emphasis on the need for the creation of awareness of the issues involved. Increased inappropriateness of medicine practice is evident in all groups where there has been unsafe practice such as, in particular, with antibiotics. All diseases have their peculiarities that we ought not to make guessing about alone. Sometimes, the external symptoms do not give enough clues for doctors to make a definitive judgment, in which case a test in the medical laboratory provides the help needed. Doctors are more able to then make a conclusion as to the disease that a patient is suffering from and a better diagnosis can be made. A doctor can then prescribe a medicine accordingly, however, in Kurdistan, PHCCs are overcrowded and this can prevent a physician from having enough time to provide patients with adequate quality of care. Doctors are set to attend to patients between the hours of 09:00 and 11:00 and

they are only able to give 2 minutes to each of them due to the overcrowding and because patients always seem to be impatient and in a hurry and do not wish to wait long. The overcrowding is due, in part, to the low fees for the consultation charged by the PHCC (250 Iraqi Dinars, equivalent to 20 US cents) which encourages repeated visits. Also, patients look to have care that is not required and can be irrational. PHCC overcrowding is one of the reasons for the high level of self-medication in Kurdistan with patient deciding to go directly to the pharmacy to get their medications. An increase to the fees to a level of one or two thousand Iraqi Dinars for each consultation could help bring about a reduction in the number of unnecessary visits and to a lowering of the degree of irrational service use. Some participants, however, could be concerned about the introduction of greater, initial fees as this may lead to certain patients, particularly the uneducated and poor, hesitate from making a visit to the PHCC. Also some patients may remain unaware of the seriousness of the illness that they are carrying or could turn to strategies for health seeking that are inappropriate for them, such as visiting nurse clinics that are private. Another factor with regard to self-medication and inappropriate medicine usage within Kurdistan could be the high number of sellers of drugs, including the private clinics. Many nurses and medical assistants have opened clinics where all kinds of medicines are prescribed including the sorts that can have serious side effects or lead to addiction. Whilst respect is given for the longevity of their experience, it is considered there ought to be a restriction on the types of medicines that these health workers prescribe. A further issue that was noted was that patients may take several types of drugs at the same time in order to try and get rapid relief from their symptoms. Whilst a flu epidemic was occurring, patients sought several kinds of drugs and combinations of injections and these were provided by medical assistants at the drug selling location.

4.2.12 Reasons for irrational drug use

- a) Lack of information. There are no regular facilities providing unbiased, up-to-date information on current drugs within the country, as would be the case in many other developed countries;
- b) Inadequate and defective education and training of medical graduates. During the period of training, there is a lack of proper clinical training with regard to writing out

- prescriptions. There is a day to day increase amongst doctors in dependency on diagnostic aids rather than clinical diagnosis;
- c) Poor communication between patients and health professionals. Medical practitioners and other types of health professional have been giving less time to patients and failing to explain basic information about drug use;
 - d) Diagnostic uncertainty/lack of diagnostic facilities. The provision of correct diagnosis is a vital step on the path towards rational drug therapy;
 - e) Patient demands. In order for patient expectations to be satisfied in the context of demands for quick relief, clinicians have been prescribing drugs for all complaints;
 - f) Ineffective regulation of drugs and defective system of drug supply. There is an absence of a drug regulatory authority that is well-organised. Also, the presence of a large number of different drugs within the market leads to them being used irrationally;
 - g) The activities for promotion undertaken by the pharmaceutical industry. Drug prescribing is influenced by various pharmaceutical industries aiming to capitalise on lucrative promotional programmes.

The medicines that patients are supplied with in PHCCs often are only sufficient for a day or two rather than covering a full course of treatment; this can be the case if there was a need for 5 or 7 days of treatment, for example. The main reason for prescribing an insufficient quantity of medicine is the unavailability or shortage of medicines. However, there is also inappropriate prescribing of medicines and patients are encouraged to purchase their own medicines from the pharmacy directly rather than waiting at a PHCC for perhaps 4 hours; medicines are available only within the first 2 hours, so patients would go back home without having received treatment and feel obliged to prescribe self-medication from somewhere away from the PHCC. Some of the drugs that are available at PHCCs is of poor quality and, in not functioning well, can be of little real benefit to the patients. The reasons for the poor quality can be considered to be down to a poor standard of quality control and storage conditions that are poor due to, in the main, a lack of a continuous supply of electricity which is particularly significant when the weather is hot.

CHAPTER 5: CONCLUSIONS

5.1 Conclusions

This study has shown that self-medication practice is widespread within Kurdistan. The type of symptoms or illnesses that were reported, and also the type of drugs that were requested for use through self-medication were very broad; moreover, the illnesses reported were not solely limited to minor ones, and POM medicines were found to also be available as medicines that were OTC. In relation to the sale of antibiotics, one third of patients were given doses that were sub-therapeutic. Others involved the purchase of antibiotics without there being any clear symptoms or signs of bacterial infection.

Self-medication is practiced by participants from all socio-demographic classes, with the most common illnesses or illness symptoms that were self-diagnosed being cold/infection/fever/headache. The reasons that respondents gave for self-medication and self-diagnosis were prior experience of the illness, the perception that such illnesses were not serious, and also in instances of emergency. Patients switched medications because of low level of knowledge, patients purchasing just few capsules for symptoms disappearing, many patients using pharmacies as a health facility, pharmacists not advising customers, patients purchasing direct from pharmacy in view of easy, fast, and cost-saving considerations, and also that they believe that their doctors prescribe the same medicines, with very poor communication between patients and health professionals, and ineffective regulation and drug dispensing policies (they appeared not to care about antibiotic resistance and drug interactions). Moreover, there is a requirement for standards for professionals in the field of pharmacy, and these are required to be maintained when providing education and counseling related to health and/or drug use. This study does highlight the poor attitude that community pharmacists had in relation to participation in such research; this attitude was given emphasis by responses to the identification of the OTC and POM status of the groups of drugs selected. The outcome of this research appears to suggest that inappropriate medicine use within Kurdistan can, in part, be ascribable to the manner in which community pharmacies operate. Still, there is a major need for delimitation of the type of illnesses that can be self-diagnosed and treated by self-medication, and also the establishment of limits for the class of products that can be used. It was also found that there was an inadequate knowledge of drugs amongst consumers. Moreover, even when self-medication is appropriate, there is a need for

counseling suited to the treatment and drug actions, and provided by the healthcare provider and/or pharmacist, that is both complete and objective.

5.2 Recommendations:

1- There is a major requirement for a vigorous enforcement of the existing pharmacy regulations; whilst these regulations may be imperfect, the provision of an ethical and professional service can be attained through a primary strict adherence to the law as it stands. As such, adherence should occur immediately. However, there are two vital elements that have to be in place in order to guarantee the effectiveness of this recommendation, i.e. the inspectorate has to be strengthened, and the public has to be informed. With regard to making the inspectorate stronger, there will need to be enlargement of teams within all of the Kurdistan regions, with employment of additional personnel that are suitably qualified. Instituting a suitable continuing education programme by the Ministry of Health will therefore serve as a crucial element of such a strategy, and this would enhance the skills of inspectors, and also help to ensure that they have up-to-date knowledge of the field. Such an approach would make a critical difference to ensuring that such inspectors were effective in their role of ensuring that pharmacy regulations were enforced. A consequence of this would be manifold for healthcare sectors, with community pharmacies forced to amend their business approaches and exert a more professional orientation. With regard to informing the public, there is no doubt that subjects must have a valid prescription in order for a POM to be obtained directly from a pharmacy. There also has to be an understanding that such a requirement applies to both drugs for therapies that are short-term, and also for medications for longer-term therapies, such as repeat prescriptions for diseases that are chronic (i.e. diabetes and hypertension). With the public having to understand that a prescription is a compulsory prerequisite to the purchase of a POM, the onus would then be upon the pharmacists and physicians to inform the public of this law enforcement subsequently. Clearly, there would be increased impact upon primary healthcare services if the public seek out consultations with physicians when they consider that a POM is required; this, in turn, would lead to staffing implications, since more manpower would be required at the primary healthcare level;

2- Governmental consideration should be focused upon speeding the recruitment within community pharmacies of Kurdish students who are trained to be pharmacists rather than just assistants to them, i.e. those who have acquired the Diploma in Health Institution;

3- In order to achieve the full potential of public health services and healthcare so that it is commensurate with the demands of the twenty-first century, an international commission is required to be established for the review of all aspects of pharmacy practices in Kurdistan. Accordingly, the commission should pay particular attention to the ‘peculiarities’ of Kurdish culture, and make recommendations so that the pharmaceutical profession can be appropriately reshaped. Such a commission must have both national and international representation so that there is a high level of knowledge and expertise with regard to best practices. In this manner, knowledge of pharmaceutical management can be shared with those that shape opinion within the nation. Indeed, armed with a robust national plan for pharmacy, i.e. one that takes a full account of Kurdish culture and traditions, Kurdistan would be better prepared to face the pressures and challenges for modern healthcare;

4- The MOH must have an established computerised system for maintaining records of controlled drugs. In order to achieve this, the manner in which hospital pharmacists report information to the MOH on a quarterly basis has to be standardised. It is also recommended that the governmental and other related authorities should use stronger regulations for the dispensing of drugs, and to discourage drug ‘hawking’ within the country without appropriate licensing for operation;

5- There is a major requirement for the formulation of strategies and the enforcement of policies that act for prevention of the supply by pharmacies of medicines without an appropriate prescription. It is also recommended that more research should to be undertaken on self-medication processes occurring in Kurdistan.

5.3 Final note

There is the intention to present the thesis to the Minister of Health for Kurdistan for consideration by officials. It is hoped that this research can be a valuable resource for the Ministry to aid in the beneficial transformation of Kurdistan society through employment of the skills and talents of its pharmacists.

5.4 Limitations of the Study

All studies have their limitations, and it is important that they are considered when conclusions are drawn from the findings that have been put forward. For this research, the study limitations are now considered. Firstly, this study was limited in relation to the method of data collection; whilst the sample from which the data hailed was relatively large, the study design of a cross-sectional nature was limiting, along with the technique of convenience sampling. A consequence of these effects was that the sample selected may not have been entirely representative of the population of the study. Only people who had visited the clinic during the time of the research were included within the sample; the implications of this was that a patient who was unable to attend the clinic for any particular reason was not included, and subsequently, insights from their experience of the practice of medicine, which may have been different from those who were included, did not form part of the study. Hence, there ought to be further efforts made to include under-represented target groups within further research studies.

Moreover, since questionnaires were distributed while patients were in pharmacies or clinics waiting to be seen by a doctor, or attended to by a member of staff, data accuracy may have been affected by feelings of being in a rush, feelings of anxiety and/or feeling of tiredness. A further study limitation was the apparent lack of knowledge of the respondents, with many of the participants of the study having low levels of literacy, and this may have led to some of the responses to the questionnaire being written incorrectly. It was indeed apparent that many study participants had a limited level of education, and/or were elderly; however, any problems that arose in view of these reasons may have been minimised by the high rate of response to the study.

A second study limitation arises from the process of interviewing. Indeed, numerous constraints affected the work of the researcher with regard to acquiring information and having access to interview participants. In general, more democratic settings lend themselves to qualitative methods of research, and it well known that within the KRG region, especially in relation to health sciences, there is a degree of under-development. With such a system that is very restricted, there may be difficulty in speaking openly, and a lack of willingness to participate within a study in view of the realities and/or perceptions of political repression. Suspicion and mistrust could affect the process of interviewing, as well as the lack of familiarity with such research methods and/or a low level of education amongst the potential participants (Clark, 2006).

There are at least two clear reasons why it has not been common for interview methods to be employed within Kurdistan. Firstly, feeling free to describe personal history, express personal views and being open to strangers are particular cultural stand-points that are lacking within Kurdistan. Moreover, qualitative research methods do not generate a great deal of interest within the region. Also, many quantitative research related to chronic diseases has hailed from the fields of nursing, social psychology, sociology or anthropology, and these have not been well-established within Kurdistan. A further factor is that the medical profession has great political power in relation to the study of disease and health, and such dominance engenders the preference for quantitative methods predominating. In terms of cultural matters, there was an overall sense that people were reluctant to be involved with the research. For example, of 45 individuals who had agreed to be participants, only 28 of them were subsequently interviewed. Furthermore, even though interviewees tended to give information that was useful, a number of participants provided responses that were very short, and so the style of the interviews became more like a form of face-to-face questionnaire. This, in part, could be attributable to cultural reasons, and also a lack of experience on the part of the researcher in dealing with such situations.

Another limitation of qualitative methods is that results cannot be generalised to the population at large; since this study was undertaken within urban cities, the findings may not have complete relevance for those living in rural areas of Kurdistan. Since the research is founded and based on a questionnaire that was self-administered, presented data arises from recollection of the memory of the respondents, and hence, in some if not all cases, there is quite a high degree of subjectivity. Another potential limitation of the research is that there

was an uneven distribution of lowly and highly educated respondents. Also, only a small proportion of the participants were aged over 60 years of age.

5.5 Recommended future research areas

It has often the case that any effective strategy of research work ought to raise more questions than it manages to answer. Up till now, there has been little investigation into the reasons that lie behind the practices of self-medication, and there have been few studies into the knowledge that consumers have about drugs. Since there is a large potential area of research that is currently under-emphasised, the following suggestions/questions are put forward for potential areas for the undertaking of valuable future research: -

- i) When and why do the consumers of drugs self-medicate in the manner that they do?
Are the drugs that have been obtained being used properly by the self-medicating consumers of these drugs? Why is it that those people who are self-medicating are doing so rather than seeking out more formal types of health service?
- ii) How is self-diagnosis promoted? What is the level of knowledge of the participants or staff within the health system? How can forms of self-medication that are responsible be achieved?
- iii) Is there satisfaction amongst the consumers of drugs with regard to the health service in general and the services received from community pharmacies in particular? If consumers are not satisfied, how does their dissatisfaction arise?
- iv) Do professionals working in pharmacies live up to the expectation of clients/customers?
- v) There should be research into interventions research within various areas related to practices of self-medication and the knowledge that consumers have of drugs;
- vi) Educational materials are required to be prepared for both healthcare providers and the public, in order to provide encouragement for appropriate and proper drug use,

and also to foster encouragement for practices of self-medication that are responsible;

- vii) Further research ought to be undertaken into the role that social support and culture plays on self-medication practice within the various regions of Kurdistan;
- viii) In order to improve the healthcare service, there ought to be further qualitative studies for examination of self-medication practice that involves healthcare providers and the associated health authorities;
- ix) There is a major requirement for further study of issues of medical errors within the hospitals of Kurdistan;
- x) Suggested study outcomes are that there is potential for more research in the future into possible impacts from self-medication if used as an appropriate form of health seeking behaviour and/or a strategy for managing disease;
- xi) Future research into self-medication would be extremely valuable if it investigated self-medication in rural areas and made comparisons with the urban localities of Kurdistan.

References:

Abahussain, E., Matowe, L.K. and Nicholls, P.J. (2005). Self-reported medication use among adolescents in Kuwait, *Med Princ Pract.* 2005:14: 161–164.

Abahussain, E., Matowe, L.K. and Nicholls, P.J. (2005). Self-reported medication use among adolescents in Kuwait, *Med Princ Pract.* 2005:14: 161–164.

Abasaeed, A., Vlcek, J., Abuelkhair, M., Kubena, A.,(2009). Self-medication with antibiotics by the community of Abu Dhabi Emirate, United Arab Emirates. *J Infect Dev Ctries;* 3 (7):491-497

Abay S, Amelo W. (2010). Assessment of self-medication practices among medical, pharmacy, and health science students in Gondar University, Ethiopia. *J Young Pharmacists;* 2(3): 306-310.

Abdelmoneem Aawad, Idris Ellayeb, Liyod Malowe (2005). Self-medication with antibiotics and anti-malarial *Journal of pharmaceutical science.* 2005; 8(2): p.326-331.

Abdelmonein, S.A., Eman, R. and Hussain, A. (2008). Self-medication practices among Diabetic patients in Kuwait. *Medical principles and practices.* 17: 315-320.

Abdul-Mohsin Jassim (2010). In-home Drug Storage and Self-medication with Antimicrobial Drugs in Basrah, Iraq. *OMJ,* 2010; 25: p.79-87.

AESI (1998). Association of the European Self-medication Industry (AESGP). Non-prescribed medicines: definition and classification, May 1998.

Akhtiar Zebari (2013). Modernization of drug distribution in Kurdistan Is it possible to implement the Swedish drug distribution system in Kurdistan? Report passed: April 18, 2013

Al Hilfy, T. (2007). Towards quality and accreditation in health professions education in Iraq. Middle East Journal of Family Medicine 2007; 5:3-7

Al Hilfy, T. (2007). Towards quality and accreditation in health professions education in Iraq. Middle East Journal of Family Medicine 2007; 5:3-7.

Ali Azeez Al-Jumaili, Saad Abdulrahman Hussain, (2013). Pharmacy in Iraq: History, current status, and future directions Ali Azeez Al-Jumaili, Saad Abdulrahman Hussain, . 2013 Am J Health-Syst Pharm; 70:368-72

Ali et al (2012). Self-medication practices among health care professionals in a private university, Malaysia. International Current Pharmaceutical Journal, 1 (10). 302-310

Al-Jumaili, A.A., Hussain, S.A. and Sorofman, B. (2013). Pharmacy in Iraq: History, current status, and future directions. Am J Health-Syst Pharm.; 70:368-72.

Almalak, H., Albluwi, A.A.I., Alkheib, D.A., Alsaleh, H.M., Khan, T.M. et al. (2014). Students' attitude toward use of over the counter medicines during exams in Saudi Arabia. Saudi Pharmaceutical Journal, 22: 107-112.

Almasdy, D. and Sharrif, A. (2011). Self-medication practice with non-prescription medication among university students; a review of literature. Archives of pharmacy practices.2011; 2(3): 95-100.

Anderson JAD, Buck C, Danacher H, Fry D (1997). Users and non- users of doctors implication for the self-care. JRCGP. 1977; 27: p.155-159.

Angeles-Chimal P, Medina-Flores ML, Molina-Rodriguez JF(1992). Selfmedication in a urban population of Cuernavaca, Morelos Salud Publica Mex. Sep-Oct;34(5):554 61.

Anyanechi, C.E. and Saheeb, B.D. (2014). Toothache and self-medication practices: A study of patients attending a Niger delta tertiary hospital in Nigeria 2014, Annals of Medical and Health Sciences Research, Volume 4 issue 4 page 884-888

Appleton, J., V. (2009). Starting a New Research Project in: Neale, J. (ed) Research methods for health and social care. New York: Palgrave Macmillan.

Appleton, J., V. (2009). Starting a New Research Project in: Neale, J. (ed) Research methods for health and social care. New York: Palgrave Macmillan.

Aris, Windayati (2013). Self- medication with antibiotics in Yogyakarta city, Indonesia: a cross-sectional population-based survey, BMC Research Notes, May 2013, Faculty of Health Science.

