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**Deanship of Graduate Studies**

**AL – Quds University**

# Physicians' Compliance with the Palestinian Essential Drug List in Primary Health Care in Gaza Strip

By
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**M. Sc. Thesis**

**Jerusalem – Palestine**

**Fall, 2004/2005**

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**Master of Public Health**
**School of Public Health**
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# Physicians' Compliance with the Palestinian Essential Drug List in Primary Health Care in Gaza Strip

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**January 2005**

# Dedication

***The Eternal Leader***

***Yasser Arafat***

**(1929-2004)**

Chairman of the Executive Committee of the P.L.O

President of State of Palestine and President of PNA

*The researcher would like to dedicate this work to the father, the symbol, the president of Palestine, and the martyr of Jerusalem* ***Yasser Arafat (Abu Amar)****.*
***Abu Amar*** *spent his life struggling for the liberation of Palestine, and taught us how to love it and work for it in all aspects of our lives. During the period of conducting this study,* ***Abu Amar*** *was firmly standing against the Israeli siege in El Mokataa in Ramallah, despite of the very difficult situation; he gave us hope for future and morale for continuing life.* ***Abu Amar*** *will survive as the only Palestinian eternal leader.*

# Abstract

*The presence of Essential Drugs List is considered very important component in any national drug policy, and its implementation helps in rationalization of drug use. The Palestinian EDL, was developed on March 1st 2000, and since then, there wasn't any evaluation for its implementation and use, which is widely considered the most important step after its development. This study aims to evaluate the compliance of the Gaza Strip physicians with the Palestinian EDL in the governmental PHC clinics, and assesses the physician knowledge, attitudes, and prescribing practices regarding the essential drugs. The study was conducted in all the governmental PHC clinics in the Gaza Strip. A descriptive cross sectional design using triangulation of data was utilized. The sample included all the PHC physicians who were working in the governmental PHC clinics in the five governorates of Gaza Strip, who completed self administered questionnaire. Additionally, a retrospective multistage sample consists of 1656 prescriptions, 36 prescriptions from each of the 46 clinics were taken and examined in reference to the study indicators. The response rate was 87.68% and the study showed that, only 2.8% of the respondents were involved in the preparation of the EDL, 34.4% of the respondents attended training courses on EDL, 67.4% of the respondents reported currently using the EDL, and 51.2% of the respondents faced many problems in using the EDL. More importantly, the study showed that, the average number of drugs prescribed per each prescription was 1.92; the percentage of drugs prescribed from the EDL was 97.85 %, the percentage of drugs prescribed by generic names was 5.47%, the availability of a copy of PNF in the surveyed clinics was 28.3%, and the availability of key drugs was 82.6%.*

*The study concluded that, there are a number of problems regarding the physicians compliance with the EDL, and considering the study results, the researcher provided some recommendations such as, provision of training, strengthening monitoring, evaluation and follow up, updating of the first EDL and promoting the lines of communications between policy makers and physicians.*

# ملخص الدراسة

## مدى التزام أطباء الرعاية الأولية في القطاع الحكومي
## بقائمة الأدوية الأساسية الفلسطينية – قطاع غزة

*إن وجود قائمة الأدوية الأساسية يعتبر من أهم عناصر السياسة الدوائية الوطنية. كما أن تطبيق واستخدام قائمة الأدوية الأساسية يساعد في ترشيد استهلاك الأدوية. لقد تم تطوير قائمة الأدوية الأساسية الفلسطينية في الأول من مارس عام ٢٠٠٠ ومنذ ذلك الحين لم يتم تقييم لاستخدامها والذي يعتبر الخطوة الأهم بعد تطويرها. إن هذه الدراسة تهدف إلى تقييم التزام الأطباء العاملين بمراكز الرعاية الأولية الحكومية في محافظات قطاع غزة الخمس بقائمة الأدوية الأساسية. وتهدف أيضا إلى تقييم ممارسات أطباء الرعاية الأولية في وصف الدواء ومعلوماتهم و توجهاتهم فيما يخص الأدوية الأساسية. لقد تم إجراء الدراسة في كل مراكز الرعاية الأولية الحكومية في محافظات غزة الخمس. إن هذه الدراسة دراسة وصفية مقطعية وقد استخدمت فيها أكثر من طريقة لجمع البيانات. اشتملت عينة هذه الدراسة على مجتمع أطباء الرعاية الأولية العاملين في القطاع الحكومي والذين قاموا بتعبئة الاستبيان بأنفسهم, كما كان هناك عينة أخرى أخذت بعدة مراحل من الوصفات الدوائية للأشهر التي تسبق الدراسة وكانت مكونة من ١٦٥٦ وصفة, ٣٦ من كل عيادة من ٤٦ عيادة التي تم دراستها. تم اخذ الوصفات ودراستها حسب المؤشرات المستخدمة في هذه الدراسة. كان معدل الاستجابة 87.68% ونتائج الدراسة أظهرت أن٢.٨٪ من الأطباء قد شاركوا في إعداد قائمة الأدوية الأساسية, و ٣٤.٤٪ منهم التحقوا ببرامج تدريب حول قائمة الأدوية الأساسية. كما أظهرت النتائج أيضاً أن ٦٧.٤٪ من الأطباء كانوا يستخدموا قائمة الأدوية الأساسية و ٥١.٢٪ منهم وجدوا كثير من المشاكل في استخدامهم لها. أما فيما يتعلق بنتائج المؤشرات المستخدمة في هذه الدراسة, فقد أظهرت النتائج أن متوسط عدد الأدوية الموصوفة في الوصفة الدوائية الواحدة هو ١.٩٢ ونسبة الأدوية الموصوفة من قائمة الأدوية الأساسية كان ٩٧.٨٥٪. كما أن نسبة الأدوية الموصوفة بالأسماء العلمية للأدوية كان ٥.٤٧٪ وتوفر نسخ من الدليل الوطني الفلسطيني و قائمة الأدوية الأساسية في العيادات التي تم دراستها كان ٢٨.٣٪ وتوفر الأدوية الرئيسية كان بنسبة 82.6%. ولقد خلصت الدراسة إلى أن هناك عدد من المشاكل المتعلقة بالتزام أطباء الرعاية الأولية بقائمة الأدوية الأساسية وبناءً على النتائج قدمت الباحثة بعض التوصيات ومنها عقد دورات, تعزيز المراقبة و التقييم و المتابعة. تحديث أول قائمة للأدوية الأساسية, و تعزيز سبل التواصل بين صناع القرار والأطباء.*

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# List of abbreviations

| | |
|---|---|
| CVS | Cardio Vascular System |
| DAP | Action Programs of Essential Drugs |
| EDL | Essential Drug List |
| GNP | Gross National Product |
| INRUD | International Net for Rationale Use of Drugs |
| MOH | Ministry of Health |
| NDP | National Drug Policy |
| NGOs | Non Governmental Organizations |
| NSAIDs | Non Steroidal Anti Inflammatory Drugs |
| ORS | Oral Rehydration Salt |
| PCBS | Palestinian Central Bureau of Statistics |
| PHC | Primary Health Care |
| PNA | Palestinian National Authority |
| PNF | Palestinian National Formulary |
| RTS | Respiratory Tract System |
| SPSS | Statistical Package of Social Sciences |
| STGs | Standard Treatment Guidelines |
| UNICEF | United Nations International Children's Emergency Fund |
| UNRWA | United Nations Relief and Works Agency |
| UTS | Urinary Tract System |
| WHO | World Health Organization |

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# Chapter 1: Introduction

## 1.1 Research background

Reasonable access to health care in any country of the world is a human right and governments should do their best to ensure the provision of a high quality health care for their people. Some of the necessary components of any health care system are health services, qualified staff, and drugs, of these components, drugs must have special concern as they have curative and preventive roles. Furthermore, they are costly and might be dangerous, therefore they must be managed and used rationally.

In fact, patients most probably need drugs; this doesn't mean that every body needs drugs. It is known from the pharmaceutical point of view that drugs are poisonous for the healthy persons and have hazardous side effects if used irrationally. Also, over use of drugs leads to economical problems affecting individuals as well as for the health care system. The misuse of antibiotics leads to development of new resistant chains of microorganisms, so drugs must be regulated and managed carefully and must be used rationally.

Despite of the fast technological development in health services throughout the world, irrational use of drugs still common in most developing countries as well as developed ones, but this problem is more worrying in developing countries because of the wastage of the already scarce resource (Burden, Rainhon and Reich, 1999).

Since 1981, the World Health Organization (WHO), through the Action Program of Essential Drugs (DAP), the Nairobi Conference of Experts and the International Network for Rational Use of Drugs (INRUD) have played a supportive role to the

developing countries in the field of research and promoting the rational use of drugs in many ways (WHO, 1998a).

Many factors affect the rational use of drugs; the most important factors are the prescribing practices of the physicians, their training or lack of it in good prescribing practices, their knowledge and attitudes about rational drug use (WHO, 2001a). Additionally, other cited factors include, the high influence of patients on the physician and their strong demand for drugs, high influence of the sales representatives of pharmaceutical companies, availability or unavailability of drugs, regulatory and managerial system, and finally but importantly, the presence or absence of the national drug policy (WHO, 2001a).

In Palestine, over prescribing, irrational prescribing, and prescribing expensive brand name drugs are prevalent in health facilities (Obeidallah et al, 2000). In the governmental Primary Health Care (PHC) facilities in Gaza Strip, the problem is very serious because of the large consumption of drugs, where in 2003; physicians who work in MOH-PHC clinics in Gaza Strip provided 1,387,803 prescriptions (MOH, 2004). Moreover, the PHC services are provided almost freely for persons with medical insurance. The Palestinian Ministry of Health (MOH) spent 17.9% of its total expenditure on drugs and medical disposables and laboratory reagents in 2003 and over use of drugs by patients leads to resistance production to the commonly used antibiotics and many other side effects (MOH, 2004).

Globally, in order to ensure high quality health care with safe use of drugs, in Alma Ata Declaration, a set of important principles for the PHC system have been developed, one of them was the availability of the Essential Drug List (EDL) (Declaration of Alma Ata, 1978).

Since 1975, WHO has developed the first EDL and since that date, it has a very powerful role with many developed and developing countries helping them to adapt their national EDLs in order to improve and maintain the availability, accessibility, and appropriateness of drugs provided to clients. Palestine developed and endorsed its first national EDL in 2000 and began to develop strategies for the implementation of this list in order to improve the quality of the health care by improving the rational drug use and improving the cost-effectiveness of health care as well (MOH, 2002a).

The development of the EDL was the first step followed by the most important step; which is the implementation of it. In order to keep the implementation in progress, evaluation for the pharmaceutical situation must be done periodically. Follow up is the practical stage which reflects the compliance of prescribers with the EDL; some of the ways for follow up and evaluation is conducting research aiming to investigate drug use in health care facilities, using the simple and uniform indicators, which have been developed by WHO. In collaboration with the INRUD, these indicators have been tested and applied successfully in many countries over all the world (WHO, 1992).

This descriptive cross sectional study is intended to evaluate the compliance of the Gaza Strip physicians with the Palestinian EDL in PHC facilities in the main health provider, which is the MOH, to reflect on the implementation of the essential drug policy. The study used a structured questionnaire for the PHC physicians, and selected WHO drug use indicators used to assess the pharmaceutical practices of the PHC physicians in order to reflect their compliance with the EDL.

The selected drug use indicators are, the average number of drugs prescribed in the prescription, percentage of drugs prescribed by generic name, percentage of drugs prescribed from EDL or formulary, availability of copy of EDL or formulary at the facility and the availability of key drugs.

The data analyzed using the statistical packages to get information that reflect the pharmaceutical prescribing practices, knowledge, attitudes of the PHC physicians, their compliance with EDL and to conclude from the findings any possible ways for the improvement of physicians compliance with the EDL. In other words, the study could direct the attention of the decision makers in MOH and the concerned people towards the physicians prescribing practices and their compliance with the EDL, to design future interventions.

This study is the first one to be done in the Gaza Strip to evaluate the PHC physicians' compliance with the EDL after its development in May 2000, so it will be a basis for further research regarding the essential drug policies and practices.

## 1.2 Research problem

As aforementioned, the Palestinian MOH has developed a national essential drug list as a step of an essential drug program, aiming to overcome the improper prescription behaviors of physicians such as expensive and excessive prescriptions beyond necessary, which lead to serious waste of drug and so to financial overload, as well as undesired health impacts on patients. In order to achieve the objectives of the essential drugs program, the role of the PHC clinics is a fundamental one as they provide free services to individuals who subscribe to the government medical insurance scheme.

The compliance of the Palestinian physicians in the PHC clinics with the EDL is an indication for the good implementation of the essential drugs program and the achievement of the program objectives.

The study could help in providing signals which may help to encourage the positive practices, and dealing with the obstacles which prevent the success of the essential drugs program.