Ary, D., Jacobs, L., Razavieh, A., & Sorenson, C. (2009). Introduction to research in education. USA: Wadsworth Pub Co.

Atohengen, Q. (2013). Doctors Warn on Self Medication for Headaches. (PM News, September 23, 2013). Available at file:///G:/Doctor warns on self-medication for headaches.

Bawazir S. A. (1992). Prescription pattern of community pharmacies in Saudi Arabia. *International Pharm J*, 6: 222-223.

Berg, B. L. (2001). *Qualitative research methods for the social sciences* Bosto: Allyn and Bacon.

Berg, B. L. (2007). *Qualitative research methods for the social sciences*. New York, USA: Pearson Education Inc.

Betsy S., Kayode K., Olumuyiwa O., (2001). Physician-Patient Communication about Over-the-Counter medicines. *Soc. Sci. Med.* 2001; 53(3): 357-369.

Black, T. R. (1999). *Doing quantitative research in social science: An integrated approach to research design, measurement and statistics*. Sage Publications Ltd.

Blenkinsopp A. and Bradley C. (1996). Over the counter drugs. Patients, society and the increase in self medication. *BrMedJ*, 312: 629-32.

Bond CM. and Grimshaw JM. (1995). Dyspepsia guidelines for "over the counter advice" in community pharmacies: a case study of guideline development. *Health Bulletin*; 53: 26-33.

Bowling, A.(2002). *Research methods in health*. PA, USA: Open University Press Philadelphia.

Bowling, A.(2009). *Research methods in health. Investigating health and health service*. *Public health* 124, 122-122.

Bryman, A. (1998). Quantitative and qualitative research strategies in knowing the social world. *Knowing the social world*, 138-156.

Bryman, A. (2008). Why do researcher integrate/combine/mesh/blend/mix/merge/fuse Quantitative and qualitative research. *Advanced in mixed methods research*, 87- 100.

Burnard, P.(1991). A method of analysing interview transcripts in qualitative research. *Nurse Eadu Today*, 11, 461-6.

Burton, N. (2012). Mental Illness: Preventing a Relapse. Available at: <http://m.psychologytoday.com/blog/hide-and- seek/201210/mental-ipreventing-relapse>

Caulin, C., and Crazz, H (2000). Self-medication: is Regulation Needed...from Whom. *Therapie* 2000; 55(4): 547-553.

Chalker, J., (2001). Improving antibiotic prescribing in Hai Phong Province, Viet Nam: he "antibiotic-dose" indicator. *Bulletin of the World Health Organization*, 79(4).

Chambers, C.T., Reid, G.J., McGrath, P.J., and Finley, G.A. (1997). Self-medication of Over-the- Counter Medication for Pain Among Adolescents. *Arch. Pediatr. Adolesc. Med.* 1997; 151(5): 449-455.

Cindy L.K. Lam, Maxwell H.W.(1989). A study on practice of self-medication . *June 1989*; 11(6): p.272-286.

Clark, P. (2003). Towards a greater understanding of the experience of stroke: Integrating quantitative and qualitative methods. *Journal of Aging studies*, 17 171-178.

Clarke, P. (2003). Towards a greater understanding of the experience of stroke: Integrating quantitative and qualitative methods. *Journal of Aging studies*, 17 171-178.

Collingsworth, S., Gould, D., and Wainwright S.P.(1997). Patient Self-administration of Medication: A Review of the Literature. In. *J. Nurs. Stud.* 1997; 34(4): 256-69

Coombes, L., Allen, D., Humphery D., & Neale J. (2009). In-depth Interview. In: Neale, J. (ed) *Research methods for health and social care*. New York: Palgrave Macmillan.

Cresswell, J.W. & Clark, V. L. P. (2007). *Designing and conducting mixed method research*. online Library.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among traditions*. Thousand Oaks, CA: Sage.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches*. Thousand Oaks, CA: London: Sage Publications, Inc.

Creswell, J. W. Plano Clark, V . L., Gutmann, M. L. & Hanson, W. E. (2003). Advanced mixed methods research designs. *Handbook of mixed methods in social and behavioural research*, 209-240.

Creswell, J. W. Plano Clark, V . L., Gutmann, M. L. & Hanson, W. E. (2003). Advanced mixed methods research designs. *Handbook of mixed methods in social and behavioural research*, 209-240.

Cruz, A.M., Bravo J., and Rojas V. (1999). Knowledge, Belief, and Practices Related to Acute Respiratory Infections in Adults over 65 years old. *Cad. Saude. Publica.* 1999; 15(14): 851-857.

Dawson, C (2009) introduction to research methods: A practical guide for anyone undertaking a research project; Oxford; how to book limited.

Denscombe, M. (2007). The good research guide: for small-scale research projects. New York Open University Press

Dimatteo, M. R. (2004). Variations in Patients Adherence to Medical Recommendations: Quantitative Review of 50 Years of Research. Medical care 42 200-209.

Dr Jenny Keen (1991). Department of Health London. The New Department of Health Clinical Guidelines for Drug Misuse and Dependence.

Drife JO. (1993). Deregulating emergency contraception Br.Med J, 307:6 95-6.

DuY, K. H. (2009). Self-medication among children and adolescents in Germany: results of the National Health Survey for children and adolescents. BJMP. 2009; 68(4):599-608. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19843063>

Elo, S. & Kyngas, H. (2008). The qualitative content analysis process. J Adv Nurse, 62, 107-15.

Fields, Richard. (2004). Drugs in Perspective: A Personalized Look at Substance Use and Abuse.

Finding, K. E. Y. (2003). Poor adherence to long term treatment of chronic disease is a worldwide problem. 2003. Rev Panam Salud Publica, 14 218-21.

Fournier JC, DeRubeis RJ, Shelton RC, Gallop R, Amsterdam JD, Hollon SD(2008). Antidepressant medications v. cognitive therapy in people with depression with or without personality disorder. British Journal of Psychiatry. 2008;192:124–129.

Ghosh, S.(2010). Evaluation of the practice of self-medication among college students in west Uttar Pradesh. *International Journal of Pharma Professional's Research*, 1 (1). 14-18. 2010.

Gloria Molina, (2003). L. A. County Board Of Supervisors: First District, Yvonne Brathwaite Burke, Second District; Zev Yaroslavsky, Third District; Don Knabe, Fourth District; Michael D. Antonovich, Fifth District 2003 (Antibiotic Misuse)
[Http://PublicHealth.Lacounty.Gov/Acd/Docs/Lahealth092003_Antib.Pdf](http://PublicHealth.Lacounty.Gov/Acd/Docs/Lahealth092003_Antib.Pdf)

Gore, P.R. and Mahavan S. (1994). Consumers' Preference and Willingness to Pay for Pharmacist Counselling for Non-prescription Medicines. *Journal of Clinical Pharmacy and Therapeutics*; 19(1): 17-25.

Gore, P.R. and Mahavan S.(1994). Consumers' Preference and Willingness to Pay for Pharmacist Counselling for Non-prescription Medicines. *Journal of Clinical Pharmacy and Therapeutics*; 1994; 19(1): 17-25.

Green, J. & Thorogood, N. (2004). *Quantitative methods for health research*. London: Sage Publications Ltd.

Grinnell, R. M. & Unrau, Y. A (2008). *Social work research and evaluation: Foundations of evidence-based practice*. New York: Oxford University Press.

Hardon, A., Boonmongkon, P., Dtreefland, P., Tan, M., Hongvivatana, T., Van der Geest, S. & Van staa, A. (2001). *Applied health research manual: anthropology of health and healthcare*. Netherlands: Het Spinhuis.

Hisham Aljadhey, PharmD, PhD, Ghada A. Assiri, B.Pharm, MSc, Mansour A. Mahmoud, B.Pharm, MSc, Sinaa Al-Aqeel, MSC, PhD, and Michael Murray, PharmD, MPH (2015). Self-medication in Central Saudi Arabia 2015; 36(3): 328–334.

Hsieh, H. F. & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qual Health Res*, 15 1277-88.

Hsieh, H. F.& Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qual Health Res*, 15 1277-88.

Huges, C.M., McElnay, J.C, and Fleming G.F.(2001). Benefits and Risks of Self-medication. *Drug Saf.* 2001; 24(14): 1027-1037

Hughes, C.M., McElnay, J.C., and Fleming, G.F. (2001). Benefits and risks of self medication. *Drug Safety*, 24 (14). 1027-1037.

Hughes, G. F.,McElnay, J. C., Hughes, C. M.,McKenna, P. (1999). Abuse/misuse of nonprescription drugs. *Pharmacy World & Science*, 21:251–255.

Iihara, N., Miki, K., Takbatake, K., Takenaka, C., Medication Tsukamoto, T., and Morita, S (2000). Analysis of Factors Influencing the Self-medication of and Construction of Educational Program for Patients with Chronic Hepatitis. *Yakugaku Zasshi* 2000; 120(7): 644-651.

Inas R. Ibrahim (2012). Self medication practice in Baghdad, Iraq by *Australasian Medical Journal* [AMJ 2012, 5, 11, 600-602]

Ivankova, N. V. & Stick, S. L. (2006). Students Persistence in a Distributed Doctoral Program in Educational Leadership in Higher Education: A mixed Methods Study. *Research in Higher Education*, 48 93-135.

Iversen L, Mollison J, MacLeod T (2001). Attitudes of the general public to the expanding role of community pharmacists: a pilot study. *Family Practice*; 18:534-536.

Jadhav, S.P., Nikam, K., Gandhi, A., Salunkhe, K. and Shinde, N. (2012). Applications of computer science in Pharmacy: An overview. *Natl J Physiol Pharm Pharmacol*.2012;2(1):pp1-9

Jain S. (2011). Concept of Self Medication: A Review. International Journal of Pharmaceutical & Biological Archive; 2(3): 831-836.

Jaquier, F., Buclin, T., and Diezi, J. (1998). Self-medication by the Adolescent. Schweiz Med. Wochenschr.; 128(6): 203-207.

Jasim, A. L. and Taher, T. A. (2014). Self Medication Practice among Iraqi Patients in Baghdad City. American Journal of Pharmacological Sciences 2.1 (2014): 18-23. Fadhil, and Salam S.

Johnson, R. B. & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. Educational researcher.

Kaushal J, Gupta MC, Jindal P, Verma S. (2012). Self-medication patterns and drug use behavior of housewives belonging to the middle income group in a city in Northern India. Indian J Community Med 2012;37:16-9.

Krishnan, H.S., and Schaefer, M. (2000). Evaluation of the Impact of Pharmacist's Advice Giving on the Outcome of Self-medication in Patients Suffering from Dyspepsia. Pharm World Sci 2000; 22(3): 102-108.

Kriss Ren Varghese (2010). "A study to assess the effectiveness of structured teaching programme on adverse effect of selected self medication among nursing and non-nursing students in selected colleges, bangalore". Fortis institute of nursing, bangalore.

Kumar N, Kanchan T, Unnikrishnan B, Rekha T, Mithra P, Kulkarni V, et al (2013). Perceptions and practices of self-medication among medical students in coastal South India. PLoS One 2013;8:e72247.

Kushida, K. (1998). The Current Situation Surrounding Pharmacies and Pharmacists. Gan.To..Kaga.k Ryoho. 1998; 25 Suppl 4: 572-575.

Lafta, J. Z. (2011). Iraqi pharmaceutical country profile The Chief Pharmacist Pharmacist
Jamila Z. Lafta, Baghdad, Iraq

Lau, J.T., Yu, A., Cheung, J.C. and Leung, S.S (2000). Studies on Common Illness and
Medical Care Utilization Patterns of Adolescents. *J. Adolesc Health* 2000; 27(6): 443-452.

Laure P.(1998) Investigation on self-medication: from disease to performance. *Therapie*
1998; 53(2): 127-135.

Laurie, J. P. (1989). In the Shadow of Biomedical self-medication in two Ecuadorian
Pharmacies. *Soc. Sci. Med.* 1989; 28(9): 905-915.

Le , T.H., Ottosson, E., Nguyen, T.K.C., Kim, B.G. and Allebeck, P. (2011). Drug use and
self-medication among children with respiratory illness or diarrhea in a rural district in
Vietnam: a qualitative study, *J Multidiscip Healthc.* 2011; 4: 329–336

Llanes de Torres R, Argon Pena A, Sillero Quintan M.I, and Martin Rios M.D.(2000). Go to
the Health Centre or go to the Drug Store? Pharmacy Offices as a Primary Care Resource.
Aten. Primaria 2000; 26(1): 11-5.

Mack, N., Woodson, C. M., MacQueen, K.M., & Namey, E. (2005). Qualitative research
methods: A data collectors field guide. Research Triangle Park, NC: Family Health
International.

Mamdouh Abdullah Hashim Yamany; (2000). Aspect of drug misuse in the kingdom of
Saudi arabia October 2000

McKee, M.D., Mills, L., and Mainous A.G 3rd (1999). Antibiotic Use for the Treatment of
Upper Respiratory Infections in a Diverse Community. *J. Fam. Pract.* 1999; 48(12): 993-6.

Michael Klein (2010) Combating Misuse and Abuse of Prescription Drugs: Q&A with,
Ph.D.

- Mitchell, D. L. & Jolley, J. M. (2010). *Research design explained*. USA: Wadsworths Pub CO.
- Mogali¹, S., Al-Ghanim, S., Alduais A. M. S. and Al-Shabrani¹, B.F. (2015). Self-medication practice among Yemeni patients in Ibb city: a survey study exploring patients' perceptives, *Journal of Hospital Administration*, 2015, Vol.4, No. 4.
- Mohamad Javad Foroughi Moghadam, Farzad Peiravian, Azadeh Naderi, Ali Rajabzadeh, and Hamid Reza Rasekh (2014). An Analysis of Job Satisfaction among Iranian Pharmacists through Various Job Characteristics 2014 Summer; 13(3): 1087–1096.
- Montastruc JL, H Bagheri, T Geraud & M Lapeyre Mestre (1997). Pharmacovigilance of self-medication. *Therapie*, 52:105-110.
- Morgan, D. L. (1998). Practical strategies for combining qualitative and quantitative methods: applications to health research. *Qual Health Res*, 8 362- 376.
- Morgan, D. L. (2006). Connected contributions as a motivation for combining qualitative and quantitative methods. *Applying qualitative mixed methods in aging and public health research*. Washington, DC: American Public Health Association.
- Morgan, D. L. (2007). Paradigm Lost and Combining Regained Methodological Implications of Combining Qualitative and Quantitative Methods. *Journal of mixed method research*, 1 48-76.
- Morse, J. M. (1991). Approaches to qualitative , quantitative methodological triangulation. *Nurs Res*, 40 120-3
- Nancy V. and Markm N.(1997). Changing Patterns of Pharmaceutical Practice in the United States. *Soc. Sci. Med.* 1997; 44(9): 1285-1302.
- Noori, A. A. R. M. N. (2010). Irrational self-medication of antibiotic in University Of Kufa in Annajaf. *Medical Journal of Babylon* 2010; 7: 1-2.

O'Cathain, A., Murphy, E. & Nicholl, J.(2007). Why, and how mixed methods research is undertaken in health services research in England: A mixed methods study. *BMC Health Serv*, 7, 85.

Omolase, C.O., Adeleke, O.E., Afolabi, A.O. and Afolabi, O.T. (2007). Self- medication f amongst General Outpatients in a Nigerian Community Hospital, *Annals of Ibadan Postgraduate Medicine*, 2007, 5:64-67

Onwuegbuzie, A. J. & Leech, N. L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and quantitative research methodologies. *International Journal of Social research Methodology*, 8, 375-378.

Oppenheim, A. N. (1992). *Questionnaire design, interviewing and attitude measurement*. London , UK Continuum Intl Pub Group.

Parahoo, K. (1997). *Nursing research: principle, process, and issues*. New York: Palgrave Macmillan.

Phalke V D, Phalke D B, Durgawate PM,(2006). self-medication practice *CME*, 2006; 31(1): p. 34-35.

Plano Clark, V. & Creswell, J. (2011). *Designing and conducting mixed methods research*. other, 12-15.

Plano Clark, V. & Creswell, J. (2011). *Designing and conducting mixed methods research*. other, 12-15

Pope, C. & Marys, N. (1995). researching the parts other methods cannot reach: an introduction to qualitative methods in health and health service research. *BMJ*, 311, 42-5.

RAOSOFT. (2009). Sample size calculation URL: <http://www.ezsurvey.co./samplesize.htm>.

Rathbone, M . (1988). A pharmacist's Guide t o Drug Abuse. Pub Pharmaceutical Society of Australia.

Reeves, D.S., Finch RG., Bax RP., Davey PG., Po AL., Lingam G., Mann SG., Pringle MA., (1999). Self-medication of Antibacterial Without Prescription. A Report of a Working Party of the Health Society for Antimicrobial Chemotherapy. J. Antimicrob. Chemothe. 1999; 44(2): 163-177.

Richman, P.B., Garra G., Eskin B., Nashed A.H., and Cody R. (2001). Oral Antibiotic Use Without Consulting a Physician: a Survey of Emergency Department Patients. Am.J. Emerg. Med. 2001; 19(1): 57-60.

Sanders, P.& Wilkins, P. (2010). First steps in practitioner research: a guide to understanding and doing research in counselling and health and social care. Ross-on-Wye: PCCS.

Sanders, P.& Wilkins, P. (2010). First steps in practitioner research: a guide to understanding and doing research in counselling and health and social care. Ross-on-Wye: PCCS.

Sarahroodi E, (2010). Antibiotics Self-Medication among Southern Iranian University Students. International Journal of Pharmacology 2010; 6: p. 48-52.

Sarahroodi, S., Jamshid, A.M., Sawalha, A.F., Mikaili, P. (2012). Pattern of self-medication with analgesics among Iranian university students in central Iran. J Family and community med. 2012; 19(2):125-129. Doi: 10.4103/2230-8229.98302. Available from: <http://www.jfanonline.com/article,asp?issn=2230-8229;year=2012;vol=19>

Sarahroude, S., Arc, A., Sawalha, Ashtarinezhad, A.F. (2010). Antibiotics self-medication among South and Iranian University students. International Journal of pharmacology.2010; 6(1):48-552. Available from: <http://www.scialert.net/abstract/doi-ijp.2010-48-52>

Sawair FA, Baqain ZH, Abu Karaky A, Abu Eid R. (2009). Assessment of self-medication of antimicrobials in a Jordanian population. Med Princ Pract, Antimicrob Agents Chemother. 2009;18:21-5.

Sawalha, A.F. (2007). Assessment of self-medication practice among university students in Palestine; Therapeutic and toxicity implication. *The Islamic University Journal*. 2007; 15(2):67-82. Available from: <http://www.najah.edu/page/2450>

Sherazi, B. A. (2012). Prevalence and Measure of Self Medication: A Review, *Pharm. Sci. & Res.* Vol.4 (3), 2012, 1774-1778

Siho, S., and Hemminki E (1997). Self-medication of Dyspepsia: How Appropriate is it? *Scan.J. Gastroenterol* 1997; 32(9): 855-861.

Slife, B. D. & Williams, R. N.(1995). *What's behind the research? discovering hidden assumptions in the behavioural sciences*. Thousand Oaks, California: Sage publications, Inc.

Sonam, J, Malvi, R., Purviya J. (2011). *Concept of Self-Medication: A Review*, *International Journal of Pharmaceutical & Biological Archives* 2011;2(3):831-836

Stiel, D. (2000). Exploring the Link Between Gastrointestinal Complications and Over-the-Counter Analgesics: Current Issues and Considerations. *Am J Ther* 2000; 7(2): 91-98.

Stoelben, S., Krappweis, J., Rossler, G., and Kirch, W (2000). Adolescents' Drug Use and Drug 117 Knowledge. *Eur. J. Pediatr* 2000; 59(8): 608-614.

Sturm et al. (1997). Over-the-Counter Availability of Antimicrobial Agents, Self-medication and Patterns of Resistance in Karachi, Pakistan. *J. Antimicro.b Chemother.* 1997; 39(4): 543-547

Tashakkori, A. & Teddlie, C. (1998). *Mixed methodology: Combining quantitative and qualitative approaches*. Thousand Oaks, California: Sage publications, Inc.

Tashakkori, A. & Teddlie, C. (2003). *Handbook of mixed methods in social & behavioural research*. Thousand Oaks, California: Sage publications, Inc.

Thomson Gale (2006). Encyclopedia of Medicine.com, 3rd ed., Thomson Gale.

Thongersen-Ntoumani, C. & Fox, K.R. (2005). Physical activity and mental well-being typologies in corporate employees: A mixed methods approach. *Work & Stress*, 19, 50-67.

Ulin, P. R., Robinson, E. T. & Tolley, E. E. (2005). *Qualitative methods in public health: A Field guide for applied research*. San Francisco, CA: Jossey-Bass IN Pub.

Van Doun, D., Binns C.W., and Van Le T. (1997). Availability of Antibiotics as Over-the-Counter Drugs in Pharmacies: a Threat to Public Health in Vietnam. *Trop. Med. Int. Health* 1997; 2(12): 1133-9.

Van Nes, F., Abma, T., Jonsson, H. & Deeg, D.(2010). Language differences in qualitative research: is meaning lost in translation? *European Journal of aging*, 7, 313-316.

Watson, M. & Coombes, L. Neale, J.(ed). (2009). *Survey*. In *research methods for health and social care*. New York: Palgrave Macmillan.

Wazaify, M., Hughes, C.M., McElnay, J.C. (2006). The Implementation of a harm minimisation model for the identification and treatment of over-the counter drug misuse and abuse in the community pharmacies in Northern Ireland. *Patient Education and Counseling*, 64(1-3):136-141

WHO (1998). World Health Organization/Drug Action Program (WHO/DAP). *Survey highlights failings in public education in rational drug use*. *Essential Drugs Monitor* 1998; Number 25 & 26 P.18.

Worku, S. and Mariam, A. G. (2003). Practice of self-medication in Jimma Town, December 2003, *Ethiopia J Health DEV*, 2003;17 (111-116)

World Health Organization (1994). *The role of the pharmacist in the health care system*. Report of a WHO consultative group, Geneva: World Health Organization; 1994.

World Health Organization (WHO) (1995). Contribution to updating the WHO Guideline for Developing National Drug Policies. Report of a WHO Expert committee meeting, 19-24 June 1995.

World Health Organization (WHO) (2016). 'Guidelines for the regulatory assessment of medicinal products for use in self-medication', World Health Organization.

World Health Organization (WHO)(1988). Labelling is the Foundation Responsible Self Medication. Essential Drugs Monitor; 1988; Number 7 P.3.

World Health Organization (WHO), (2006). The safety of medicines. Available from: <http://www.who.int/mediacentre/factsheets/fs293/en/>

World Health Organization (WHO/DAP) (1988). Labelling is the Foundation Responsible Self-Medication. Essential Drugs Monitor, Number 7 P.3.

World Health Organization/Drug Action Program (WHO/DAP) (1993). Public Education in Rational Drug Use; Report of an Informal Consultation, 23-26 November 1993, Geneva.

World Health Organization/Drug Action Program (WHO/DAP) (1993). Public Education in Rational Drug Use; Report of an Informal Consultation, 23-26 November 1993, Geneva.

World Health Organization/Drug Action Program (WHO/DAP) (1997). International Conference on Improving Use of Medicines. Essential Drugs Monitor 1997, Number 23

Appendix 1

A DEMOGRAPHIC AND HEALTHCARE SERVICE- RELATED BACKGROUND FOR KURDISTAN

1.1 Introduction

Chapter 3 provides a general overview of the demography for present day Kurdistan with particular reference to the status of health. It provides a description of the system of healthcare delivery and major developmental aspects that underpin it. It is clear that numerous particular socio-cultural factors have a bearing upon study of the health system and health and disease in general. Alexandria (1999) *Medicine and Forensic Pathology*.

1.2 Profile of the country

The state of Iraq has an overall surface area of 438,317 square metres, and the entire population of the country in July 2014 has been estimated as being 32,585,692 people (CIA, 2014). Females are constituting just under half of the population, i.e. 49.8% and males, therefore, just over half at 50.2 % of the population, and there has been an overall growth in population of nearly 2.23% per year. Children form over half of the population at 54.3%, with approximately 17% of the population under 5 yrs. of age, and those between 10 and 19 years of age (adolescents) forming approximately 23%. Approximately 22% of the population are women of child-bearing age. People 60 years of age and above and 65 years of age and above constitute 3.8% and 2.8% of the population, respectively. Around a third of the population lives in rural areas, and two thirds of the population in areas that are urban. Over 24% of the total population of Iraq reside in Baghdad, 9.5% of the population lives in Mosul, 6.6% of the population lives in Basra, 6.3 % of the population lives in Sulaymaniya, and 5.2 % in Erbil (IKNES 2011). Iraq can be considered as having two distinct parts: the Arab part controlled by the Iraqi government and centred on Baghdad, and the Kurdish region which is semi-autonomous and governed by the Kurdish Regional Government (KRG) based in Erbil. Each part has its own cultures and languages. An area with the highest level of violence in Iraq is the border region between the Arab and Kurdish areas where most of the oil resources of Iraq have been discovered, i.e. near to Mosul and Kirkuk (UNDP, 2012).

The Kurdish region (KR) is situated in the north-eastern and northern areas of the state of Iraq, with Turkey to the north, Iran to the east and Syria to the west. It has a total area of 40,643 km² and an estimated population of 5,351, 276 people. Erbil is the capital city of the region with both Arabic and Kurdish as official languages. In some areas, Assyrian, Armenian and Turkemi are also spoken in their respective communities. In geographical terms, the region is considered diverse, ranging from cool mountainous areas that have snow in the wintertime to hot plains (CIA 2014). Between 75 and 80% of the 32,585,692 people of Iraq are Arab (CIA, 2014). There are several ethnic minorities within Iraq, although the Kurds residing in the northern parts, at between 15% and 20% of the total population, are the largest one (KRG et al., 2010). Iraqi society is predominantly Muslim, with 60% Shi'a Muslim and 37% Sunni Muslim. Historically, although by far the minority, Sunnis have been both politically- and economically-dominant (UNHCR, 2012). Exploitation of the vast oil reserves has been the major industrial sector within the country; however, 44% of the population are still involved in agriculture in some manner or other (Iraq Profile, 2006).

The Kurdistan region is sub-divided into three provinces, namely Erbil, Sulaymaniya and Duhok. Under the 2005 constitution, the governorates of the regions of Kurdistan are administered by the KRG, which has significant powers of autonomy within the federal state of Iraq. When compared to the rest of Iraq, the area administered by the KRG is relatively stable. In accordance with the laws of the Kurdistan region, enacted by its Parliament, the KRG has executive power. Its cabinet is composed of the Kurdistan List coalition winners of the parliamentary elections that were held in the region in July of 2009, along with some other parties.

This region has had the above noted stability and peace in comparison to other parts of Iraq, since the ending of the Kurdish civil war of 1994 to 1998, and since the Ba'athist regime fell in 2003. Despite this relative stability, there is a tense situation for security and a certain level of unpredictability in view of various political factors. Even though the two KRG administrations merged recently, the joint control between the Kurdistan Democratic Party (KDP) and the Patriotic Union of Kurdistan (PUK) has still not been fully exercised and proven. Socio-economic reasons also have helped to continue tension in the region, with dissatisfaction over malfunctioning infrastructure, human rights restrictions, corruption, and the inadequate provision of clean water and electricity, processes leading to regular incidents

of public unrest and numerous demonstrations throughout the area administered by the KRG (UNHCR 2010).

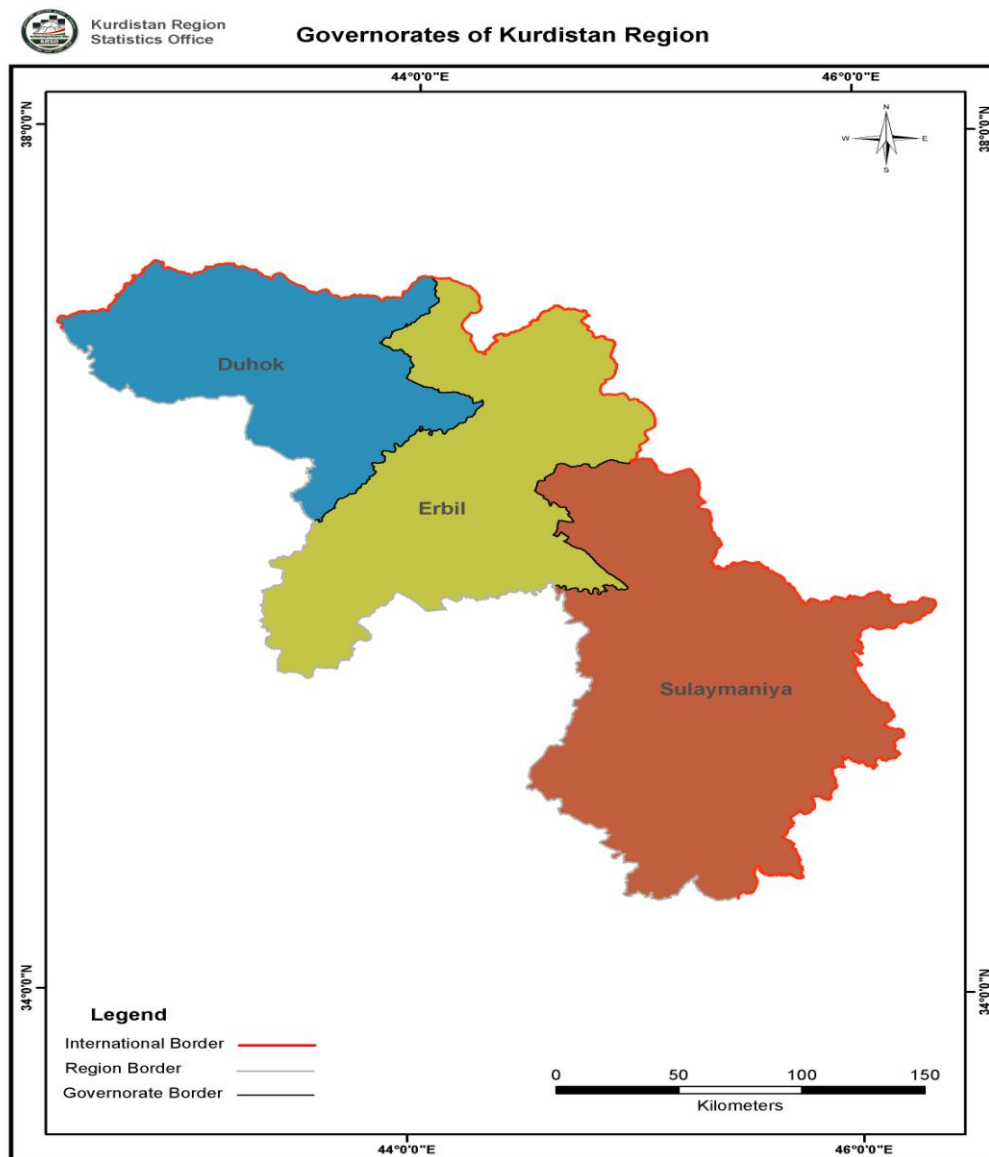


Figure (1.1): Map of the governorates of the Kurdistan Region.

1.3 Language

Kurdish and Arabic are the official languages of the Kurdistan Region. Kurdish is the most widely spoken within Kurdistan, although Arabic is also widely understood and spoken. Kurmanjo and Sorani are the two main dialects of the Kurdish language; however, a number of communities also speak their respective languages, i.e. Turkmani, Armenian, Mandiac Neo-Aramaic and Assyrian Neo-Aramaic (KRG et al., 2010).

1.4 Religion

Islam is the dominant religion adhered to by most of the population of Iraqi Kurdistan, including Arabs that mostly belong to Sunni Islam, Kurds and Iraqi Turkmen. There is a degree of religious diversity, however, with many Armenians and Assyrians adhering to Christianity, along with a number of Turkmen and Kurds (KRG et al., 2010).

Iraqi Kurdistan has a diverse religious population. The dominant religion is Islam, adhered to by the majority of its inhabitants. These include Kurds, Iraqi Turkmen, and Arabs, belonging mostly to the Sunni branch of Islam. Christianity is adhered to by Assyrian and Armenian peoples (as well as by a few Kurds and Turkmen). Shabaki, Yarsan and Mandaean religions are also followed in Kurdistan, and Yazidism also has a noteworthy minority (KRG et al., 2010).

1.5 The Iraqi Health Service

The formal healthcare system for Iraq has a history going back nearly a century to the early 1920s with the establishment of the Ministry of Health, which became a part of the Ministry of Interior. In 1939, the Ministry of Social Affairs took over responsibility for health, though the Iraqi Ministry of Health (MOH), with an organisational structure that has changed little today, was finally formally established in 1959 (MOH, 2012). Iraq did witness remarkable economic and social development throughout the 1970s and into the early 1980s, and the efficient healthcare system became known as one of the best within the whole of the Middle East; improvements to numerous critical health outcomes were noted in this ‘golden age’. However, deterioration of the performance and capacity of the service set in during the two wars, (Iraq-Iran war and Iraq-Kuwait war) and international economic sanctions further seriously compounded the system decline (Alwan et al., 2008). Perhaps half a million people from both sides involved were killed within the Iran-Iraq War between 1980 and 1988. Clearly, war has led to the further diversion of medical staff and resources away from civilian facilities (Baylis, 2007). The first Gulf War was triggered with the Iraqi invasion of Kuwait in 1991, and the consequent sanctions had a huge impact upon the health system for this country and the health status of the Iraqi people (Daponte, 2000; Richards, 2000). Whilst some of the effects of the sanctions were mitigated by the renowned oil-for-food programme,

serious damage had already been done to the Iraqi system for healthcare. By the time of the US-led invasion of the country in 2003, the Iraqi health system had become very weak with fragile infrastructure, non-functioning equipment and woefully inadequate drug supplies (Aziz, 2003). As Knapp (2003) noted, following the invasion, there were heavy losses of pharmaceutical stocks and equipment because of the destruction and looting of health facilities. Unfortunately, there were widespread shortages and the quality of healthcare continued on a downward spiral (Shabila et al., 2010). Patient care and the education of trainees were affected significantly by the heavy losses of healthcare staff from the tertiary hospitals (Doocy, 2010). It was estimated that over 3 million people needed assistance in 2012 (UNHCR, 2012). IDMC (2012), also reported that the number of internally-displaced people had reached 1.4 million; clearly, internally displaced peoples and refugees only have very poor access to health care services (Morton, 2008; Doocy et al., 2010; URC-CHS, 2013). During the period between 2003 and 2011, the occupation of Iraq by coalition forces went along with the implementation of assistance schemes amounting to \$53 billion in value; these were, however, of limited success (Williams, 2010). The federal Ministry of Health suffered, whilst different sectarian groups brought it under their control.

In the early 1990s, the Iraqi KRG established a Ministry of Health and, although similar in system and organisational structure to the Iraqi Ministry of Health based in Baghdad, the process for management and budget were developed in Erbil (Burnham et al., 2009). Two different channels are used nowadays to direct healthcare service provision within Kurdistan, namely the Public Health Services and the Private Health Sector. The Public Health Services are supported by the Regional Ministry of Health, and it includes all the hospitals and health centres in both rural and urban areas. Healthcare service provision within the public sector has a network of hospitals and primary healthcare (PHC) centres where services are provided to all equivocally for a very small fee. Unfortunately, this cheap access has led to health services being adversely effected by the overuse and overcrowding of facilities. The Private Health Sector incorporates all the private clinics, medical laboratories, pharmacies and hospitals that are in operation throughout the region (KDH et al., 2009). Since 2003, Kurdish health authorities have controlled their own budget, and whilst much of Iraq continues to have political instability, Iraqi Kurdistan enjoys sufficient foreign investment and is more secure. As such, following close to two decades of KRG self-rule, Kurdistan has had the political space and time for development of its capacities and institutions. Moreover, Nouri

al-Maliki became the new prime minister of Iraq in May of 2006. In 2009, British military troops left Iraq, and in 2011 the US forces also withdrew. Fear of violence and political instability remain a constant feature of Iraqi life. However, a degree of normality has begun to return to much of the country. Despite the greater stability, there are astounding health challenges ahead within the country, particularly in enhancing the functioning of the healthcare system (Wilson, 2009; Squires, 2009; Webster, 2011).

1.6 The lack of official figures for healthcare

No central database of health statistics exists within the healthcare system for Kurdistan; if figures are needed, there has to be a collection of data within an individual clinic or hospital. In addition to the lack of availability of healthcare statistics, the computerisation of the health facilities within the KRG is very poor (KRG et al., 2010).

1.7 General overview

Within the KRG area, the medical treatment standards in primary, secondary and tertiary level healthcare compare very poorly to the standards of quality achieved in Europe. Within the urban areas of the region, the basic health service is old fashioned and deficient, though functioning. The provision of healthcare in the rural areas of the region, however, are particularly worrying (UNHCR et al., 2006). There is a lack of medical supplies and basic medicines in many of the 672 primary healthcare centres and 48 hospitals dotted around the region. Effectiveness and quality of healthcare provision can be patchy and varied, because of a lack of adequate equipment and medical staff; these differences are particularly marked between rural and urban areas, and also between the private and public sectors. The need for an enhancement in quality secondary and tertiary healthcare services has now begun to exceed the supply (IRAN, IRAQ 2007). Exorbitant prices within the private sector keep specialist treatments out of the reach of the poor. Furthermore, it is often the case that a price limit specified for a consultation in the private sector is not respected, and there is no guarantee that the rule will be enforced. One of the biggest challenges that the Ministry of Health of the KRG area faces is the dearth of suitably specialised medical staff. The supply of medical-technical equipment has improved considerably; however, the accumulation of requirement over the years has become so great that it will take several more years for the residents of the KRG area to be assured of adequate healthcare services across the region (IRAN, IRAQ, 2007).