## 1.3 Justification of the study

There is an international direction toward valuing the importance of developing national essential drug lists as it indicates, from a public health point of view, the priorities for all aspects of the pharmaceutical system. In Palestine, the national essential drug list was recently developed as a part of the essential drugs program and since then, no evaluation for the implementation of this program has been carried out. In other words, despite the fact that the Palestinian National Formulary (PNF) and EDL are in place, no scientific study has been carried out to assess the prescribing practices of the physicians, and their compliance with the EDL and PNF. Therefore, in order to give an indication for the implementation of the essential drugs program, this study answers the question to what extent the PHC physicians in Gaza Strip comply with the EDL and to help in finding out any possible ways to improve this program. Furthermore, the EDL must be updated every two to three years according to the WHO, and in order to update the EDL, it must be used in the drug prescribing and must be available for all the physicians, this study will help in illustrating many aspects related to the use and availability of the EDL and therefore, helps the decision makers in the MOH in any development procedures or actions. Therefore, this study is a unique trial in developing an understanding of what factors underpin physicians' compliance with the EDL, within the Palestinian context, which is underpinned by unique socio-economical, political, managerial as well as developmental characteristics. Specifically, studying compliance among physicians in Gaza Strip is very important in this critical historical transitional period, both in terms of building and developing the Palestinian organizations in the light of scarce resources and economic constraints. In addition, evidence in the literature exists to suggest that there is a wide variation in compliance cross countries and health care systems and the experience of one country

cannot be copied in other places (Hogerzeil et al, 1993). Meaning that, this research is type of health services research which is usually a country-specific, and in this case, unique to the Palestinian situation. However, at the time of the greater demand, the problem of compliance to standards and protocols is of greater financial and managerial concern. It is worth noting that, in the Palestinian health care system, the drugs budget is one of the largest expenses in the overall budget (MOH, 2004).

All these factors combined led the researcher to conduct this study coincided with the noticeable policy makers' attention and valuing of this issue (field observation).

## 1.4 Objectives of the study

### 1.4.1 General objective

To evaluate the compliance of the Gaza Strip physicians with the Palestinian EDL in PHC facilities that are owned and managed by the MOH. The study could help in illustrating possible ways for improvement, thus leading to better utilization of the EDL.

### 1.4.2 Specific objectives

1. To assess the physicians pharmaceutical prescribing practices in PHC facilities in reference to selected WHO indicators.
2. To assess the PHC physicians' knowledge and attitudes regarding the Palestinian EDL.
3. To assess the pharmaceutical practices among the PHC physicians in relation to certain demographic and organizational variables.

4. To identify areas of strengths and areas of weaknesses of the pharmaceutical practices among the PHC physicians, in reference to the compliance with the EDL.
5. To conclude from the study possible suggestions that could help in improving PHC physicians' compliance with the EDL.

## 1.5 Research questions

1. To what extent the PHC physicians comply with the EDL?
2. Are their any differences between the different PHC levels regarding the compliance of the physicians with the EDL?
3. Are there any differences between the five governorates in Gaza Strip regarding the compliance of the physicians with the EDL?
4. What is the average number of drugs prescribed in the prescription?
5. What is the percentage of drugs that the PHC physicians prescribe by the generic names?
6. What is the percentage of drugs that the PHC physicians prescribe from the EDL?
7. Are the EDL copies and PNF available in the PHC facilities?
8. Are the key drugs identified in this study, available in the PHC facilities?
9. What are the main strengths and weaknesses in the currently utilized essential drug policy?

## 1.6 Feasibility and cost

The study was conducted as a part of the researcher's Master of Public Health study at the School of Public Health, Al-Quds University. After the approval of Al-Quds

University, School of Public Health, there was a discussion with the responsible people in the MOH especially the managers in the Pharmacy Directorate, the PHC Directorate, and the Quality Improvement Program, and they were so cooperative which made the implementation of the study more feasible. Regarding of the study costs, this study is self-funded; the researcher was responsible of all the needed costs. The implementation of the study took place during Al Aqsa Intifada, during which the Israeli occupation military forces frequently divided Gaza Strip into three areas which led to accessibility problems preventing the free movement of the researcher. Additionally, the recurrent incursions and the high degree of instability and prevaling stress led to some difficulties in the implementation of the study.

## 1.7 Context of the study

To better understand the health care system and the pharmaceutical sector, the researcher provided some helpful background information. The pharmacy situation as any of the health sectors is influenced by the demographic, socioeconomic and political situation.

The current study was conducted in Gaza Strip in Palestine so some of the relevant information regarding the demographic, socioeconomic, political situation were crucial to study and could affect the pharmaceutical services and therefore presented in the coming paragraphs.

### 1.7.1 Demographic context

Palestine (historical Palestine) is a small country 26,323 Square Kilometre about the size of Wales in the United Kingdom or New Jersey in the United States of America

(Cattan, 1988). It has an important strategic geographic location as it is situated on the western edge of the continent of Asia, the eastern coastal extremity of the Mediterranean Sea. Palestine is bordered by Lebanon in the north, Syria and Jordan in the east, the Gulf of Aqaba in the south and by Egypt and the Mediterranean Sea in the west (Annex 1) (MOH, 1999; Hamad, 2001).

As a result of its strategic location of being at the cross roads of Africa, Asia and Europe, many forces tried to occupy Palestine and the Palestinians continued to defend their country and struggle for freedom, sovereignty and independence (Cattan, 1988). However, at the end of the First World War, Palestine was placed under the British Mandate. Incorporated into the mandate was the Balfour Declaration in 1917 providing a homeland for Jews, which led to the establishment of Israel in 1948 (Abu-Lughod, 1971). The subsequent Arab-Israeli war in 1948 resulted in the loss of the majority of the Palestinian land, de-population and demolition of more than 400 Palestinian villages and the wiping out the Palestinian culture (Cattan, 1988). Around 914,000 refugees (four out of five of the population) were uprooted from their cities, towns and villages, most of them to the West Bank, the Gaza Strip, Jordan, Lebanon and Syria (Said, 1992).

Subsequently, the Gaza Strip and the West Bank are the two geographically separated small pieces of land, which remained in Palestine after the Arab-Israeli War (Cattan, 1988) in 1948. However, in 1967, during the Six-day War, Israel occupied the rest of Palestine, namely, the West Bank including East Jerusalem and the Gaza Strip, starting 27 years of direct military occupation (Said, 1992). However, the Israeli occupation is faced by strong constant Palestinian resistance, which has been intensified during the Palestinian uprising since 1987, known internationally as the “Intifada”.

The Gaza Strip is a narrow band of land, located on the south of Palestine, constituting the coastal zone of the Palestinian territory along the Mediterranean Sea between Egypt and Israel. It is 45 kilometres long and 6-12 kilometres wide with an area of 362 square kilometres and an altitude of 0-40 metres above the Mediterranean Sea level (MOH, 1999). It is a subtropical region of 4 distinct seasons characterised by hot humid summers and warm humid winters (MOH, 1999). Currently, the Gaza Strip is composed of five provinces: North Gaza, Gaza City, Mid Zone, KhanYounis and Rafah (Annex 2). There are five towns in the Gaza Strip, eight refugee camps and fourteen villages (MOH, 1999).

Demographic reports indicated that the Gaza Strip is the second most densely populated area on earth after Hong Kong (World Bank, 1997). According to the Palestinian Central Bureau of Statistics (PCBS), the total Palestinian population residing in the Gaza Strip and the West Bank including Jerusalem was estimated to be 3,737,895 of whom 1,6 million are registered refugees (PCBS, 2004; MOH, 2004). The population in the Gaza Strip was estimated to be 1,370,345 with 65.5% refugees (MOH, 2004). More than 17 % of the population resides in the north of Gaza, 51 % in the central and 32 % in the southern area. Urban population is estimated at 44%, the rural at 30% and about half of the refugee population resides in refugee camps (World Bank, 2003; PCBS, 2004). The population density rate in Gaza Strip, Inh/$Km^2$ estimated to be 3,806.5 in 2003 (PCBS, 2004). It is important to note that around 35% of the total area is still occupied by a few hundred Israeli settlers. Therefore, the actual density rate is much higher than the estimated figures. Moreover, age structure in the Gaza Strip (Annex 3) is similar to that in many developing countries, where nearly half of the total population is under 15 years old (PCBS, 2004). Should the present rate of population increase continue, the Gaza population would almost double in 10 to 15

years (MOH, 1999). This will create a desperate situation in terms of education, employment, health, slowing production growth and increasing the prevalence of poverty. What makes things worse is that, more than one million of the Palestinians are living inside the green line "Palestine 1948" and the number of Palestinians who are living in Diaspora is estimated at 4,843,427 (PCBS, 2004). In fact, this political situation has led to the separation and splitting up of many Palestinian families (Cattan, 1988; Said, 1992). The researcher assumes that these demographic and political situations could affect not only the health care system plans, interventions, and management systems but also physicians' knowledge, training, practices and psychological status and subsequently, their compliance.

### 1.7.2 Socio-political context

Currently, the Gaza Strip has been undergoing the experience of autonomy since the Peace Agreement between Palestine Liberation Organization and the Government of Israel on 13th of September 1993, providing for a partial transfer of authority to the Palestinian National Authority. However, Israel still holds overall sovereignty over the Gaza Strip. It has the upper hand over borders, movement of goods and travelers in and out of Gaza, particularly the Palestinians themselves (MOH, 1999). It also controls trade, the commercial market, water, the main sources of energy, the means of communications and security (MOH, 1999). Hence, it still has a hold over the Palestinian economy.

There has been a recent sharp down turn in wage income from Israel due to the security closure of the borders between Gaza and Israel during Intifada (World Bank, 2003). This has been complicated by the massive contraction of employment opportunities in Israel leading to nearly 100,000 Palestinian workers have lost their jobs in Israel since

September 2000 (World Bank, 2003). According to the Document of the PCBS (2004), the per capita Gross National Product (GNP) in Palestine is US $ 1,746.8 GNP. In Gaza Strip the per capita even lower than that of the West Bank and poverty afflicts approximately 60% of the Palestinians population (PCBS, 2004; World Bank, 2003). Further, although fluctuant unemployment is estimated (at least) at 25.6% in the Palestinian community; however, it is, remarkably, higher in Gaza Strip (29.2) than the West Bank (23.8) and only 8-10% of the formal workforce in Gaza Strip is female (World Bank, 2003). It is worth mentioning that daily life expenses in Gaza Strip are similar to Israel, both share one commercial market despite the high purchasing power of the Israeli community compared to the Palestinian community (World Bank, 1998). Added to the socio-cultural factors, due to the political and economical instability, the Palestinian population has one of highest fertility rates in the region (3.89), compared to 3.5 in Egypt, 3 in Lebanon, 2.4 in Israel and 3.2 in Turkey (MOH, 2004; Hamad, 2001). The population growth rate has been estimated at 2.4% in 2003 (MOH, 2004). Additionally, the high growth rate of the population could increase pharmaceutical services workload both at primary care as well as secondary care levels (MOH, 1999). However, the WHO recognizes high birth rates as one of the negative indicators of the health status of a given population (Taylor, Lillis and LeMone, 1997).

It is worth noting that the Palestinian population has suffered a lot from recurrent occupations, starting with the Turkish Rule and ending with the Israeli Occupation (Cattan, 1988). Additionally, Palestinians place a high value on education and regard it as a durable and movable asset “contrary to land and houses that can be and were lost” therefore; this value is instilled in their children (Hamad, 2001).

However, this situation could be seen as affecting not only the mode of working in the Palestinian organizations but also the entire life experience of the Palestinian

population. Thus, the researcher claims that the healthcare system is a reflection of all these factors and trends underpinning the society. Both the long term uncertainty situation and the mode of taking decisions adversely affected the Palestinian organizations including healthcare organizations (Massoud, 1994; World Bank, 1998), therefore worth while to be considered in any assessment of the management of health services including physicians' compliance with EDL.

### 1.7.3 The Healthcare context

Among the other relevant contextual characteristics that might affect physicians' compliance, the researcher is interested to present some information about the healthcare system and health status of the Palestinian population.

Compared to other countries at a similar level of economic development, the Palestinian population's overall health status is relatively good (World Bank, 1997). The infant mortality rate is estimated at 24 per 1000 live births, (62 in Turkey, 41 in Egypt, 40 in Tunisia, 21 in Jordan and 7 in Israel) (MOH, 2004; Hamad, 2001). The leading causes of adult death are similar to developed countries including cardiovascular diseases and cancers with a high prevalence of stress and psychological trauma related diseases (MOH, 2004). On the other hand, diseases of poverty are still prevalent, such as respiratory infections and diarrhoeal diseases that remain important causes of child mortality and morbidity (MOH, 2004). The later conditions are due to a large extent, to the widespread poor sanitary and environmental conditions.

In 1994, the newly formed Palestinian MOH inherited a fragmented, largely unregulated, pluralistic healthcare system from the Israeli Civil Administration (MOH, 1999). In fact, not only was the healthcare system generally under-funded, understaffed, under-supplied and under-equipped but also there was mal-distribution of

human resources to the disadvantage of rural areas (Palestine Council of Health, 1997). The PHC settings were also at a disadvantage in comparison with the hospital settings. Until recently, Palestinian physicians were trained outside Palestine and in more than 100 countries. Each country has its own philosophy in teaching and in medicine therefore standardization of service delivery is a real challenge to the health care system. Additionally, Palestinian professionals' involvement in managing the health services at that time was limited and most strategic issues, such as policies, budgets and promotions were maintained under the direct control of the Israeli Ministry of Defence, which negatively manipulated these issues in the Israeli's interests (Palestine Council of Health, 1994). It could be argued that, such a situation could be seen as affecting the Palestinian sense of autonomy, commitment and belonging to health organisations as well as affecting the Palestinians' ability to develop experience in managing their organisations. Thus, the researcher assumes that both of the above mentioned factors can affect the current healthcare system and subsequently, physicians' compliance.