1.8 Modernisation of the healthcare system

With its extensive primary healthcare system and reputation for advanced, technological specialist know-how, the public healthcare system in Iraq in the 1970s and early 1980s was widely lauded. Nowadays, the impacts of the wars and sanctions are all too apparent, with a system that had the potential to be world-class, having deteriorated to the standard of a poor developing country (Corp, Watch et al., 2007). Between 1975 and 1991, the Ba'athist regime persecuted and neglected the KRG area, and following this it suffered from the terrible impacts of the Kurdish civil war between 1994 and 1998. Furthermore, sanctions from both the central government of Saddam Hussein and the sanctions of the United Nations all compounded the set of circumstances for the running of a health-care system. Central government diverted very few funds to northern provinces, and very few hospitals or clinics were built during these years. Consequently, the KRG has a mountainous task in its administration of a region with such little infrastructure (Salam et al., 2007). The KRG area has had its own budget since 2003 (KRG, 2006). Compared with other areas in Iraq, this KRG area has become more secure and the WHO have reported that the healthcare system in northern Iraq is better served with private sector health centres than all the rest of the country with a figure of 1.3 private sector health centres per 10,000 people in comparison to a figure of 0.5 per 10,000 in Iraq as a whole. According to IRIN (2004), such figures can be deceptive. In 1991, the KRG area started to come under the protection of the US and British alliance; however, its needs in terms of healthcare are much the same as other areas in Iraq. In view of the devastating consequences of war, the Kurdish authorities have not been able to provide residents with adequate services during its fifteen years of self-rule. Central hospitals have been overcrowded, there has been a lack of suitably qualified health personnel, problems with malfunctioning equipment, degraded infrastructure, disruptions to communication, sanitation and electricity supply and clearly, the health centres and hospitals themselves have been destroyed; all these factors have exerted a huge impact on the KRG area (IRIN, 2007).

1.9 Reforms within the Ministry of Health

Prior to 2006, the Kurdistan region had two separate administrations; one governing Sulaymaniya and the other Duhok and Erbil. From the time an agreement was reached in January 2006, the Ministry of Health, led by the Patriotic Union of Kurdistan (PUK), had responsibility for all the health policies and strategies within the region. This work involved

resolution of the unification of the two different administrations and overseeing both the public and private sectors. Currently, the Ministry of Health is undergoing a merger of the various laws and regulations from the two countries, and a decentralisation of itself so that certain powers were left to hospital managers and local government in order to facilitate a day-to-day decision making process with a degree of autonomous control. Previously, all decision making had been the responsibility of the health ministers, often in a manner that was subject to different plans, objectives and political demands. The reforms, however, enabled the Ministry to focus on its principal duty of strategic planning (KRG, 2006).

1.0 The private sector role

The lack of a distinct difference between the private and public sectors in the system for healthcare in the KRG area has been a constant problem. As the private sector was not permitted to grow within the KRG area, the majority of physicians have developed private clinics. The need to make a clear distinction between the two sectors is a priority of the Ministry of Health of the KRG, so that the prices for private consultations can be fixed so that the private sector can develop independently. Doctors have tended to charge different fees for their consultations, depending on who the patient was or upon their mood. The current charge is around IDQ10.000 per consultation, though this can rise to as much as IDQ 25'000 per consultation as private practitioners do not tend to respect a fixed consultation price (KRG 2006). It is also the case that various medicines and medical equipment are more readily available in the private sector and booking medical examinations can be easier in the private healthcare system than in the public one (Mission to North/Iraq, 2003).

1.11 Public health services

1.11.1 Primary healthcare

Currently, hospitals, public clinics, emergency care units (sited within hospitals and usually open between 8 am and 2 pm) and Primary Healthcare Centres (PHC) are the first point of contact for patients within the current public healthcare system. PHCs are comprised of main centres and sub-centres, and being much less standardized, and since staff and medical equipment such as X-ray facilities are in short supply, diagnosis can be limited. The main centres have a management of one or more physicians, and sub-centres have a management composed of paramedic staff, such as nurses and attendants, with limited diagnostic ability in

comparison to professional doctors (Salam et al., 2007). PHCs are in existence throughout the provinces and whilst their number seems to have met the national standard (Figure 5.1), the number of main PHCs where there is at least one physician is short of both Iraqi and international standards, as shown in Figures 5.2 and 5.3. Health authorities have also suggested that the distribution of PHCs is inappropriate. Health centres that have a physician in place can have large populations; typically, the centres are situated in cities and the larger towns and, on average for all the districts, they serve a population of 13,000 people. Sub-centres without a physician serve populations of around 2,600 on average province-wide, and are usually located in villages or smaller settlements. If there is monitoring of the population served from each of the facilities, managers can have an assessment of how and when facilities and services are needed; if the population served exceeds a particular threshold, or service coverage is below a certain standard, this can be addressed. However, there is no universal standardisation for PHCs, nor universal monitoring over criteria, such as services offered, staffing level, type, or size of the population served. Since November 2010, the Minister of Health has been working in collaboration with the Director Generals of Health (DGs) in Sulaymaniya, Duhok and Erbil for an assessment of the catchment population and location of the current clinics, so that the standardisation of services and distribution can be improved (Melinda et al., 2014). In general, the overall number of healthcare facilities is considered adequate; however, the distribution and number of main PHCs that employ at least one trained physician is not considered adequate by many health authorities. Reports suggest that PHC pharmacies are operational and well stocked (Melinda et al., 2014). The laboratories of PHCs can perform a reasonably well standardized group of tests suitable for ambulatory care. Overall, for all of the provinces, the Iraqi and international standard of 10,000 population served per PHC has been exceeded; the Iraqi standards are above the WHO espoused ones (Sphere Project, 2004; WHO Inter-Agency Standing Committee for Global Health Cluster, 2009; Republic of Iraq, 1994). The Iraqi government has called for a level of coverage of 1 main health centre for every 10,000 people, and 1 subsidiary health centre for every 5,000 people. The PHCs (main and subsidiary) serve, on average, 6,172 people in Kurdistan, although the provinces have considerable differences; the coverage is 8,762 people per PHC in Duhok, 7,316 in Erbil and 4,796 in Sulaymaniya. Viewed another way, with the information available for Duhok, the 64 centres that have a physician serve 13,173 people each on average; however, this figure levels out a considerable range with the centre in the Zakho district serving 18,102 people, and the centre in the Amedy district

serving 7,317 people. For those centres without a physician, the average figure is 2,632 people covered by each centre, with a range from 7,216 served by the centre in the Berdarash district, to 1,517 served in the Shekhan district (Melinda et al., 2014). The supply of drugs is the responsibility of the three health directors from the districts of Sulaymaniya, Erbil and Duhok. The drugs are delivered every two months despite the medication being, in general, only sufficient for one month (Salam et al., 2007).

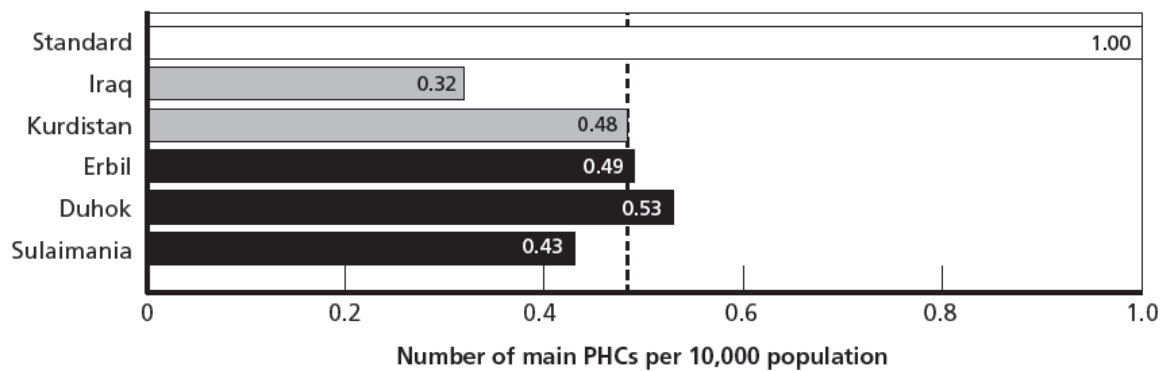


Figure (1.2): Number of PHCs per 10,000 population

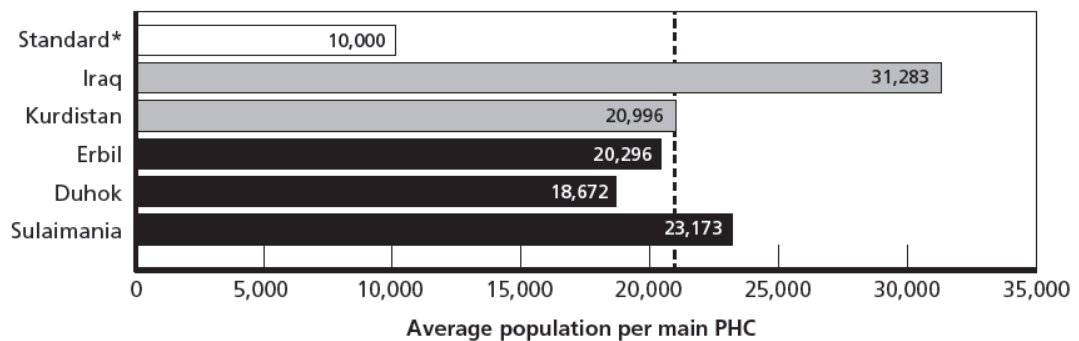


Figure (1.3): The number of main PHCs per 10,000 population

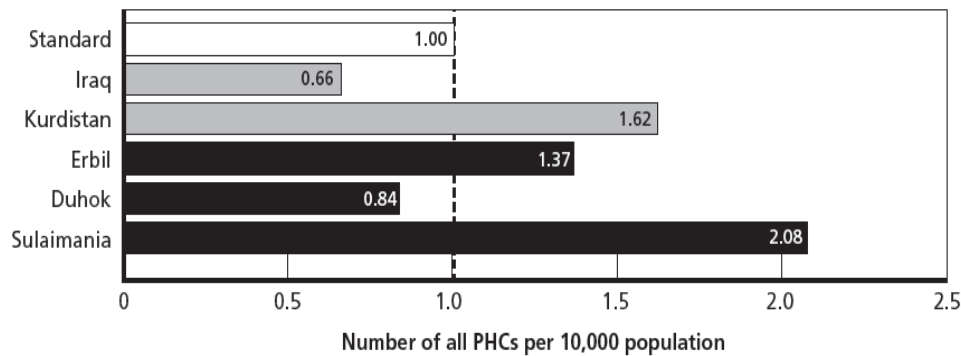


Figure (1.4): The average population covered by main PHCs

1.11.2 Secondary and tertiary healthcare

All of the provinces have public sector general hospitals, and at least one hospital for emergency and paediatric services. For Kurdistan as a whole, the average population served by a hospital is 93,357, with a range from 126,557 people served per hospital in Duhok, 89,882 people served per hospital in Erbil, and 84,671 people served per hospital in Sulaymaniya. The law specifies that populations of over 40,000 ought to have at least one hospital of 50 bed capacity; the standard in reality across the provinces, then, is larger than the legally-established standard (Melinda et al., 2014). The Kurdish region general hospitals deliver both preventative and curative healthcare services to people at the secondary level within district or sub-district areas, with departments for the following services: X-ray, pathology, emergency, medical, paediatrics, obstetrics/gynaecology and surgery (KDC, 2004). A number of tertiary hospitals deliver both preventative and curative health services in the internal provincial sectors, some of which are teaching hospitals, whilst the remaining non-teaching hospitals provide paediatric, maternity and emergency services (KDC, 2004).

1.12 The current supply and utilisation of healthcare

According to a number of reports from the WHO, the World Bank and the KRG MOH, the current hospitalisation rates are similar to other countries. Notwithstanding, the use of outpatient services in Kurdistan is less than that in other selected countries. By way of comparison, the hospitalisation rate of Kurdistan is similar to that of the United Kingdom or the Netherlands at a figure of 111.2 people per 1,000 (Melinda et al, 2014). Kurdistan has a healthcare supply that is lower than most other countries within the region and the WHO

Eastern Mediterranean region, based on fewer pharmacists, dentists and physicians per 10,000 people. The supply of physicians, for example, is 24 per 10,000 people in Egypt, 18 per 10,000 people in Kuwait, 26 per 10,000 people in Jordan, and only 11.1 physicians per 10,000 people in Kurdistan. (World Bank, 2010). In terms of hospital beds, there are fewer per 10,000 people in Kurdistan in comparison with Lebanon, Turkey or Jordan, or indeed fewer than the world average. The number of nurses working within Kurdistan, however, is at a level comparable to that of other countries (Waitzkin, Jasso-Aguilar and Iriart, 2007).

1.13 Regional coverage and the quality of treatment

The basic health service functions within all the urban areas, albeit with deficiencies, but the health service within many rural areas is old fashioned (UNHCR et al., 2006). There is substantial variation between rural and urban areas in terms of the effectiveness and quality of treatment in public sector healthcare centres because rural facilities tend to have a lack of adequate medical equipment (Salam et al., 2007). Official reports of the Kurdistan Development Corporation state that primary health carecentres have an equivalent distribution across both rural and urban communities (KDC 2004). However, information gathered from the Minister of Health for Sulaymaniya and local NGOs, including Oandil and WADI, showed that there is poor medical coverage and poor medical infrastructure in rural areas, which has led to overcrowding in the healthcare facilities of the city. The UNDP in its Iraq Living Conditions Survey have noted that the majority of families residing in urban areas are able to access healthcare centres during a reasonable journey time, although there is a serious problem for access to health facilities for those living in rural areas, and this poor access particularly impacts low income households (UNDP 2004). The health of rural populations has been improved little by the efforts of the KRG, and there is now a large disparity between health in rural and urban areas, attributable mainly to this poor access to healthcare facilities. In 2009, the KRG promised to provide 30 new clinics for rural communities, although only a few have been discharged because sufficient funds have not been allocated. Likewise, there is underfunding and understaffing of the existing rural healthcare facilities, which are poorly equipped to cope with demand. The WHO reported that there is limited access to electricity and water, and a need for renovation in 70% of the primary healthcare centres in Kurdistan; it was found that two thirds of the centres were staffed by medical assistants with limited levels of resources and knowledge, and that rural areas had statistics that were worse. Villagers have often reported that they have made the

journey to a clinic during its supposed hours of operation only to discover it was closed. One particular villager stated that they had been unsuccessful in seeing a doctor for twenty years. Potential progress for healthcare provision in rural areas is hampered by the poor infrastructure, such as lack of clean water and electricity, and the poor condition of the roads. With the large numbers of poor and marginalised people unable to afford the costs of private sector healthcare services (despite the increased role being played by the private sector), there is a requirement for adoption of a health insurance system (Alwan et al., 2004). Since public facilities do not provide all the necessary health services and tend to be overloaded, private sector services are needed by many patients. Clearly, needing to access private sector services is a huge challenge for the poor, particularly when ‘out of pocket’ payments are required. The result is that the poor tend to purchase medication from pharmacies without having been prescribed them by a trained physician (Vekov et al., 2009).

1.14 The costs of access to public healthcare services

In the mornings, medicines and basic medical treatment in public sector healthcare facilities (hospitals and PHCs) have a very low charge, with patients expected to pay around 500 Iraqi Dinars (IQD) (US\$0.40) for basic medical treatments, though the prices do vary depending upon the service given, with dental consultation costs, for example, being about 1000 IQD (US\$ 0.80). Internally Displaced Persons (IDPs) and refugees have the same right to access healthcare services as that of the general public (UNHCR, 2005).

1.15 Private healthcare services

Privately-owned health centres and hospitals are available in Kurdistan, though their treatments, surgical interventions and examinations are provided at a high cost. Most of the specialists working in private clinics also work in the morning in public hospitals. Their private clinics begin in the afternoons at 3 pm, and they can go on until late in the evening; the services of such private clinics are often too expensive for the poor. However, the services provided in private clinics are vastly superior to those in public sector health facilities since the private doctors have better technical and medical equipment for undertaking thorough examinations. Specialised health services, such as dental poly clinics, T.B. centres, centres for laboratory testing and infertility centres, are all provided by the private sector (IRIN 2007).

1.16 The relationship between the public and private sectors

The system of fees in Kurdistan is, arguably, the most significant factor that contributes to the inequality of healthcare provision. Whilst healthcare is, in official terms, provided freely for everyone, the day-to-day reality is not perfect. Those public sector PHCs that work between 8:30 and 12:30 charge patients a nominal 500 IQD (US\$0.40) for consultations, with patients then able to see as many primary care physicians as they can in that one day. With the high demand and overcrowding, however, consultations tend to be limited to about two minutes. Physicians are able to work in the public sector hospitals during the day, and then have their own private sector practice in the evening. Physicians often refer patients to other services and the ‘feeding off hospitals’ is a practice by which public diagnostic services are used in augmenting private sector businesses (Salam et al., 2007). There is a great strain on resources during working hours, with a Kurdish Globe report of 2010 noting that: “up to 140 people visit the ear, nose and throat departments every day, where they wait in a noisy reception area to see the doctors, who themselves are busy, trying to find working equipment (Kurdish Globe et al., 2010). The Rizgary hospital has operational hours between 8 am and 1.30 pm, for example, and has a rotation of only one doctor per department after those hours (Salam et al., 2007). It has often been the case that funding from the public sector has been diverted to developing private PHCs in urban areas; USAID covered the capital costs for constructing almost a dozen public PHCs. However, these were recently approved in a governmental pilot programme for use and health care provision within the private sector (Kurdish Globe et al., 2010). Private centres are vastly superior in quality and are able to provide specialised services such as laboratory test centres, infertility clinics, TB centres, dental poly clinics and so on, although at a considerable cost to the patient. Charges to the patient range from 15,000 IQD to 25,000 IQD (between US\$12 to US\$20) solely for an examination, and this equates to more than a quarter of the monthly wages of an average family. There are further costs for additional services, treatments or the provision of drugs. The Kurdish Globe has reported that patients have to pay 10,000 IQD (US\$9) for just a 4-6 minute consultation at a private clinic. A patient may sometimes wait for months in order to see a good doctor. In an attempt to change the divide between the public and private sectors, consultant clinics have been opened up at the district level by the KRG; physicians may now work between 3-7 pm in the summer and 3-6 pm in the winter with prescriptions and consultations costing around 1,170 Iraqi dinars (US\$1.4). Physicians are also provided with a

salary from the Ministry. Rural populations that are usually poor and suffering from inadequate medical coverage and the need to face overcrowding in public sector hospitals in urban areas, can now benefit from specialist healthcare services more cheaply (Salam et al., 2005). Despite such an attempt at changing access to health services, the two-tiered system of private sector and public sector hospitals has reinforced the current inequities in access to care and care quality. Moreover, as rural areas are without an adequate healthcare coverage, the overall socio-economic development of the country has been inhibited (IRIN, 2004). Additionally, the absence of a sound, universal insurance safety net and adequate social welfare has left older and poorer sections of the community vulnerable to the personal catastrophe of serious ill health and the associated health expenditures (KOFF, 2005). There are a few public assistance benefits and pensions available, though these are not widespread. Those suffering from a lack of funding and in receipt of social welfare may sometimes have to rely on personal links and policy maker decisions to favour them in order to gain access to healthcare; rather than health care provision being based solely on need, it is strongly influenced by financial, social and political capital (Kurdish Globe. 2011). Hence, with such a lack of resources and a clear way forward, the system for healthcare in Kurdistan has many problems that people are fully aware of and yet few people actually identify solutions or new ways to face up to challenges ahead. Whilst there are groups of professionals who take advantage of their status and power for personal gain, the majority of workers, be they established professionals and/or those continuing their professional education, work hard. Rather than just verbal criticism, more tangible efforts need to be made to help Kurdish society develop. In that regard, the Ministry of Health and the current Minister must collaborate in driving forward reforms of the healthcare system whilst ensuring the rights of the public are upheld (Rawnaq et al., 2003). On the positive side, there is the chance to learn from mistakes made in other developing countries and start from scratch in building up the Kurdistan health care system. A way needs to be devised to ensure the best care possible is given to patients in keeping with the ethical duty of healthcare professionals. It is apparent that the views of the public ought to be accommodated in reforming the health service. (Rawnaq et al., 2003). Every health system will have its own particular challenges, however to achieve improvement in the Kurdistan healthcare system, there is a need for teamwork and working together with a singular vision., As Rawnaq et al. (2003), made clear short-term goals for patient satisfaction ought to be delivered in a way that ensures that the health service is working towards a long-term strategy.