However, currently, the four major players of healthcare services in the Gaza Strip and West Bank are the MOH, the United Nations Relief and Works Agency (UNRWA), Non-Governmental Organisations (NGOs) and the private for-profit service providers (MOH, 2004). The MOH is responsible for a significant portion of PHC, secondary care and some tertiary care (more than 50% of services were provided by Government) (Palestine Council of Health, 1997; MOH, 2004). Moreover, the MOH purchases tertiary services from other health providers both locally and abroad (MOH, 2004). UNRWA plays an important role in health services delivery, providing free of charge PHC and purchasing secondary and tertiary services for the registered Palestinian refugees (World Bank, 2003). Additionally, UNRWA contracts for services with NGOs, primarily for secondary and tertiary care and with some Israeli facilities for

limited speciality for tertiary care (World Bank, 2003). Therefore, a significant challenge for the MOH is to facilitate co-ordination among these different service deliverers, to ensure rational use of scarce Palestinian resources available for the health sector (World Bank, 2003).

An important issue currently emerging in almost any discussions about healthcare systems is the funding of health organisations. Given the transitional developmental status of the healthcare system in the country, many parties contribute in funding the Palestinian health organisations. International donors' contributions continue to be an important source of revenues for the health sector. The Palestinian National Authority (PNA) devotes an unusually large share of its resources to health sector. In 2003, the postulated MOH expenditure was 108.6 million US $ (MOH, 2004). Yet in the midst of this, there is a discomfort among public, politicians and professionals in Palestine regarding the quality of healthcare and the work climate in health organisations (Hamad, 2001). It is worth noting that, the WHO health indicators in Palestine are similar or even lower than other countries spending remarkably less on their healthcare systems (MOH, 2004). There appears to be a general consensus that Palestinians are obtaining low outputs and that the degree of waste in the health system is large and highly indicative of inefficiency of the system (Hamad, 2001).

The steady increase in the number of PHC centers in Palestine is very obvious and has a positive indication; generally the number has been increased from 454 in 1994 to 619 in 2003. The governmental PHC centers have increased from 205 in 1994 to 391 in 2003, from which 54 centers in Gaza Strip and 337 in West Bank (MOH, 2004). In Gaza Strip the PHC centers are divided according to the PHC level into 22 centers at level 2, 25 at level 3 and 6 at level 4. In Gaza Strip 1,973,025 visits were made in 2003

(MOH, 2004). The total running expenditure of PHC services in Gaza Strip was US $ 9,637,866. Therefore, the average cost per visit was 2.8 US $ (MOH, 2004).

## 1.8 Pharmaceutical services

Since 1993, as the PNA took its responsibility in Gaza Strip, MOH assumed its duties in health sector. The pharmaceutical sector was a very important challenge as it forms a very high proportion of the MOH expenditure. This could be explained by the strong demand of patients as well as the clients on the PHC facilities. Other important perceived causes also included, the irrational prescribing practices, over-prescribing and the tendency of the physicians to prescribe very expensive brand name drugs. In 1996, the PNA had spent around $ 92.5 million on health care (Obeidallah et. al., 2000). The cost of drugs only (without disposables) was around $19 million which account for 20% of the total health expenditure; this was higher than the drug cost in neighboring developing countries (Obeidallah et. al., 2000). The Pharmacy Directorate of the MOH, realized the pharmaceutical problem and paid attention for improvement as demonstrated in the national strategic health plan (MOH, 1999). The mission statement of the Pharmacy Directorate is *"providing well-organized pharmaceutical services and safe medications to all the Palestinian population at affordable cost".* To implement this mission, one of the Pharmacy Directorate national objectives was approving and implementing EDL (MOH, 1999).

As a result the MOH has designed a special program on rational drug use guidance with full support of the WHO and the World Bank, by adapting a national EDL and the PNF. In March 2000, MOH had developed and published its EDL and in 2002 the Pharmacy Directorate had published and disseminated the EDL and the PNF (1390 Copies in Gaza Strip) to maximize the optimal use of limited financial resources. The

priorities were given to the drugs of proven efficacy, acceptable safety and those satisfy the real health need of population (MOH, 2002b).

In 2003, MOH spent 17.9% of its total expenditure on drugs and medical disposables and laboratory reagents, from which the cost of purchased drugs was 68.4% of the total purchased drugs (MOH, 2004). It is worth maintaining that, in 2003 and despite of the international funds and the participation of the Ministry of Finance, there was deficit in drugs, medical disposables and laboratory reagents by 9.4% of the postulated expenditure (MOH, 2004).

## 1.9 Development of the Palestinian Essential Drug List

Early in 1994 a technical expert from WHO was assigned to formulate the Palestinian EDL. After 3 years, (in 1997) two senior pharmacists representing Gaza Strip and West Bank were chosen to continue the formulation of the PEDL (Field interview).

The first practical stage was the choosing of a drug list (of 550 drugs) in Gaza Strip independently and another one (of 700 drugs) in West Bank independently (WHO, 2000a). Then the two lists were merged together into one list. The drugs mentioned on the list were compared to the list version of WHO EDL and draft list was sent to World Bank consultant for Essential Drugs Review (WHO, 2000a). On March 1st 2000, the final Palestinian EDL was approved by the MOH which held many training courses on the using of the PNF and EDL. The Quality Improvement Program with the financial support of WHO has held training courses in North, Gaza and middle zone governorate in 8/2001, and has held other courses in the south including Rafah and Khanyounis in 8/2001. The trainees were selected involving both Physicians and pharmacists and were trained to conduct training programs in their facilities (MOH, 2001). It is worth

mentioning that, it is important for the MOH in Palestine, to continuously ensure a systematic process for updating the national drug list, to keep the list suitable for the current health condition of the population and to involve the newly approved drugs (Schoenbaum, Afifi and Deckelbaum, 2003). However, revising and updating the EDL must be based on information that reflects the strengths and weaknesses of it meanwhile, considering the practitioners points of view as they use it. According to the Palestinian health status, after revising and following the WHO model for EDL, the Palestinian EDL includes the alphabetical classification of the essential drugs according to pharmacological groups, subgroups, with all dosage forms of active principles and all drugs were listed in their generic names.

The PNF includes the Palestinian EDL and follows the WHO recommendations on the formulation of the national formularies. The PNF contains 30 chapters each one includes certain therapeutic group. Each chapter and sub- chapter has an introduction includes a short overview of the drug groups and its uses (MOH, 2002a).

Regarding UNRWA clinics, they have their own pharmaceutical system, in which they use the WHO model of EDL. They provide the health and pharmaceutical services freely. Additionally, NGOs clinics have their own pharmaceutical system and they don't necessarily comply with the Palestinian EDL. Despite of this current situation, MOH intends to generalize the essential drugs program and the use of the Palestinian EDL cross the different providers

## 1.10 Operational definitions of terms

*Compliance:* According to Longman dictionary, compliance is defined as obedience, adherence or the tendency to yield too willingly to the wishes of others (Longman,

1982). In this study, compliance of PHC physicians therefore is the adherence of the PHC physicians to the EDL and PNF.

*Essential Drugs:* Essential drugs are those drugs that satisfy the health care needs of the majority of the population and must be available at all times.

*Essential Drug List:* A national essential medicines list which reflects the medicines that are needed to serve that country's population. Essential drugs in the national list must be listed in the generic names.

*Intifada:* The Palestinian uprising against the Israeli Occupation which started in December 1987 till 1994 (the first Intifada) and the second one started in September 2000 still ongoing, known internationally as the "Intifada".

*Key Drugs:* A short list of specific drugs (less than 15, in this study 12 drugs were selected) that are essential to treat common health problems in a specific country.

*Physician:* A formally employed licensed practitioner who is authorized to prescribe medications at his/her clinical practice in the PHC clinics.

*Prescription*: An official approved and endorsed form, on which prescribers write drugs for patients.

# Chapter 2: Literature review

In this chapter the researcher presents the literature reviewed regarding the essential drugs concept and programs, rational drug use and ways to promote the rational drug use. Then, it reviews the ways used for drug use measurement and the WHO drug use indicators. Finally, it reviews the relevant drug use studies.

## 2.1 Conceptual framework

In this part of the chapter, the researcher depicts the ideas extracted from the different compliance concepts, which have been incorporated into her conceptual framework. Attention is paid keeping these concepts open and flexible to accommodate the diversity of the Palestinian situation. Conceptual models attempt at organizing and donating a symbolic representation of conceptualization of phenomena with the minimal use of words (Burns and Grove, 1997). Framework is the conceptual underpinning of a study and used to guide and direct the research process and to make research findings more meaningful and generalizable. Additionally, frameworks are efficient mechanisms for drawing together and summarizing accumulating facts as shown in the figure.

There are many factors related and affecting the physicians' compliance with EDL, and they are divided into two main categories. Factors related to physicians and factors related to the health system as illustrated in the figure:

*The first category*, which is factors related to physicians, including four main branches. Firstly, personal characters such as gender, years of experience, place of graduation and age. Naturally there could be different compliance level in reference to the different personal factors. So, it is important to study these factors in relation to the compliance with the EDL. Secondly, prescribing practices of physicians is another factor that reflects the compliance with EDL for example, using EDL, and prescribing drugs not on EDL. Additionally, prescribing practices can provide a general picture about the pharmaceutical situation regarding the physicians' compliance with the EDL. Prescribing practices could be measured by certain standardized WHO drug use indicators, from them, the average number of drugs prescribed per encounter and the percentage of drugs prescribed from EDL. The literature indicates that, there are many benefits of using and complying with essential drugs from which saving lives and reduces suffering especially as they promote the rational drug use and restrict the poly pharmacy added to that, the financial implication and saving as a result of using EDL (WHO, 2000a).

Thirdly, physicians' knowledge about the essential drugs and the generic names of the drugs are other contributing factors. There is a claim that, the knowledgeable physicians about the essential drugs, their importance and their generic names could be more compliant with the EDL; also this could be measured by the percentage of drugs prescribed by generic names. Finally, the last factor in the physicians' category is their attitudes regarding essential drugs, for example, their thoughts and believes about the importance of the EDL and its effects.

*The second category* is factors related to the health system. This category is subdivided into three main branches, the first factor, is the availability of drugs formularies and EDL at the health facilities. It is very important to develop disseminate and maintain

copies of EDL at facilities. This could be measured by the percentage of the availability of copies of national formularies in the assessed clinics. This reflects the management process of the implementation of the essential drugs program. The availability of the PNF helps the physicians and promotes their compliance with the EDL. The second is drug management in order to ensure the availability of the essential drugs. This is very important factor and could be measured by the availability of key drugs which are a group of less than 15 drugs that are the mostly used drugs according to the common health problems of the country (WHO, 1993). They must be listed in the EDL and their availability usually reflects the availability of the entire essential drugs. Availability of essential drugs in the health facilities promotes patients confidence in the health care facilities, because patients always seek for the benefits of the curative and preventive drugs and clients' attendance level for the health care facilities will be lower if drugs are out of stock. On other hand, the essential drugs are procured efficiently and cost-effectively and the priority is given for the locally produced drugs. As a result, this leads to encouraging the local pharmaceutical companies and finally, governments will be more likely to make other resources available for health system development. The last one in this category is provision of training courses which are important to provide physicians with the needed information and skills. Giving that theory guides practice, training gives the physicians a good idea about the whole essential drug program and helps them to apply this concept in their practice settings. Additionally, by training physicians can be aware of the importance and positive impacts of implementing the essential drugs program to over come the irrational drug practices.

In general, the two identified categories, physicians and health system factors must work together with a good communication channels between policy makers and

physicians to ensure their involvement in decisions. Another important issue is the evaluation and monitoring to ensure the proper implementation of the essential drugs program. Moreover, evaluation gives an opportunity for both the policy makers and practitioners to make any needed decisions in order to promote physicians compliance with the EDL, as well as for the physicians themselves to make more efforts to improve their compliance with the EDL. Finally, but importantly, drug use research which provides a scientific information, helps the policy makers to develop the needed and suitable interventions in order to maximize the physicians compliance with the EDL.

## 2.2 History of drug development in the world

Historically, the first synthetic pharmaceutical Aspirin was introduced in 1897 (WHO, 2002a). In 1941, the world has seen the first modern antibiotic, two years later in 1943 the first commercially anti malarial drug has been formulated, and in 1944 the first anti tubercular drug was formulated (WHO, 2002a). The 1950s showed the first use of many new drugs, from these drugs, the oral contraceptives, diabetes drugs, and drugs for mental illness (WHO, 2002a). After this, rapid development in the field of pharmaceuticals has been achieved, including the development of drugs for other infectious diseases, for cardiovascular diseases and for wide range of other health conditions (WHO, 2002a).