1.17 Diseases that cannot be treated within the KRG region

A number of diseases cannot be treated with success in the KRG area, such as pancreas, lung or brain cancers, and any diseases that require laser surgery, for example (Salam et al., 2007). Moreover, there is a lack of the equipment needed for HIV testing and a lack of anti-retroviral drugs. The health authorities in Baghdad have instructed the Ministry of Health in the KRG area to remove any foreigners that have been discovered to be HIV-positive. The Director of the AIDS Research Centre (ARC) in Baghdad, Dr. Wadah Hamed, has stressed that problems with the identification and treatment of HIV/AIDS within Kurdistan are made worse by the lack of co-ordination between clinics in Baghdad helping those that have contracted the disease and the health authorities. The Ministry of Health for Kurdistan had, in effect, been arguing that all those with the disease were from abroad and have been deported, and that in reality there were not many cases of HIV/AIDS in the Sulaymaniya, Erbil and Duhok provinces. However, the lack of coordination and the underestimation of its prevalence has resulted in an increase in the number of people infected with HIV/AIDS and, along with low levels of awareness amongst the general public with regard to the need for testing for the disease, the risk of an epidemic in the years to come has risen (IRIN, 2006).

1.18 Mental health

There are few professionally-trained psychiatrists in provinces administered by the KRG and, in reality, mental health facilities are virtually non-existent; only five specialists and eight board students were noted as being on the verge of completing their studies in Erbil, for example (KOFF 2007). The Kurdish authorities have been aiming at addressing the shortage of specialists in psychiatry; graduated doctors have been sent abroad for training (Salam et al., 2007). According to the KRG, in terms of tertiary care, there is only one Psychiatry department in the teaching hospital in Erbil, and a reception ward for trauma cases in the hospital that deals with emergencies. At the level of primary healthcare, there is also a psychotherapy centre in the city (KDC 2004). Rather than being run by the local health department, the Erbil psychotherapy centre is operated by the KDP. Around 3 km north of the centre of Erbil in Banslaw, a psychiatric hospital which was built in 2005 to accommodate a specialist training programme to be run with the help of the Medical School located at Erbil University. Sulaymaniya also has a psychiatric clinic (KDC 2007).

1.19 Corruption and insecurity within healthcare services

Corruption and feelings of insecurity amongst healthcare personnel are also problems that interfere with the day-to-day running of healthcare services. In order to receive preferential treatment, force or intimidation are often used by security agents, influential party members or tribal elders to threaten or corrupt doctors; other patients awaiting attention within emergency care units can be left neglected in such threatening circumstances (Salam et al., 2007).

1.20 Patient care continuity within Kurdistan

The term ‘continuity’ in relation to healthcare refers to provision that, rather than being episodic, has no gaps ascribable to a failure in communication between different providers and/or lost information. In dealing with such cases, neither the providers of care, nor the patients, should have to keep starting again when involved in a specialist or primary care visit. As clarified in a report of WHO (2008b, p.42), patients ought to experience a “regular point of entry into the health system, so that it becomes possible to build an enduring relationship of trust between people and their healthcare providers”. In addition to this, care ought not to be considered as starting and finishing within the consultation room; there is a need to fully address or resolve problems through the adoption of a “consistent and coherent approach to the management of the patient’s problem” (WHR, 2008, p. 49). Continuity is therefore needed for effective care in reproductive health, healthy child development, mental healthcare and the management of chronic disease, as well as in general primary care practice. In addition, there is a requirement for the minimisation of barriers to patients, such as consultations that are too expensive, or systems of referral that involve difficult navigation, or instructions that are too complicated, so that continuity of care can flourish (Melinda et al., 2014). Continuity of care in Kurdistan is very poor, and patients can often be given differing treatments by different doctors, or even differing diagnoses for the same condition. The absence of an effective electronic system for patient records exacerbates the problem in Kurdistan (Melinda et al., 2014). Often, when they have an illness, patients in Kurdistan may see numerous doctors during the same day to try and receive a consistent diagnosis prior to undertaking any treatment. Patients are short on trust for the doctors, and the relationships between doctors and patients can, in general, be very poor. Such mistrust

and potential for a wrong diagnosis can have devastating consequences; there can be a high financial and/or physical price from prescribed drugs being mixed up, or excessively repeated investigations. An example to illustrate potential problems is that of a patient who had Atrial fibrillations, a condition in which heart rhythm irregularities, if left untreated, can put a serious strain on the heart. Following initial hospital treatment, the patient was advised by a doctor with recommended follow-up actions, together with a plan for the management of diagnosis and treatment of the condition. It was later discovered that the patient was taken by the family to another specialist who changed the recommended medication for control of heart rhythm, and subsequently, the patient had to be readmitted to hospital and experienced a much quickened heart rate and heart failure. This case is illustrative of the potential for fatal consequences caused by a lack of continuity in patient care, and changes to the recommended treatments for patients. Also, it is clear that there exists a culture of mistrust in Kurdistan between patients and their families and healthcare professionals. Continuity of care is clearly a significant example of a serious challenge facing the health system in Kurdistan. So that the long term risks can be reduced, doctors and patients and their families need to be educated regarding the issue of continuity of care. Furthermore, there is a clear need for an electronic health record system to be established (Shakawan et al., 2012).

1.21 Physicians

As well as a shortage in numbers, there is also a lack of training and competencies of physicians in Kurdistan. There are also issues for the hours worked by physicians and their distribution. Although there are a few more physicians per capita in Kurdistan than in the WHO Eastern Mediterranean region, in comparison with both the world in general and with many other countries nearby, Kurdistan has fewer physicians per capita. There are the fewest physicians in Duhok (5.3 per 10,000 population), and more in Erbil (12.9 per 10,000 population) and Sulaimania (12.7 per 10,000 population). In Iraq as a whole, there were 5 physicians per 10,000 people according to the WHO figures for 2004. Ministry of Health figures show that 84% of physicians are GPs that have finished 2 or 3 years of clinical training at the postgraduate level, and 16% of all physicians (950 out of 5,819) have specialisation in general internal medicine, paediatrics, surgery or obstetrics/gynaecology, or a sub-speciality of these. Currently, every year around 260 graduate as physicians from the medical schools in the KRG area, a rate that maintains the level of physicians per capita

when related to the current population growth rate; hence, in comparison with other countries of the region, the shortage of physicians is not being overcome by this rate of new graduates (Melinda et al., 2014). Most physicians give their services in the public sector in the mornings and later on, in the afternoon, they have consultations with private patients. The salaries for work in the public sector are relatively poor, although once a physician has completed their clinical training they are guaranteed a governmental job with a pension. Physicians do, however, benefit considerably from the substantially higher income that they can derive from their work in the private sector (Melinda et al., 2014).

1.22 Nurses

The annual report for 2009 of the Ministry of Health indicated that the region has 8,860 nurses, which equates to a rate of 17 nurses per 10,000 people. There are four levels of nursing, and it is not clear whether these figures are a reflection of all of them, i.e. university trained, nursing school trained, medical institute trained, or assistant nurse or midwife having received only basic course level training, or whether the top three (the first three of the above levels). There are more nurses per capita in Kurdistan than some countries, i.e. Syria, Iran, Turkey and Lebanon, although fewer than others, such as Qatar, UAE, Oman, Egypt and Jordan. The Minister of Health has expressed concern that the qualifications, competencies and distribution of nurses across all the four levels in Kurdistan is more of a critical problem than their actual number (Melinda et al., 2014).

1.23 Other types of health professional

A Ministry of Health report has indicated that the number of pharmacists and dentists in the Kurdistan region is less per 10,000 population than most other countries within the world, and more than other countries in the WHO Eastern Mediterranean region and other countries in the region of Kurdistan (Melinda et al., 2014).

1.24 Medical ethics within Kurdistan

During the twentieth century, developments of science and technology have helped lead the way to improvements in healthcare and medicine to the benefit of the lives of millions of people. New challenges have been presented by the changing context of healthcare that have affected the work of various healthcare specialists, researchers and the wider healthcare

community. Increasingly, professionals working in medicine are faced with difficult moral and ethical questions and dilemmas. A number of guidelines and ethical codes have been established in view of a reflection on the moral dimensions that new advances in healthcare and medicine have brought about, along with the wish to enhance efforts with regard to public health. Famously, the Declaration of Geneva was adopted by the World Medical Association (WMA) in 1948 and in London in 1949. Indeed, the WMA adopted an International Code of Medical Ethics. The guidelines of the Declaration of Geneva have had various amendments starting in 1968 with another in 1983 and yet another in 1994. Other international guidelines with respect to ethics have addressed more specialised medical services, such as guidelines for healthcare for HIV/AIDS patients and for blood transfusions. Certain international agencies, such as the United Nations, have adopted further health and medical research guidelines (Alexandria et al., 1999). All of these various documents have presented basic principles that interested bodies have deemed to have universal validity. Rather than replacing guidelines or codes that have been set at the national level, the various international documents serve to guide those developing national guidelines. In order to govern with regard to ethical issues for the medical profession, many countries across the world have now established their own national medical ruling body. By way of perspective, however, it should be remembered that simple medical standards have been maintained by the global medical profession for over four thousand years. It is also important that those working within the healthcare sector understand clearly the implications of what they are doing, and the decisions and recommendations that they are making; hence, understanding ethics plays a vital role in medical diagnosis. Good patient care results from the ethics involved; perhaps 80% of what constitutes sound medical practice arises from an understanding of these ethical processes.

There is, however, unsatisfactory patient care within the Kurdistan region, with the system for healthcare unable to cope with the demands of the increasing population. The doctors in Kurdistan tend to have out of date practices, and a perception of medical ethics that is behind the times. Consequently, many patients in the region have experienced discrimination (Melinda et al., 2014). Also, the small hospitals in Kurdistan suffer from overcrowding and its negative consequences. Healthcare is clearly not provided as well as it could be; however, not everyone is fully aware of the situation. From the perspective of many doctors in Kurdistan, their shifts do not give them enough time to see and effectively treat everyone

needing attention. There is a need for better communication; whilst a patient, placing their trust in a doctor, needs to be addressed suitably so that a good diagnosis and prognosis can be made, too often doctors speak in English to Kurdish people. Not only is this an example of poor communication, in ethical terms it is a very poor situation requiring resolution (Amina et al., 2012).

1.25 The issue of counterfeit medicines within Kurdistan

The use of medicines that are counterfeit is a huge challenge facing the field of public health. Everywhere in the world there is potential for medicines to appear appropriately packaged and the capsules or tablets to appear correct, and yet they actually do not have the proper ingredients and could even be highly toxic. Some are medicinal fakes of high quality, or just harmless but useless preparations. For some countries, such an occurrence can be a rarity, whereas for others it can be an everyday occurrence. Whatever the type of counterfeit medicine, the sources are always illegal and their origin vague or unknown, and with potential patient harm or even fatality, it is obviously a problem that needs to be tackled (UNDP et al., 2012). All kinds of counterfeit products may be produced from antibiotics and simple generic versions of painkillers to hormones and steroids, and from antihistamines to medicines to combat cancer, hypertension and cholesterol. Most disturbingly, counterfeit medicines are often present in supposed treatments for conditions that are life-threatening in developing countries, such as tuberculosis, HIV/AIDS and malaria (WHO et al., 2011). Many counterfeit and non-effective medicines are sold on the market in Kurdistan, and some people have died as a consequence of taking incorrect medicines. Furthermore, there is a low level of education with regard to health amongst the Kurdish people and often, if more easily accessible, civilians attend unregistered paramedic clinics, perhaps located in various parts of the city in private houses and where potentially dangerous medicines are offered for sale. Many people in Kurdistan suffer from long-term problems such as diabetes, heart disease, blood diseases and other chronic conditions that require a lifetime of medicine treatment. Clearly, long-term consumption of improper medicine, be it fake, out of date or poisonous, can be fatal. Within Kurdistan, there have been many fatalities because of bad medicines, and most hospitalisations are attributable to this issue (Kurdish Globe et al., 2012). The Iraqi-Kurdistan Syndicate of Pharmacists (IKPS) consider there to be approximately two thousand such places for the sale of illegal medicines in Erbil province alone. Attempted control of all warehouses and pharmacists selling medicines has not been entirely successful. An example

of regulation from December 2010 was the seizure of twenty different products from a number of companies in Erbil after quality control results were found to be negative (Jantine van et al., 2011). The majority of medicines come from other parts of Iraq, China, India, Turkey and other Middle Eastern countries. Many medicines of low quality arrive into the region from Salahaddin, Musil and Baquba, with fake medicines also smuggled from Iran and Turkey. Without the necessary quality controls, producers can make lots of money (Jantine van, H et al., 2011). Rather than effectiveness or strength of medicines, with relatively low prices, low-quality drugs are often imported from as far away as India or China, with it often noted by people in those countries that Kurdish traders often have little care for quality and focus instead on the prices (Qassim et al., 2010). An example of a fake product made in China was one that was found in laboratory testing to have only 25 milligrams of Paracetamol in each tablet when the packaging claimed the headache medicine had 500 milligrams per tablet. An awful lot of non-effective and bad medication is on the market within Kurdistan, and as much as 90% of such medication is brought to the country from China or India. When certain businessmen return from trips to China, they may have tons of fake medicines with them and counterfeit medicine can seem exactly like medicines from Europe in appearance. Most medicines on the market in Kurdistan hail from China and India, with the remainder coming from Syria, European countries and Turkey. Genuine medicines from Europe tend to be very expensive and beyond the purchasing power of all but a few people within Kurdistan. The Pharmacist Syndicate is not cooperating with companies that import medicines to Kurdistan, and can even be unaware of them, and nor does it have complete awareness of what type of medicines are being imported. Eighteen companies are in the business of importing medicines to Kurdistan, and many non-licensed pharmacies have been opened by assistants to doctors. Owners of illegal pharmacies have refused to declare what they are up to, although most appear to be importing into Kurdistan the most sought after and cheapest medicine because of the demand from the majority of people unable to afford higher quality products. There is a need for licensing rules to be changed, and the government to place more restrictions upon the companies involved. The Minister of Health for Kurdistan has stated that the Ministry does not have the full cooperation of the Iraqi Health Ministry as the full share of the medications for the region are not being sent. There is a doubt that the Ministry of Health in Baghdad sent even half of the \$98 million intended for the purchase of medicines for the Kurdistan region. Arguments persist between Ministers, and there has been a failure to keep politics out of such health matters. Since the uprising of

1991 against the former government of Iraq, there has been a lack of quality control in Kurdistan; the UN sanctions on Iraq during the 1990s played a huge part in the failure to establish adequate quality control. During the 1980s, the Baghdad quality control office monitored all medication that was entering into Iraq. Since 2003, control of supply of medicine to Kurdistan was from Baghdad, though since 2009 there has also been quality control in Kurdistan. However, counterfeit medicines have been bought freely to Kurdistan as there are no robust border checks, and illegal medicines are brought in from neighbouring countries and from the Iraqi cities of Baquba, Salahaddin and Mosul (Tahir et al., 2011).

References:

- Alexandria (1999) *Medicine and Forensic Pathology*. World Health Organization: Regional Office for the Eastern Mediterranean. EMRO Series 20. WHO/EMRO, Egypt.
- Alwan A (2004): *Health in Iraq: The current situation, our vision for the future and areas of work*. 2nd edition. Baghdad: Ministry of Health;
- Alwan A (2008): Health-sector funding: options for funding health care in Iraq East Mediterr Health J, 14(6):1372-1379
- Amina Shadab and Tara Fatehi (2012) *Medical ethics in Kurdistan in Health, , Kurdistan KRG* 18,june 2012
- Aziz C (2003). Struggling to rebuild Iraq's health-care system. *Lancet* 2003; **362**: 1288–89.
- Baylis J, Wirtz JJ, Gray CS (2007) *Strategy in the contemporary world: an introduction to strategic studies*, 2nd edn. Oxford: Oxford University Press,.
- Burnham G, Lafta R, Doocy S (2009). Doctors leaving 12 tertiary hospitals in Iraq, 2004–2007. *Soc Sci Med* 2009; **69**: 172–77.
- CIA the World Factbook (2014); www.cia.gov/cia/publications/factbook/print/iz.html
- CorpWatch, *High-Tech Healthcare in Iraq* (2004), *Minus the Healthcare*, 08.01.07, source: www.corpwatch.org/article.php?id=14290; UNDP, *Iraq Living Conditions Survey 2004*, source: www.reliefweb.int/library/documents/2004/undp-irq-31dec2.pdf.
- Daponte BA, Garfield R(2000). The effect of economic sanctions on the mortality of Iraqi children prior to the 1991 Persian Gulf War. *Am J Public Health*; **90**: 546–52.
- Doocy S, Malik S, Burnham G. (2010) Experiences of Iraqi doctors in Jordan during conflict and factors associated with migration. *Am J Disaster Med* 2010; **5**: 41–47.
- Doocy S, Sirois A, Anderson J, et al (2010). Food security and humanitarian assistance among displaced Iraqi populations in Jordan and Syria. *Soc Sci Med* 2011; **72**: 273–82.
- <http://lcweb2.loc.gov/frd/cs/profiles/Iraq.pdf> 2006

IDMC (2012). Iraq: response still centered on return despite increasing IDP demands for local integration. <http://www.internaldisplacement.org/countries/iraq> (accessed Dec 1, 2012).