Many changes in the patterns of diseases and drug demand, as well as the rise of new diseases, the re-emergence of other diseases and increasing drug resistance of potentially fatal diseases, all of these problems along with the attitudes and behaviors of governments, prescribers, dispensers, consumers, and drug industry all contributed to the increased spending on drugs and growing pressure on health resources (WHO, 2002a). As a result, WHO recommends that all countries formulate and implement a

comprehensive national drug policy (NDP), which is a commitment to a goal and a guide for action which presented and printed as an official government statement, to act as a formal record of aims, and decisions. NDP helps in identifying the needs and prioritizes the medium to long term goals and identifies the strategies to achieve them. It is very important for the NDP to be developed and to fit within the framework of a national health policy. The NDP has four major objectives which are the availability of essential drugs, affordability of essential drugs, quality of drugs and rational use of drugs (Burden, Rainhorn and Reich, 1999). One of the key components of a NDP is the selection and implementation of essential drugs (WHO, 2001a).

In 1977, the WHO published the first model list of essential drugs which identified 208 individual drugs which provide safe treatment for the majority of the known communicable and non-communicable diseases (WHO, 2000c).

## 2.3 Essential drug concept

One year after publishing the first WHO model of EDL in 1977 (WHO, 2000c), the WHO/United Nations International Children's Emergency Fund (UNICEF) conference on primary Health care at Alma_Ata included access to essential drugs as one of the eight elements of primary health care (Declaration of Alma-Ata, 1978). In 1979, WHO had another important step related to the essential drugs which was the establishment of the WHO Action Program on essential drugs. Avery remarkable stage toward the improvement of the pharmaceutical situation in countries took place in 1985 in Nairobi which was the conference of Experts on Rational use of Drugs (WHO, 2001a).

In 1975 the first definition of essential drugs was formulated by the WHO Director-General Dr. Half Den Mahler who puts drugs issues on the international development agenda and defined essential drugs as "*those considered to be of utmost importance and*

*hence basic, indispensable and necessary for the health needs of the population*" (WHO, 2000d). It is obvious from the meaning of the Essential Drugs concept as they are limited and carefully selected based on safe and cost-effective clinical guidelines that, they are leading to more rational prescribing, to better supply of drugs, and to lower costs (Grimshaw and Russell, 1993). The WHO defintion of essential drugs is that, they are drugs that satisfy the health care needs of the majority of the population and must be available in all times (WHO, 1993).

A national essential medicines list reflects the medicines that are needed to serve that country's population. For example, a country whose citizens suffer from diseases such as malaria or cholera will prioritize access to medicines for these diseases. In other countries where cancer and heart disease affect the majority of the population, the EDL will prioritize medicines to treat these diseases (Shared, 2003). While the concept of essential drugs is simple to be understood, its implementation is complicated and needs a lot of efforts, but of course not impossible (Shared, 2003).

Essential drugs in the national list must be listed in the generic names, mean that bio-equivalence must be ensured; they are cheaper than branded products (Lemye, 2000).

Also, any donated drugs must be from the national EDL of the recipient, country or, if a national list is not available, on the WHO model list of essential drugs, unless specifically requested drugs by the recipient (WHO, 1999a). By this way the drugs which will be available in the country will be only the essential drugs (WHO, 1999a).

## 2.4 The impacts of developing and using essential drugs

The impacts of using essential drugs are divided into three main categories as the following:

*Health impact:*

The first benefit of using essential drugs is saving lives and reducing suffering especially as they promote the rational drug use and restrict the poly pharmacy (WHO, 1993). In contrary, irrational use of drugs leads to reduced quality of therapy and as a result increases morbidity. Furthermore, risk of unwanted effects of irrational drugs will increase these unwanted effects including adverse reactions and microbial resistance. Additionally, irrational use of drugs affects the patients psychologically and makes patients rely on unnecessary drugs.

*Health system impact:*

Availability of essential drugs in the health facilities promotes patients confidence in the health care facilities, because patients always seek for benefit of the curative and preventive drugs and clients' attendance level for the health care facilities will be lower if drugs are out of stock. It is good keeping in mind that, the essential drugs are procured efficiently and cost- effectively and the priority for the local drugs, as a result this will lead to encouraging the local pharmaceutical companies and finally, governments will be more likely to make other resources available for health system development.

*Economic impact:*

Internationally, in 1993 drug spending accounted for 5 to 20% of total health spending in average (World Bank, 1993). For most ministries of health in developing and developed countries, public spending on pharmaceuticals represents the largest health

expenditure after staff salaries. Indeed, in some countries, drug expenditure-as a percentage of public health care spending-can be as high as 40% (Govindaraj, Chellaraj and Murray, 1997). By focusing on essential drugs, rational drug selection, good procurement practices and limited number of drugs can be cost-effective for the governments and best health care value for public pharmaceutical expenditure can be assured (WHO, 2000b). In contrary, irrational use of drugs leads to waste of resources, and to unavailability of essential drugs in other areas where they may be needed and increases cost. For example, new generations of antibiotics are very expensive.

## 2.5 Development of essential drug Lists

Since 1977, a very rapid development regarding EDLs development has been achieved and most countries followed the WHO example in revising their EDLs. WHO updates its model list every two years on average (WHO, 2001a). Three out of four countries in the world or 141 countries have EDLs (WHO, 1998a). Additionally, form these 141 countries who have national essential drugs lists, 135 countries have turned the essential drugs concept into clinical practice with national Standard Treatment Guidelines (STGs) (WHO, 1998a).

Nearly two-thirds of the world's people are estimated to have access to full and affective treatment with the medicines they need. Specifically, the number of people who had access to essential drugs grew from roughly 2.1 billion in 1977 to 3.8 billion in 1997 (WHO, 1998a). The number of people estimated to have regular access to essential drugs has risen to over 4 billion in 2002 (WHO, 2002a). The Annual Report 2002 of the WHO showed that over 90 countries have introduced the essential drugs concept into the curriculum of medicine and pharmacy colleges (WHO, 2002a).

## 2.6 Rational drug use

The poor populations overall the world are affected by the communicable and non communicable diseases. Of deaths, 60% are due to the common communicable diseases, and a further 30% to the non communicable diseases (Guillot and Gwatkin, 1999). Worldwide, 20% of the deaths are due to a few common communicable diseases, they are, acute respiratory infections, diarrheal disease, tuberculosis and malaria. Another 20% of the deaths every year are due to two leading types of non communicable diseases, ischemic heart disease and cerebrovascular diseases (Murray, and Lopez, 1996).