IKNES (2011), Iraq Knowledge Network Essential Services Factsheet, <http://www.cosit.gov.iq/english/pdf/2011/ServicesFactsheet-English.pdf> 29.12.2011

IRIN, (2007)Iraq: Interview with Minister for Health in Sulaimaniyah, 05.10.2007,source:www.reliefweb.int/rw/rwb.nsf/0/6d29ced3d91a3275c1256f24004107ad?OpenDocument&Click=; Expert information to the Swiss Refugee Council from Dr. Salam Kasem, Rizgary Hospital, Erbil, 20.06.07

IRIN, IRAQ:(2007) Kurdistan government appeals for medical supplies, 01.07.07, source: www.irinnews.org/report.aspx?ReportID=73018.

IRIN,(2004) Iraq: Interview with Minister for Health in Sulaimaniyah, 05.10.04.

IRIN,(2006) IRAQ: Shortage of anti-retroviral drugs in Kurdistan, 12.12.06, source: www.irinnews.org/report.aspx?reportid=62435.

Jantine van Herwijnen (2011) Kurdish globe Civilians dying from bad medications Sunday, 23 January 2011, 09:22 GMT

KDC (2007), Healthcare Sector Profile & Indicators for Erbil / Dohuk Governorate ; Expert information to the Swiss Refugee Council from Dr. Salam Kasem, Rizgary Hospital, Erbil, 20.06.07.

KDC, (2004) Healthcare Sector Profile & Indicators for Erbil / Dohuk Governorate 2004.

Knapp C (2003). Anarchy pushes Iraqi health system to brink of collapse. *Lancet* 2003; **361**: 1351.

KOFF, (2007) swisspeace, Iraq Roundtable, 10.05.07; Expert information from Dr. Salam Kasem, Rizgary Hospital, Erbil, 20.06.07; IWPR, Mental Health Crisis, 23.08.05, source: www.iwpr.net/index.php?m=p&o=254096&s=f&apc_state=henficer254096.

KOFF,(2005) swisspeace, Iraq Roundtable, 10.05.05; Expert information IWPR, MentalHealthCrisis,23.08.05,source:www.iwpr.net/index.php?m=p&o=254096&s=f&apc_state=henficer254096.

KRG,(2006) Health minister: Top priority is improving primary healthcare, 20.10.06, source:http://www.krg.org/articles/%20article_print.asp?ArticleNr=14384.

KRG,(2010) Health minister: Top priority is improving primary healthcare, 20.10.06, source:http://www.krg.org/articles/%20article_print.asp?ArticleNr=14384.

Kurdish Globe (2010), Health reforms vital in Iraqi Kurdistan Wednesday, 30 June 2010, 07:18 GMT NIMEP 2011 volume II: 169

Kurdish Globe (2012) Awamedica manager says company can control Region's medicines Monday, 21 May 2012, 08:01 GMT

Kurdistan Directorate of Health (2009). Kurdistan ministry of planning Health information package 2009

Melinda Moore; C. Ross Anthony; Yee-Wei Lim; Spencer S. Jones; Adrian Overton; Joanne K. Yoong (2014)The Future of Health Care in the Kurdistan Region—Iraq: Toward an Effective, High-Quality System with an Emphasis on Primary Care ; 2014 ISBN: 978-0-8330-8578-8// www.rand.org.

MOH (2012) Directorate of Technical Affairs, Iraqi Ministry of Health. www.tech.moh.gov.iq (2012 Jun 13). (DTAIMH 2012.

Morton MJ, Burnham GM (2008). Iraq's internally displaced persons: a hidden crisis. JAMA 2008; **300**: 727–29.

Qassim Khidhir (2010) The Kurdish Globe The Region hopes to provide its own meds in the near future Saturday, 13 November 2010, 10:05 GMT.

Rawnaq Aqwari (2003) Expert information to the Swiss Refugee Council of Dr. Rawnaq Aqwari, coordinator of the National Mental Health Program of the ministry of health, E-Mail to the Swiss Refugee Council, 23.04.05; Report from a Fact Finding Mission to Northern Iraq, Syria and Jordan, August – September 2003, source: www.landinfo.no/asset/7/1/7_1.doc.

Report from a Fact-Finding Mission to Northern Iraq, Syria and Jordan, August – September (2003), source: www.landinfo.no/asset/7/1/7_1.doc.

Richards LJ, Wall SN (2000). Iraqi medical education under the intellectual embargo. *Lancet* 2000; **355**: 1093–94.

Salam, K.(2007) Expert information to the Swiss Refugee Council from Dr. Salam Kasem, Rizgary Hospital, Erbil, 20.06.07; IWPR, Mental Health Crisis, 23.08.05, source: www.iwpr.net/index.php?m=p&o=254096&s=f&apc_state=henficr254096.

Shabila NP, Al-Tawil NG, Tahir R, Shwani FH, Saleh AM, Al-Hadithi TS (2010). Iraqi health system in Kurdistan region: medical professionals' perspectives on challenges and priorities for improvement. *Confl Health* 2010; **4**: 19.

Shakawan Ismaeel (2012) Continuity of patient care in Kurdistan and reform in the Health system in, KRG, Kurdistan.

Squires A, Sindi A, Fennie K (2009). Health system reconstruction: perspectives of Iraqi physicians. *Glob Public Health* 2010; **5**: 561–77.

Tahir Hawrami (2011) KRG Minister of Health, discusses AIDS, illegal medications and other health concerns Saturday, 06 August 2011, 07:37 GMT

UNDP (2012) Life expectancy at birth (years)
<http://hdrstats.undp.org/en/indicators/69206.html> 7.2.2012

UNDP, (2004) Iraq Living Conditions Survey 2004.

UNHCR, (2005) Country of Origin Information Iraq, October 2005, p.105, source: http://www.unhcr.se/Pdf/IraqCountry_info_Oct05.pdf; Expert information to the Swiss Refugee Council from Dr. Salam Kasem, Rizgary Hospital, Erbil, 20.06.07.

UNHCR, (2010) Country of Origin Information Iraq, October 2010, p.105, source: http://www.unhcr.se/Pdf/Iraq_Country_info_Oct05.pdf; Expert information to the Swiss Refugee Council from Dr. Salam Kasem, Rizgary Hospital, Erbil.

UNHCR,(2006) Sulymaniyah Governorate Assessment Report, August 2006.

UNHCR. (2012) UNCHR Country operations profile—Iraq.
<http://www.unhcr.org/pages/49e486426.html> (accessed Dec 18, 2012).

URC-CHS n(2013). Strategies for improving health services for internally displaced persons in Iraq. <http://www.urc-chs.com/resource?ResourceID=660> (accessed Jan 14, 2013).

Vekov TY (2009): Medical doctors' opinion of healthcare reforms in Bulgaria World Hosp Health Serv, 45(1):9-14

Waitzkin, H., R. Jasso-Aguilar, and C. Iriart, (2007) “Privatization of Health Services in Less Developed Countries: An Empirical Response to the Proposals of the World Bank and Wharton School,” International Journal of Health Services, Vol. 37, No. 2, 2007, pp. 205–227.

Webster, PC (2011). Iraq’s health system yet to heal from ravages of war. Lancet 2011; **378**: 863–66.

WHO (2011) Non-communicable diseases country profiles 2011
http://www.who.int/nmh/countries/irq_en.pdf 28.12.2011.

WHR (2008) The World Health Report 2008: Primary Health Care: Now More Than Ever, Geneva, 2008 p49.

Williams T (2010). Report seeks sole agency to rebuild war zones. New York Times. Feb 22, 2010.

<http://www.nytimes.com/2010/02/22/world/middle-east/22iraq.html?scp=3&sq=rebuilding%20health%20iraq&st=nyt> (accessed Dec 16, 2012).

Wilson K, Fidler DP, McDougall CW, Lazar H (2009). Establishing public health security in a postwar Iraq: constitutional obstacles and lessons for other federalizing states. J Health Polit Policy Law 2009; **34**: 381–99.

World Bank,(2010) World Development Indicators 2010, Washington, D.C., 2010.

World Health Organization (1994) The role of the pharmacist in the health care system. Report of a WHO consultative group, Geneva: World Health Organization; 1994.

Appendix 2

KURDISTAN PHARMACY SERVICE

2.1 Background

Arabic is the first and Kurdish the second minority within the middle Eastern country of Iraq, and English is often heard as the most spoken foreign language. English is often used by Iraqi medical personnel during their hospital practice, and also in their communication at medical colleges for dentistry, pharmacy and medicine. In 2011, there were 27 private universities in Iraq and 25 governmental operated ones (IMHESR, 2011). The University of Baghdad is the largest university in Iraq, and was founded in 1908. The University of Mosul, founded in 1967, is the second largest university in Iraq (UM, 2011).

1.2 Contemporary pharmacy in Iraq

Modern pharmacies within Iraq can be traced back to 1936 with the founding of the first pharmacy college named the Royal College of Pharmacy and Chemistry, which reported to the Ministry of Health that had been founded in 1920. In the early decades of Iraqi pharmacy, practitioners were known as ‘chemical pharmacists’ since they had graduated with specialisms in both chemistry and pharmacy. This college merged with University of Baghdad in 1957 and was renamed the College of Pharmacy, following which new graduates earned a Bachelor’s degree in pharmaceutical sciences. In 1972, the College of Pharmacy began to offer Master’s degrees, and in 1975 it offered doctorate level studies. Many students have come to the University of Baghdad from numerous other Arabic countries in order to study on the undergraduate and graduate programmes at the College of Pharmacy, with the majority of them being from Syria, Palestine, Yemen and Jordan. There was only one College of Pharmacy in the country between 1936 and 1991, though following this, a further 16 pharmacy colleges were founded (4 private institutions; 12 governmental), as noted in Table 1 (IMHESR, 2011). Governmental colleges offer free education, whereas private colleges charge. High school graduates can enter the governmental pharmacy colleges if they score, on average, no less than 92% in their pre-admission baccalaureate exam. On average, the graduates of pharmacy schools in Iraq are 23 years of age upon completion of a 5-year bachelor’s degree. Two and three years of study are required for the Master’s degree in pharmacy and doctorate programmes, respectively. At the University of Baghdad, the 2 year

programme for the Master's degree in pharmacy is composed of specialised courses for two semesters, together with a research year. Doctorate studies, on the other hand, are made up of 3 semesters of study followed by a comprehensive exam, and then a total of 18 months of research. There is a choice of six different disciplines for pharmacy graduate students, namely: pharmaceutics, clinical pharmacy, pharmaceutical chemistry, pharmacology and toxicology, pharmacognosy and clinical laboratory sciences. The Ministry of Higher Education and Scientific Research governs all financial and administrative aspects of the undergraduate and postgraduate studies, a Master's degree being a requirement for applicants to the doctorate programme (IMHESR, 2011).

Table (1): A chronology of the foundation of pharmacy colleges and schools in Iraq

Colleges and Schools of Pharmacy in Iraq (Institution)	Year Founded
College of Pharmacy, University of Baghdad	1936
College of Pharmacy, University of Mosul	1992
College of Pharmacy, Hawler Medical University	1997
College of Pharmacy, University of Basrah	1999
College of Pharmacy, University of Kufa	1999
College of Pharmacy, University of Mustansiriyah	2000
Baghdad College of Pharmacy	2000
College of Pharmacy, University of Tikrit	2002
College of Pharmacy, University of Karbala	2006
Department of Pharmacy, Al-Yarmouk University College	2006
School of Pharmacy, University of Duhok	2009
College of Pharmacy, University of Babylon	2010
Department of Pharmacy, Al-Rasheed University College	2010
College of Pharmacy, University of Al-Anbar	2010
College of Pharmacy, Thi-Qar	2012
Department of Pharmacy, Al-Rafidain University	2012

2.3 The Iraqi workforce working in pharmacy

There is approximately one pharmacist for every 2,887 Iraqi people, though it is unclear from the data about the ratio of female to male Iraqi pharmacists. Between 1990 and 2003, the majority of graduates in pharmacy were men since the admission scores required for women were higher. This sexist policy was scrapped in 2003, since when most graduates are now women. About 10,380 pharmacists were registered in the Syndicate of Iraqi Pharmacists (SIP) in April 2011. The SIP is the professional organisation for pharmacists with a reach that encompasses 15 governorates and provinces (SIP, 2011)[3]. The Syndicate of Iraqi-Kurdistan Pharmacists has its reach of the three provinces within Kurdistan, and from May 2012 had 968 registered pharmacists (SIP, 2011). As such, there are around 11,347 registered pharmacists in Iraq (Table 2). In Baghdad, there are 6,220 pharmacists practising in various fields (SIP, 2011). Governmental hospitals are the prime site for pharmacy practice, followed by pharmacies in the community, education institutions and industries for pharmaceuticals. Following graduation, all pharmacists can become registered with the SIP. Most newly-graduated pharmacists begin with a year-long rotation at a governmental hospital, followed by 2 years of service at a Ministry of Health centre in a remote town or village, before finally being considered a practicing pharmacist. In general, the working day of a pharmacist runs from 8 am to 3 pm, following which a pharmacist may run their own business within a pharmacy in the community, often known as part-time practice in community pharmacy. Pharmacists that have retired, and those without work in a governmental position can practice in businesses that are private, i.e. at a scientific bureau, a drug store or a pharmacy. Drugs and other pharmaceutical products are distributed by the major Iraqi drug stores, with links to scientific drug bureaus, national pharmaceutical companies and private community pharmacies. Scientific drug bureaus function for the scientific promotion and trading of medical appliances and pharmaceuticals, with pharmacists requiring a specific license to practice within them. There are a total of 311 drug stores, 296 private scientific drug bureaus and 5,336 community pharmacies that are registered with the SIP (SIP, 2011). Founded in 1967, the SIP is a non-governmental organization, and all pharmacists of Iraq have membership of it. The SIP is based in Baghdad, and has authorisation to license drug stores, scientific drug bureaus and community pharmacies; once a pharmacist has finished 3 practice years within public sector hospitals or other institutions within the MOH, he or she can apply for a license to authorise their practice within one of the three. In applying for licensing, there

are laws stipulating the governance of practice within pharmacy in Iraq, and practice guidelines for private businesses must be adhered to by the pharmacist (SIP, 2011).

Table (2): Registered pharmacists in Iraq by province

Registered Pharmacists in Iraq by province	No. of pharmacists
Baghdad	6,220
Nainawa	776
Basrah	488
Babylon	452
Al-Najaf	383
Karbala	319
Kirkuk	288
Dhi Qar	245
Wasit	235
Salahaddin	228
Diyala	208
Al-Anbar	182
Al-Qadisiyyah	146
Maysan	113
Al-Muthanna	96

2.4 Community pharmacy practice

Most of the pharmacies distributed amongst communities in Iraq are located in the major cities. The combined total of community pharmacies within Basrah, Mosul and Baghdad exceeds the combined total for all the other cities in Iraq. The SIP requires all community pharmacies to be at least 20 m² in area, and at least 25 m from the nearest pharmacy. Furthermore, for the storage of medicines, community pharmacies ought to have glass-doored cabinets of at least 10 m length, as well as air conditioning, complete facilities for electricity, water supply and sewerage, a compounding bench, the necessary facilities for weighing, mixing and compounding of prescriptions, official labels, a personal computer, adequate furniture for the patients, a bar-code scanner or reader and a refrigerator (SIP, 2011). There are no chains of pharmacies in Iraq since a pharmacist can have a license to run just one business privately, such as a community pharmacy. Prior to getting their license, a pharmacist is able to work under the complete supervision of a licensed pharmacist within a community pharmacy. Moreover, a community pharmacy is permitted to have one or more assistants or ‘pharmacy technicians’ who are required to earn a 2-year limited pharmacy diploma (Ali, A. et al., 2013).

2.5 Hospital pharmacy practice

The public sector hospital system is the 2nd most common setting in Iraq for the practice of pharmacy. There are 4 types of roles for pharmacy practice in public hospitals: i) the drug store manager, who has activities different from those described above; ii) internal pharmacy personnel responsible for medicine distribution to in-patients, iii) outpatient pharmacy personnel responsible for dispensing medicines to patients requiring ambulatory care, iv) clinical pharmacists with activities that, rather than focused on dispensing, are focused on pharmaceutical care that is patient-focused. In any given hospital, the number of clinical pharmacists is dependent upon the size of the hospital, its capacity and its number of floors. It is usual for there to be one or two clinical pharmacists for each ward in a hospital. One of the largest hospitals in Iraq is the Baghdad Teaching Hospital, which has a large number of clinical pharmacists (Ali, A. et al., 2013).

6.6 Clinical pharmacy practice

Over the last twenty years, there has been an increase in the number of opportunities of practice roles that are clinically oriented for Iraqi pharmacists. Pharmacists need to have a Master's degree or doctorate so that they can become a specialist in clinical pharmacy. Founded in 1992, the Department of Clinical Pharmacy of the College of Pharmacy of the University of Baghdad awards the aforementioned specialised degrees. A certification process of the Iraqi Board of Clinical Pharmacy was approved in 2011 – this process calls for four years of coursework and clinical training within teaching hospitals. First offered in the academic year of 2012 to 2013, recognition by such certification is considered equivalent to a doctorate degree since it is similar to having board certification from medical specialists. Every year, a limited number of positions on clinical pharmacy programmes are offered to new graduates of pharmacy. There is a competitive process, based upon class rank upon graduation and examination, to which pharmacists apply for entrance to the program of clinical pharmacy. A programme of clinical pharmacy is considered training, and does not lead to the award of a further degree. Practitioners of clinical pharmacy can choose the city and hospital for their work, unlike other school graduates of pharmacy. In Iraqi hospitals, clinical pharmacists have the functions of supply of medication to in-patients, the provision of nurse and physician consultations, the education of patients about the appropriate use of medication, and other activities focused on the patient (Ali, A. et al., 2013).

2.7 Regulation of the practice of pharmacy

The Ministry of Health and the SIP regulate pharmacy practice within Iraqi community pharmacies. Since it was created, the Ministry of Health has been managed solely by physicians, and rules overseen by them has controlled the practice of pharmacy within public sector hospitals. In effect, the Ministry of Health has responsibility for the administration of all healthcare institutions on hospitals in Iraq and, along with the SIP, conducts inspection and other overseeing activities on a regular basis in order to ensure that governmental laws and regulations are complied with by community pharmacies. Violation of the law leads to the imposition of sanctions for pharmacists ranging from a pharmacy being closed temporarily to a license of a pharmacy practice being revoked (Ali, A. et al., 2013).

2.8 Regulation and distribution of drug products

Iraqi pharmacists have involvement in various differing Directorates and Committees, such as the Drug Registration Committee (DRC), the National Committee for Drug Selection (NCDS), the State Company for Marketing Drugs and Medical Appliances (KIMADIA), and the Quality Control Department (QDC). The activities of the above bodies include registration, quality assurance, distribution and approval of medication. The DRC, which is part of the Department of Registration within the Directorate of Technical Affairs of the Ministry of Health, has responsibility for drug registration and the regulation of approved medications. The NCDS is made up of pharmacists and specialist physicians, and controls the approval of medications for marketing within Iraq in accordance with patient needs. KIMADIA, from its foundation in 1964 up until 2003, had responsibility for the importation, storage and distribution of medications for both the private and public sectors. Since 2003, its responsibilities included the supply of medical appliances and drugs to public sector health centres and hospitals (KIMADIA 2012). Medications can be bought by the KIMADIA either through scientific drug bureaus in Iraq, or directly from national and international pharmaceutical companies. The primary source of medications and other pharmaceutical products used in the private sector are the scientific drug bureaus that are agents of both national and international companies. They provide drug stores or wholesale outlets, and a number of pharmacies. Pharmacists operating within private pharmacies can also order supplies of medication from drug stores. Finally, the QDC, operating under the auspices of the Directorate of Technical Affairs, has responsibility for quality control evaluations of medications prior to marketing, and is composed of 107 pharmacists.

2.9 The pharmaceutical industry and market

Nowadays, the market for medication in Iraq has 8,648 registered trade names under the Directorate of Medical Affairs of the Ministry of Health (DTAIMH, 2012). The medications made by both international and national pharmaceutical companies are available in Iraq. In total, Iraq has 28 registered national pharmaceutical companies (DTAIMH, 2012). The Samarra Drug Industry (SDI) is the largest domestic producer and was founded in 1957 by the government; it has the largest share of the drug market in Iraq, and has the largest pharmaceutical production facilities in the country. There are also a total of around 1,026 international companies registered with the Ministry of Health (Annual Report, 2011). The

private pharmaceutical sector in Iraq became open to international companies after 2003, and their companies of origin are widespread across Asia, Arab countries, the United States and Canada, Australia and Europe; all those exporting medicines to Iraq have to be registered with the Ministry of Health.

The pharmacy world has witnessed radical changes over the last twenty years with the establishment of fifteen pharmacy colleges and a consequent great increase in the number of Iraqi pharmacists (Al-Lela, 2012). Many advances have been achieved by the Iraqi pharmacy profession, particularly within clinical pharmacy. Pharmacists in Iraq are now seeking further opportunities to work as healthcare team members for improvement of the care of patients, and it is clear that, with the rise in the number of Iraqi pharmacists, their position within the healthcare sector will have greater prominence. Iraqi pharmacists face the significant challenge of issues with funding mechanisms for healthcare. Health insurance is, to date, not a popular concept within Iraq, and healthcare institutions in the country are not operating in a system that is insurance driven. Indeed, Iraq does not have any health insurance companies. Medical centres in Iraq are either privately operated, or run by the government; the former works by cash payments 'out of pocket', whilst the latter have services provided free of charge. Since relatively good services are provided free of charge, the public sector healthcare system in Iraq is thought of as the main provider of healthcare. The concepts of health insurance and privatisation will not be accepted easily by Iraqi patients, since there have been free medical services within the public sector for over a hundred years. If plans for health insurance are to be established within Iraq, the likeliness is that, initially at least, coverage will only apply to private pharmacies, clinics and hospitals. As noted by Al-Rafidain (2012), such a scenario would require Iraqi pharmacists to continue to take the initiative for the development of the roles within practice and the promotion of regulations for the advancement of pharmaceutical care practice through personal investment in the advancement of education, and the ongoing development of skills (Al-Rafidain, 2012).

2.10 The situation for drugs within Kurdistan

Studies of various Middle Eastern countries and their pharmacy status shows that, being in close proximity, they are similar societies that share culture and languages. Pharmacy in the Middle East faces much the same challenges as any other countries (Nadir, K. et al., 2009). Clearly, Iraq has suffered from a very tough few years, and pharmacy schools, and schools in general, have had a shortage of academic staff. The role of pharmacists in the community and pharmacy businesses have been undermined by the sale of illegal drugs on the street. The shortages of the drugs and the poor regulation have played their part in the growth of this black market (Maliki. 2012). Mason (2012), reported that the situation with regard to business and education in pharmacy is ‘pharmaceutical chaos’ and so there are numerous obstacles to improving the quality of drugs and the quality of the education. Within the Middle East, there are many similarities with regard to the business of pharmacy, with research having shown that in Jordan, for example, as much as 93% of pharmacists are working in the private sector (Gunter et al., 2004).

The three provinces of Duhok, Erbil and Sulaymaniya, which had a population of 3.8 million in 2006, are governed by the semi-autonomous Kurdistan Regional Government (KRG) (Figure 1). Poor organisation and storage of drugs are persistent challenges for pharmacies in Kurdistan; difficulties for pharmacies are compounded by the lack of computer systems, internet and patient documents, and records (Musings on Iraq, 2012). It was reported in the Kurdish Globe that bad medication is leading to the death of civilians (Akhtiar, 2013). The Ministry of Health of Kurdistan aims to stop the importation of illegal, poor quality and expired medications, and many medical clinics have been closed down when inferior and counterfeit drugs have been discovered. The free market, widespread smuggling and the poor work of the Medical Products Agency for Quality Control have led to the proliferation of poor quality drugs within Kurdish pharmacies (Akhtiar, 2013). Low prices of drugs, rather than strength and effectiveness, leads to these products being imported from countries such as India and China. The origins of various medicines can differ considerably; for example, omeprazole is available in fourteen different types, each of which is imported from a different country, and each has a different price (Årsredovisning, 2006). Whilst in the western world efforts at reform have tended to focus on slowing rising drug costs, for Kurdistan there is a need to focus on ensuring the population receives good quality drugs.

With Kurdistan not having computer systems in pharmacies and a shortage of well-educated personnel, it is easier for errors to be made in the dispensing of drugs. Many industries in Iraqi Kurdistan are being reconstructed, and so there is hope that a willingness to see through the modernisation of the business of pharmacies will also become apparent. Rumours and media news in recent years suggest that the population craves the establishment of a modern system of pharmacies on the lines of Europe.

It was widely acknowledged that Iraq had a well-managed and effective public sector health system prior to the Iran-Iraq war. Generally, there were heavy subsidies for medical services and pharmaceutical products, and the majority of the population were in receipt of healthcare services of an adequate standard. Even back then, however, there were significant differences between services for the urban and rural populations (Firas, H. et al., 2005). Drug distribution in Kurdistan is composed of both private and a governmental strategies which are entirely independent. The governmental section of drug distribution is the responsibility of the government, whilst the responsibility for the private sector lies with a trade union known as the Syndicate of Kurdistan pharmacists. All places where medications exist are inspected by the corresponding MPA for quality control in order to ensure adherence to all regulations and laws. Due to the political problems between the Kurdish region and the state of Iraq, and also the issue of smuggling poor quality drugs, the Kurdistan region has its own approaches to quality control (Akhtiar, 2013).

2.11 Dispensing prescription medicine

The dispensing of prescription drugs are performed by the same method within all pharmacies, with anyone able to enter a pharmacy with or without a suitable prescription. All the drugs are brought forward by pharmacy personnel, although errors can be made if prescriptions are interpreted incorrectly. Widespread errors can occur with the abundance of customers and the widespread lack of education amongst personnel involved (Akhtiar, 2013). Pharmacies in Kurdistan are controlled by both Quality Control and the security police, though often uneducated people are employed within them. There is flexibility with the pricing of drugs, with no limit to how low a price a drug can be sold for; however, there is an upper limit to drug prices. Drug sustainability is also investigated, and if a pharmacy is found to sell drugs that are counterfeit, there are now strengthened laws with regard to drug quality that can be taken care of by Quality Control within Kurdistan (Akhtiar, 2013). Prescriptions in Kurdistan are white paper ones. Kurdistan, and indeed the whole of Iraq, is without a

permanent electricity supply, and such instability makes computer systems impossible in Kurdistan. There would be interruptions every four to six hours, and the transfer of electronic prescriptions between pharmacies and physicians would be very slow (Akhtiar, 2013). As Kurdistan is still within the state of Iraq, it is difficult for the government to provide a personal identification number for the National Health Service, and this obstacle is a challenge for Kurdish personnel attempting to reform the system for the distribution of drugs. Within European countries, all prescriptions become registered upon a computer system so that they can be archived electronically, for which there is a higher level of safety. However, in Kurdistan, only paper prescriptions are in existence, and so it is more difficult to research what drugs patients may have received previously (Akhtiar, 2013). Whilst European pharmacies dispense drugs with all the relevant information, labeling and packaging (such as the name of the patient, indication, the name of the prescriber, etc.), patients are dispensed drugs in Kurdish pharmacies without an informative label on the packaging. The European approach is very useful for avoiding errors, and the lack of a computer system in Kurdish pharmacies, and the failure of prescribers to note the indication of the drugs, leads to greater vulnerability for the patient/customer (Akhtiar, 2013).

2.12 Medical treatment within Kurdistan

In order to be examined, patients should visit their nearest clinic, with simple cases treatable in the clinics located within most towns, villages and neighbourhoods. In cases that are more complicated, it is usual for patients to be referred to specialised hospitals where doctors with different specialists can provide examinations from 8 am to 1 pm during the working days of Saturday to Wednesday. It costs the patient a fee of around US \$1 for a check-up with a doctor, the treating of wounds or injections, for medicines, and for laboratory tests. It is possible to treat the majority of diseases within Kurdistan, and public sector centres are able to treat cancer. Access to clinics can be very difficult in some isolated areas, and within public sector hospitals, the wait for surgery for a patient may be months (UNDP et al., 2012). For those wanting special care and that are able to afford it, there is the option of going for treatment in a private hospital. Private hospitals are also available for those unable to wait for surgical appointments, and operations can be undertaken straight away. Specialist doctors working in regular working hours within hospitals usually have private clinics in the afternoon without particular days or working hours. However, most are closed on Fridays, and a certain number are closed on Thursdays as well. Private clinics tend to have the

equipment required for X-rays, ultrasound examinations and MRIs. Anyone that suffers from a chronic disease has a medical card that has the previous use of medicines and status of illness noted upon it for when the patient approaches hospitals (WHO et al., 2011).

2.13 Availability of medicines

Most types of medication can be found in Iraq, although they may not be available in public sector hospitals. Unlike the case with private sector pharmacies and hospitals, the medicines held in a public hospital have been purchased by the government, and patients do not have a choice of a different manufacturer. Medicines that have been prescribed by doctors in private hospitals or clinics may only be purchased from pharmacies operating in the private sector. There is a wide range of medicines available from different manufacturers, from those made in Iraq, to those from the UK, Switzerland, Germany, Syria, Turkey, India and China. In Iraq, there is a shortage of cancer medicines which are obtainable from government-run specialised hospitals for cancer. Waiting times for cancer medicines can be weeks and weeks, if not months, and potentially even years in some cases. Therefore, it is normal for patients to acquire these types of medicines from other countries, especially Jordan, where the drugs can be bought from private pharmacies (Osman et al., 2011).

A medical prescription (Rx) is an instruction that a dispenser receives from a prescriber who is not necessarily a doctor, since they could also be a midwife or nurse, paramedical worker or medical assistant. Likewise, a dispenser is not necessarily a pharmacist; the dispenser can be a nurse, technician or assistant in a pharmacy. Each country has a set standard for the minimum amount of information needed on a prescription, and its own regulations and laws for defining which drugs need a prescription and who can write one (Mary et al., 2008). Usually, the term prescription refers to an order written by a physician so that a pharmacist can provide the treatment for an intended recipient, i.e. the patient. The term prescription is normally used to describe the order to receive particular medications, and the prescriptions can indicate that the person prescribing is taking responsibility for clinical patient care and, in particular, for monitoring the safety and efficacy of the medication. As such, prescriptions have highly significant legal implications. There are pre-printed forms for prescriptions gathered into pads upon which prescriptions are handwritten. Alternatively, on similar forms, a printer can be used that identifies the document (Vries et al., 1995). Every country has its own prescription regulations, and so there is no universal standard; however, it is most important that a prescription is perfectly legible with a precise indication of what should to be

given. The format of a prescription might differ a little from one place to another, although there is agreement between most countries regarding what its core elements should be. It is agreed that these should include the name of the prescriber, their address, telephone number and their signature, as well as the name of the patient, their address, age, weight, and the date of the prescription and, with regard to the medication itself, there should be the name of the drug, its formulation and strength, the dose required, how often it needs to be administered, the quantity of medication prescribed, the reason for the prescription, and also instructions for use of the medication (Lofholm et al., 2001). The checking of prescriptions by community pharmacists in order to ensure that the prescription is an important one is a very important role. The frequency of prescribing errors is unknown; however, patient high level of patient harm can be caused by mistakes made at community pharmacies. Most handwritten prescriptions by doctors in Kurdistan can appear as a scrawl, and new pharmacists may have difficulty in reading them; the patient may need to go to other pharmacies to acquire the drugs. Pharmacists may be able to read English without fully understanding the content of a prescription convincingly, and a patient may be confused and worried if unable to acquire the medication that has been prescribed by a doctor. Occasionally, a pharmacist may say a drug is unavailable when they have simply been unable to read the prescription and did not want to admit it. The ability to read prescriptions comes with experience, as the pharmacist recognises the handwriting of doctors. Doctors need to be mindful of the difficulties they may be creating and write more carefully. For example, a physician may just write a letter 'A' without anyone knowing what the letter represents. There are certain standard medical abbreviations that experienced pharmacists are aware of, although some doctors may write their own abbreviations. It is clear that, rather than the handwriting of physicians presenting a conundrum, names of medicines need to be written carefully and fully. With the difficulties that pharmacists may encounter in trying to understand prescriptions, they sometimes consult one another or ask the patient to return to the physician for a more legible prescription. Sometimes the pharmacist may even take a guess as to what the prescription says, and go ahead and dispense the medication. Obviously, it is imperative that physicians take the time to write clearly and that they communicate better with pharmacists (Lacy et al., 2001).

References:

Akhtiar Zebari (2013) Modernization of drug distribution in Kurdistan Is it possible to implement the Swedish drug distribution system in Kurdistan? Report passed: April 18, 2013

Ali Azeez Al-Jumaili, Saad Abdulrahman Hussain, (2013) Pharmacy in Iraq: History, current status, and future directions Ali Azeez Al-Jumaili, Saad Abdulrahman Hussain, . 2013 Am J Health-Syst Pharm; 70:368-72

Al-Lela OQ,(2012) Baderaldeen SK, Elkami RM et al. Pharmacy education in Iraq. Am J Pharm Educ. 2012; 76:183.

Al-Rafidain (2012) Department of Pharmacy, Al-Rafidain University. www.coalrafidain.edu.iq (accessed 2012 Dec 12).

Annual report (2011) of the Syndicate of Iraqi– Kurdistan Pharmacists. Erbil, Iraq: Syndicate of Iraqi–Kurdistan Pharmacists; 2011.

Årsredovisning(2006)(<http://www.apoteket.se/privatpersoner/om/Documents/Om%20Apoteket/Finansiell%20Info/arsredovisning-2006.pdf>) (2012-11-30)

Dr Firas Hilmi, Al-Assad Group of Companies, July (2005) A recognised pharmaceutical importer Personal communication, exemployee of Kimadia, qualified pharmacist.

DTAIMH (2012) Directorate of Technical Affairs, Iraqi Ministry of Health. www.tech.moh.gov.iq (2012 Jun 13).

Gunter MM, Natali D, Olson R, Özcan NA, Salih K and Yavuz MH: (2004). The Kurds in Iraq. Middle East Policy. 11(1):106–131.

IMHESR (2011) Iraqi Ministry of Higher Education and Scientific Research. www.moheer.gov.iq (accessed 2011 Dec 30).

KIMADIA (2012) State Company for Marketing Drugs and Medical Appliances (KIMADIA). www.kimadia-iraq.com (accessed 2012 May 3).

Lacy, CF (2001)., eds. Drug information handbook, 9th ed. Cleveland, Ohio, Lexi-Comp, 2001: 12.

Lofholm PW, Katzung BG. (2001) Rational prescribing and prescription writing. In: Katzung BG, ed. Basic and clinical pharmacology, 8th ed. New York, McGraw Hill,:1104–12.

Maliki (2012) vows revenge for Mustansiriyah University massacre. http://www.iraquupdates.com/p_articles.php/article/13557. (2012-11-25)

Mary R, Couper and Dinesh K Mehta; (2008) Prescription writing; WHO Model Formulary:p12.

Mason P.(2012) Life as a student in Iraq what impact has the war had in pharmacy. (<http://www.pjonline.com>) (2012-11-28).

Musings on Iraq (2011) (<http://musingsoniraq.blogspot.se/2011/06/view-from-northern-iraq-on-2011-kurdish.html>) (2012-11-20).

Nadir Kheir, Manal Zaidan, BSc, Husam Younes, Maguy El Hajj, Kerry Wilbur and Peter J. Jewesson: (2009). Pharmacy Education and Practice in 13 Middle Eastern Countries. American Journal of Pharmaceutical Education 72(6): 133

Osman, Z (2011) Kurdish Globe situation of medicine in Kurdistan 2011

SIP (2011) Syndicate of Iraqi Pharmacists. www.iraqipharm.com (accessed 2011 Dec 3).

UNDP (2012) Life expectancy at birth (years) <http://hdrstats.undp.org/en/indicators/69206.html> 7.2.2012.

University of Mosul. (2011) www.uomosul.edu.iq (accessed 2011 Dec 30).

Vries TP. eds. (1995) Guide to good prescribing: a practical manual. Geneva, World Health Organization,: 51–5 (WHO/DAP/94.11).

WHO 2011 Non-communicable diseases country profiles 2011 http://www.who.int/nmh/countries/irq_en.pdf 28.12.2011.

Appendix 3

Community pharmacy questionnaire

Part 1 general information and background of the pharmacist

1. Age?

- a. less than 26 years
- b. 26-35 years
- c. 36-45 years
- d. more than 45years

2. Marital status?

- a. Single
- b. Married
- c. Divorced
- d. Widower

3. Qualification?

- a. Diploma in pharmacy
- b. Bachelors degree in pharmacy
- c. Post graduate degree (Master, Ph D)
- d. Diploma in the Health Institution.

4. In what year did you of first graduation (Bachelors in pharmacy)?

5. In what year did you first register as a pharmacist ?

6. How many pharmacists are work with you in the pharmacy?

8. How many pharmacy assistants are work with you in the pharmacy?

7. For how long have you been working in this pharmacy?

- a. Less than I year
- b. Between 1-3 years
- c. Between 3-5 years
- d. More than 5 years

8. What was your previous job before you work in this pharmacy?

- a. Community pharmacy
- b. Hospital pharmacy -government -private
- c. Medicine manufacture
- d. Other (please specify

9. Are you currently a member of any pharmaceutical society?

- a. Yes
- b. No

10. If the answer to the previous question is 'yes', please state name of the pharmaceutical society?

11. Have you participated in any continuing education programs over the last 12 months?

- a. Yes
- b. No

12.If the answer to the previous question (yes), please specify

PART 2 Information about the pharmacy you are working in:

13.What are the opening hours of your pharmacy?

- a. In the morning from to
- b. In the afternoon from to
- c. In the evening from to
- d. At midnight from to

14. What system do you use for classification of your medicine stocks?

- a. Generic
- b. Alphabetic
- c. Manufactures
- d. Dealer
- e. Mixed system please (specify)
- f. Others (please specify)

15. Approximately what proportion of your customers visit your pharmacy more than once a week?

- a. Less than 10%
- b. More than 10%
- c. More than 20%
- d. More than 30%
- e. More than 50%

16. Can you indicate the 3 medicine of condition that you sell most?(give 1 for the most condition medicine you sell, 2 for the next one and so on?)

- a. Headache
- b. Fever
- c. Cold

- d. Infection
- e. Skin disorders
- f. Other (please specify_)

17. Which three medicines do you sell the most? please specify:-

- a.
- b.
- c.

18. What sort of medicine available in the Kurdistan?

- a. POM
- b. OTC
- c. GSL

19. It is essential to keep records for all medicines that I purchased ?

- a. Strongly agree
- b. Agree
- c. Neither agree or disagree
- d. Disagree
- e. Strongly disagree

20. It is essential to keeping records for all medicines that I sell ?

- a. Strongly agree
- b. Agree
- c. Neither agree or disagree
- d. Disagree
- e. Strongly disagree

21. Do you keep record for controlled drug?

- a. Always
- b. Sometimes

23. Do you use a computer system in your pharmacy?

- a. Yes
- b. No.
- c. Never

24. If the answer to the previous question (yes), what do you use the computer for?

- a. General information
- b. Checking interaction
- c. Labelling medicine

25. Do you sell specific OTC medicines to individual customers?

- a. None
- b. 0-10 customers
- c. 11-20 customers
- d. Over 20 customers

26. Do you offer advice or ling to your patients for medicines you sell?

- a. Always
- b. Sometimes
- c. Only if requested by customer
- d. Never

27. If the answer to the previous is 'a', 'b', or 'c' do you do this:

- a. Verbally
- b. In writing
- c. Both verbally and writing

28. How often do customers ask for your advice on their illnesses and medications?

- a. On a daily basis
- b. Sometimes
- c. Never

29. How often do customers ask you to sell them steroid medicines without prescription?

- a. More than once a week
- b. More than once a month but less than once a week
- c. Less than once a month
- d. Not at all

30. Have you ever dispensed the steroid medicines without prescription?

- a. Always
- b. Sometimes
- c. Never

31. If the answer to the previous question (always or sometimes), please say which of the following medicine you supply without prescription? (please tick all that apply)

- a. Oral corticosteroid
- b. Parenteral corticosteroid
- c. Oral contraceptives
- d. Female sex hormones
- e. Topical corticosteroid
- f. Anabolic steroid
- g. Male sex hormones
- h. Other (please specify)

32. How often do customers ask you to sell them products containing codeine or its derivative?

- a. More than once a week
- b. More than once a month but less than once a week
- c. Less than once a week
- d. Not at all

33. How often do you sell medicine containing codeine or its derivative?

- a. Every week
- b. About once a month
- c. Less than monthly

34. If the answer to the previous question is (every week, about once a month), for what symptoms do you sell these medicine?

- a. For dry cough
- b. As an analgesic
- c. Other (please specify)

35. How often do any customers ask you to sell them products containing any stimulants?

- a. Every week
- b. About once a month
- c. Less than once a month
- d. Never

36. How often do you sell products containing a stimulant?

- a. Every week
- b. About once a month
- c. Less than once a month
- d. Never

37. If the answer to the previous question (always or sometimes) please indicate which stimulants you sell (please tick all that apply)

- a. Amphetamine
- b. Appetite suppressants
- c. Other (please specify)

38. How often do you raise prescription queries with the prescribing physician when you face any problem when dispensing a prescription?

- a. On daily basis
- b. On weekly basis
- c. Less than weekly basis

39. How would you describe your professional relationship with physicians in your area?

- a. Mutual respect between myself and the physician
- b. Little respect between myself and the physician
- c. Cannot answer because insufficient communication between myself and physician)

40. What are the most common types of query with your local physician? please write in the box below:-

41. Which of the following medication list are OTC medicines? (please tick all that apply)

- | | |
|-------------------------------|--------------------------|
| a. Cough syrup | <input type="checkbox"/> |
| b. Antibiotics | <input type="checkbox"/> |
| c. NSAIDs | <input type="checkbox"/> |
| d. Antispasmodic | <input type="checkbox"/> |
| e. Cardiac medicines | <input type="checkbox"/> |
| f. Antacids | <input type="checkbox"/> |
| g. H2 antagonists | <input type="checkbox"/> |
| h. Oral Hypoglycaemic A gents | <input type="checkbox"/> |
| i. Hormones | <input type="checkbox"/> |
| j. Vitamins | <input type="checkbox"/> |
| | <input type="checkbox"/> |

42. Which of the following medication list do you see on prescription? (please tick all that apply)

- | | |
|----------------------|--------------------------|
| a. Cough syrups | <input type="checkbox"/> |
| b. Antibiotics | <input type="checkbox"/> |
| c. NSAIDs | <input type="checkbox"/> |
| d. Antispasmodic | <input type="checkbox"/> |
| e. Cardiac medicines | <input type="checkbox"/> |
| f. Antacids | <input type="checkbox"/> |
| | <input type="checkbox"/> |

*****THANK YOU*****

Appendix 4

General questionnaire

Please do NOT write your name on the questionnaire as this study is anonymous. Do not feel obligated to answer all questions if you are uncomfortable or unable to do so.

Thank you for giving me a few minutes to complete this questionnaire. Please tick (✓) the suitable answer:

Part I General Information

1. Age?

- a. Less than 25 years old ()
- b. From 25 to 34 years old ()
- c. From 35 to 44 years old ()
- d. From 45 to 54 years old ()
- e. 55 years and older ()

2. Where do you live?

- a. Howler ()
- b. Dohuk ()
- c. Sulaymaniya ()

3. Marital status?

- a. Single ()
- b. Married ()
- c. Divorced ()
- d. Widowed ()

4. Level of Education?

- a. None ()
- b. Primary school ()
- c. primary and some secondary school ()
- d. Secondary and some high school ()
- e. High school or equivalent ()
- f. University or equivalent ()
- g. Postgraduate ()

5. Occupation?

- a. Manual worker ()
- b. Teacher ()
- c. NHS staff ()
- d. Office worker ()
- e. Sales man ()
- f. Other (please specify) (-----)

6. Monthly income?

- a. Less than 300.000 Dinar ()
- b. Between 400.000 - 800.000 Dinar ()

- c. Between 900.000 - 1500000 Dinar ()
- d. Between 1500.000 - 2000000 Dinar ()
- e. More than 2000000 Dinar ()

7. If you or any of your family become sick, do you go to?

- a. Primary health care ()
- b. Governmental hospital ()
- c. Private hospital community pharmacy ()
- d. Local Pharmacy ()
- e. Other (please specify (- -----))

Part II Information about some Medications

8. Have you used drugs other than those required for medical reasons?

- a. Yes, ()
- b. No, ()

9. Do you ever worry about the side effects of the drug on your body?

- a. Yes, ()
- b. No, ()

10. What are the main reasons buying medicine direct from pharmacy?

- a. Cost saving ()
- b. Fast ()
- c. Convenience ()
- d. Get what medicine you need without prescription ()
- e. Other (specify) (.....)

11. Have you ever treated yourself (self-medicated)?

- a. Yes, ()
- b. No, ()

12. How many times did you treat yourself in the past one year?

(.....)

13. What was (were) your reason(s) of self-medication?

- a. Cost saving ()
- b. Convenience ()
- c. Lack of trust in prescribing doctor ()
- d. Others (specify) ()

14. For which of the following complaint(s) did you use antibiotics? (check more than one if applicable)

- a. Runny nose ()
- b. Nasal congestion ()
- c. Cough ()
- d. Sore throat ()
- e. Fever ()
- f. Aches and pains ()

- g. Vomiting ()
- h. Diarrhea ()
- i. Skin wounds ()
- j. Others (specify) (.....)

15. Your selection of antibiotics or medicine was based on... (check more than one if applicable)

- a. Recommendation by community pharmacists ()
- b. Opinion of family members ()
- c. Opinion of friends ()
- d. My own experience ()
- e. Recommendation by net citizens ()
- f. Previous doctor's prescription ()
- g. The advertisement ()

16. What did you consider when selecting medicine? (check more than one if applicable)

- a. Type of medicine ()
- b. Brand of medicine ()
- c. Price of medicine ()
- d. Indications for use ()
- e. Adverse reactions ()

Others (specify) (.....)

17. Did you ever change the dosage of antibiotics or medicine deliberately during the course of self-treatment?

- a. Yes, always ()
- b. Yes, sometimes ()
- c. Never ()

18. Why did you change the dosage of medicine during the course of self-treatment? (check more than one if applicable)

- a. Improving conditions ()
- b. Worsening conditions ()
- c. To reduce adverse reactions ()
- d. Drug insufficient for complete treatment ()

19. Did you ever switch antibiotics or medicine during the course of self-treatment?

- a. Yes, always ()
- b. Yes, sometimes ()
- c. Never ()

20. Why did you switch antibiotics during the course of self-treatment? (check more than one if applicable)

- a. The former medicine did not work ()
- b. The former medicine ran out ()
- c. The latter one was cheaper ()
- d. To reduce adverse reactions ()
- e. Others (specify) (.....)

21. How many different antibiotics did you take maximally during a single illness?

- (.....)
22. Are you concerned that you might have taken counterfeit antibiotics?
 a. Yes, very much ()
 b. Yes, somewhat ()
23. Have you ever found out that you had taken the same medicine with different names at the same time?
 a. Yes ()
 b. No ()
24. When did you normally stop taking medicines? (check more than one if applicable)
 a. After a few days regardless of the outcome ()
 b. After symptoms disappeared ()
 c. A few days after the recovery ()
 d. After medicine ran out ()
 e. At the completion of the course ()
 f. After consulting a doctor/pharmacist ()
 Others (specify) (.....)
25. Have you ever had any adverse reaction when you took medicine for self-medication?
 a. Yes (specify) (.....)
 b. No ()
26. What did you do for the adverse reactions? (check more than one if applicable)
 a. Stopped taking medicine ()
 b. Switched to another medicine ()
 c. Consulted pharmacy staff ()
 d. Consulted a doctor ()
 e. Consulted family members/friends ()
 f. Nothing ()
 g. Others (specify) ()
27. What do you think about self-medication with antibiotics for self health care?
 a. Good practice ()
 b. Acceptable practice ()
 c. Not acceptable practice ()
28. Did the pharmacist ever refuse to sell you any drugs?
 a. Yes ()
 b. No ()
29. If yes, what was the drug?
30. Why did he refuse to sell it?
31. If you asked for a drug by name, did the pharmacist ask whether the patient was child or adult?
 a. Yes, ()
 b. No, ()

32. If you asked for a drug by name, did the pharmacist ask whether the patient was a woman and-if so was she pregnant ?

- a. Yes, ()
- b. No, ()

33. If you asked for a drug by name, did the pharmacist ask whether the patient was currently taking any other medication ?

- a. Yes, ()
- b. No, ()

34. What is your opinion about the number of Community pharmacies in your city?

- a. Enough ()
- b. More than enough ()
- c. Too few ()
- d. No opinion ()

35. What is your assessment of the health care services that the Community pharmacies are providing for the social good?

- a. Very - good ()
- b. Good Acceptable ()
- c. Poor ()
- d. Very poor ()
- e. Do not know ()

*******THANK YOU*******

Appendix 5

Health Care Official interview

- Q. 1 Do you think that at present there are too many community pharmacies in Howler, Dohuk and Sulaymaniya city?
- Q. 2 Are the community pharmacies providing an adequate pharmaceutical service?
- Q.3 What are the aims of your unannounced inspection of community pharmacies?
- Q. 4 Are all community pharmacy running by the pharmacist?
- Q. 5 Are non pharmacist allowed to open the pharmacy?
- Q. 6 What action Ministry of Health will take if non pharmacist opens the pharmacy.
- Q. 7 Does the pharmacist using computer for dispensing medication?
- Q.8 What actions are taken against community pharmacies not following the Ministry of Health (MOH) pharmacy regulations?
- Q. 9 Does the inspection occur at any time during the opening hours of a community pharmacy?
- Q.10 Ware there any general problems with community pharmacies as perceived by the Department of Medical and Pharmaceutical Affairs? If so, how can they be resolved?
- Q. 11 What role does your department have in supervising (directly or indirectly) continuing education programs?
- Q.12 Do community pharmacy's pharmacists complain directly to tour Department about major problems in his job generally or with his employer? What is your role in such cases?
- Q. 13 Does the pharmacist allowed to sell POM medicine without prescription?
- Q.14 What action does the MOH (pharmacy license department) take against pharmacists who sell POM drugs without a prescription?
- Q.15 What sort of the reform require to improve the pharmacy service?

Appendix 6

CONSENT FORM

An exploration of the practice of prescribing and use of medicines, with a special focus on self-medication practices in the context of developing reform within the health care system in Kurdistan-Iraq

If you have any questions or would like to discuss any aspect of this research, please contact researcher OMER AZIZ on **07719 958 534**, via email at azizomer73@yahoo.co.uk.address Sulaymania General Hospital

***PLEASE TICK
TO CONFIRM***

1. I confirm that I have read and understand the information sheet date 22/07/2013 for the above study.
2. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.
4. Have you received enough information about the study
5. This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time.

Name of Participant

Date

Signature

Name of Researcher(witness)

Date

Signature

Appendix 7

PARTICIPANT INFORMATION SHEET

An exploration of the practice of prescribing and use of medicines, with a special focus on self-medication practices in the context of developing reform within the health care system in Kurdistan-Iraq. My name is Omer Aziz, a PhD student at the De Montfort University, at Leicester, supervised by Professor Martin Grootveld and Dr Peter Rivers. This research project is focused on use of medicine, practice of prescribing and self-medication practice by patients, paramedical staff and medical professionals in Kurdistan-Iraq, and also to obtain the views of a range of qualified medical professionals, paramedical staff and patients on the key elements of reform. Results derivable therefrom may be utilised as a basis for the introduction and instigation of new health policies, along with recommendations and priorities for improvements in the health system in this geographical region.

You are therefore being invited to take part in this research study. Before you decide to participate, it is important for you to understand why the research is being conducted and what it will involve. Please take time to read the following information carefully, and please ask if there is anything that is unclear, or if you would like to be provided with more information. Take time to decide whether or not you wish to take part.

Who is doing this research? This research project is being carried out by researchers from the Institute of Health and Life Science at the DE Montfort University at Leicester as part of a PhD research programme. If, after reading this information you have any questions at all about the research, please contact the researcher who gave you this form who will then be pleased to discuss them with you.

What will I have to do if I take part? If you agree to take part, we will ask you to answer some questions. There aren't any right or wrong answers – we just want to hear about your opinions. It should take about one half-hour of your time at the most. The questionnaire can be completed even if you are not currently taking any medication. Data from this questionnaire have the potential to allow researchers, public health workers and policy makers to gain a better understanding the factors use of medicine, practice of prescribing and self-medication practice in Kurdistan.

If you agree to take part in an interview, it will probably last approximately ½ hour, depending on how much time you have available, and how much information you wish to share. I will record the interviews with your permission, and the recordings will be documented. It is up to you to decide whether or not to take part. You do not have to give your real name. If you do decide to take part, you will be given this Information Sheet to keep. You will also be asked to sign a consent form and provided with a copy of this. If you decide to take part, you are still free to withdraw from the study at any time and without a given reason.

Do I have to take part? No. Participation in this research is entirely voluntary and you are free to withdraw from it at any time: you do not have to give a reason for this, and no

pressure will be put on you in order to attempt to change your mind. If you choose not to participate, this will not affect you or your status at the hospital.

What will I have to do if I take part? If you decide that you want to take part in this study, you can contact me, Omer Aziz, by text or phone on 0771-9958534 or by email on azizomer73@yahoo.ac.uk. I will explain what the research is about, what will be involved in the interview or questionnaire process, and will also answer any questions that you might have. You can then decide if you want to go ahead with the interview, and we can arrange a suitable time and location. The location will be both safe and confidential, and will be conducted in a private room at the hospital. All of the information that you give us will be confidential and used for the purposes of this study only. Data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner. All interview recordings will be destroyed at the end of the research. Your name or any contact details will not be recorded on the interview transcripts. My academic supervisors will have access to the anonymised transcripts of your interview, but I will be the only person to have access to the original recordings of the interview, your consent form and any of your contact details. Your participation in this study will not be discussed with other interviewees.

What will happen to the results of the research study? The results of the study will be used for the purposes of my PhD thesis, scientific publications in reputable journals, and in reports to health services. The material may also be presented at academic and professional conferences. The findings will also be shared with policy makers of the health service in Kurdistan. Anonymity and confidentiality will still be in place in all cases.

Data generated during the course of this project will be retained in accordance with the De Montfort University's policy on Data Protection and will be stored on a locked, secure computer hard-drive for a duration of 5 years after completion of the experimental work.

What do I do now? Think about the information on this sheet, and ask me if you are not sure about anything. If you agree to take part, please sign the consent form after our discussion. If you want any more information about the study, please contact me.

How can I get further information? If you have any questions or would like to discuss any aspect of this research, please contact researcher OMER AZIZ on **07719 958 534**, via email at azizomer@hotmail.co.uk.

The contact details for the person to talk to are: Omer Aziz

THANK YOU VERY MUCH FOR YOUR HELP

Appendix 8

Master list of the themes and sub- themes:

Themes	Sub-themes
An idea of the numbers of pharmacies in each of the three cities:	<ul style="list-style-type: none"> • Sufficient • Insufficient • Sufficient but without a distribution plan
The community pharmacy services:	<ul style="list-style-type: none"> • Provision of adequate service • Provision of professional service • Disagree- an adequate service is not provided
Who are running the community pharmacies?	<ul style="list-style-type: none"> • Pharmacist only • Pharmacist assistant • Nurses • Someone working in a hospital
Who is able to open a pharmacy?	<ul style="list-style-type: none"> • Pharmacist • Pharmacy assistant
What the pharmacist uses a computer for	<ul style="list-style-type: none"> • Drug interactions • Information • Labeling
What happens when a pharmacist does not follow the regulations of the MOH?	<ul style="list-style-type: none"> • Given notice • Penalties • Closure
Why do patients buy medications directly from a pharmacy without consulting a physician?	<ul style="list-style-type: none"> • Lack of trust for clinicians • Faster • Cheaper
What factors lie behind self-medication?	<ul style="list-style-type: none"> • Time-saving • Easy • Economic • Simple disease

What types of medications do pharmacists sell without prescription?

- Just OTC medicine
- Anti-biotic
- All

What type of reform of the pharmacies is required?

- Production of new regulations for pharmacies
 - Stronger regulations for importation of medicines
 - Educate the population about medicine
 - New regulations for the sale of medicines
-