At least hypothetically, every individual has the chance to live along and have relatively healthy life. Effective drug treatment exists for most of the leading infections diseases, including acute respiratory infections, malaria, diarrheal diseases, tuberculosis and the complications of measles, so by prioritizing treatment for communicable diseases, policy makers can do much to improve the health of poor populations and improve their life expectancy (WHO, 1999b). Life-saving drugs have also been developed for the leading non communicable diseases, including ischemic heart disease and cerebrovascular disease (WHO, 1999b).

Conversely, substandard and counterfeit drugs can kill, so drug regulation, quality assurances rationalization must exist to ensure the therapeutic benefits of drugs.

The rational use of drugs requires that patients receive medicines appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time and at the lowest cost to them and to the community (WHO, 1988).

Also rational use means use in accordance with scientific knowledge to satisfy needs.

In other words, to use drugs rationally means, to indicate appropriate administration route, dosage and duration for specific patient and to give appropriate information for the patient (Boston University, 1999). A paper titled with “what constitutes a good prescribing”, proposes four aims that a prescriber should try to achieve, both on prescribing a drug and on subsequently monitoring it. These aims included, maximizing effectiveness, minimizing risks, minimizing costs, and respecting the patients’ choices (Barber, 1995). In another paper in 1973, a good prescribing was defined as it should be "appropriate, safe, effective and economic" (Parish, 1973). According to Trap, good prescribing habits are essential to ensure effective and safe treatment, the shortest duration of illness, less distress and harm to the patient, and lower cost (Trap, 2000). Conversely, irrational use of drugs which equals to pathology of prescribing, it means that,

- The use of drugs when no need for drugs to be indicated.
- The use of wrong drugs for a condition requiring another drug therapy than the used one.
- The use of drugs without proven efficacy or without certain safety status.
- The failure to prescribe available, safe and effective drugs which represent the essential drugs and in correct administration, dosages and/or duration.
- The over use of expensive brand-names drugs.

## 2.7 Components of the drug use system

The components of the drug use system in any country, is concerned with the public illness patterns who will go to either the pharmacist or drug trader, private physician or other practitioner at a hospital or health center, all of these choices along with the clients, reflect the providers and consumers behaviors. The other major component is

the drug supply process including both drug imports (even denoted drugs) and local manufactures, that are, the drug supplies.

## 2.8 Factors underlying irrational use of drugs

Patients, prescribers, drug supply, drug regulation and drug industry are the main factors affecting irrational use of drugs and each one includes some factors underlying irrational use of drugs.

Regarding patients, patients missinformation about drugs, misleading beliefs that present through the society, and dealing with drugs simply without any consultation are examples of the irrationality of drug use (Quick, Laing and Ross-Degnan, 1991).

Regarding prescribers, lack of education and training regarding good prescribing practices on essential drugs, lack of up-to-date drug information, heavy patient load, pressure to prescribe drugs from patients' side, and misleading beliefs about efficacy, lead to irrational use of drugs (Devaries et al, 1994).

Regarding drug supply, inefficient management of drugs, and non-availability of the required drugs leads to irrational use of drugs (WHO, 2002b). Regarding drug regulation, the main factors leading to irrational use of drugs include lack of national formularies and EDLs, availability of unsafe drugs, donated drugs not listed on EDL, lack of evaluation system for drug prescribing practice (WHO, 2001b).

Regarding industry, the main factors affect the rationality of drug use are promotion and pressure of pharmaceutical companies' representatives and misleading claims (WHO, 2002b).

## 2.9 Measuring drug use

To be able to deal with any drug use problems, these problems must be illustrated and investigated first. Investigating drug use practices in any health facilities or communities aims to learn about the exact nature of the problem and to clarify the underlying causes. Investigating drug use requires the use of quantitative and qualitative methods (WHO, 1997a). To decide which approach to use, it depends on the costs of different methods, nature of the problem, objectives of collecting data, availability of resources and the time available.

The quantitative method is used to collect quantitative data such as number of drugs prescribed and number of drugs prescribed by generic names. These quantitative data is then used to measure averages, percentages and other summary measures to explore the nature and extent of drugs use practices. Many different ways for data collection can be used according to the objectives of the assessment (WHO, 1992).

WHO has published a health facility survey manual which contains the most used methods for collecting drug use data (WHO, 1993). The data collection methods in this manual are intended to gather data once or at multiple points in time, about a sample of patients, health facilities, or events (e.g. prescribing encounters). The data can be collected retrospectively or prospectively according to the availability of time, needed records and objectives of the assessment (Quick, Foreman and Ross-Degnan, 1988).

On the other hand, the qualitative method is better used to examine underlying feelings, beliefs, attitudes and motivations (WHO, 2000e). It is based on interviewing or observing people. The collection of qualitative data on drugs use can be done using in-depth interviews, focus groups, structured observations, structured questionnaires and simulated patient visits (WHO, 1993). Each method has its strengths and weakness. There is no absolutely appropriate method as it depends on the study objectives and nature of the problem. The qualitative data may be organized and analyzed later

according to a structured coding system, and thus gives more information related to the problem to understand the underlying causes and develop the possible intervention strategies to over come and the problem (WHO, 1993).

In fact, it is recommended to combine qualitative and quantitative methods to ensure the representatives and credibility of data, so a clearer picture can be obtained about the drug use practices (WHO, 1993).

## 2.10 Drug use indicators

In order to measure drug use related issues including, pharmaceutical prescribing practices of health providers, key elements of patient care covering both clinical consultations and pharmaceutical dispensing and availability of facility-specific factors that promote rational use must be used as a reference points (WHO, 1992). The INRUD along with WHO has developed uniform and simple indicators from which small number of basic indicators, they are core indicators, highly standardized, and do not need national adaptation (WHO, 2001a). These indicators have, to date, been widely tested and successfully applied (WHO, 1993). A brief list of the core drug use indicators is presented in (Annex 4). It is recommended to use the core indicators in any drug use studies according to the objectives of the study. Another set of complementary indicators were developed, they are important also but they are not easily measured as the core indicators. However, a brief list of the complementary indicators is presented in (Annex 5).

### 2.10.1 Drug use indicators used in this study

According to the objectives of this study, the researcher has chosen some of the core drug use indications which are relevant to the compliance with the EDL, and measure the prescribing practices of the physicians and the facility situation regarding EDL.

The following indicators are cited in the literature and frecuently used in drug use studies:

**2.10.1.1 Prescribing practice indicators**

*Average number of drugs per prescription*. This indicator aims to measure the degree of polypharmacy, for that purpose it does not matter whether the drugs prescribed have actually been dispensed or not (WHO, 1997a).

This indicator uses the average, and is calculated by dividing the total number of different drug products prescribed, by the number of encounters surveyed.

Poly pharmacy has a negative impact on health due to the following reasons:

- May increase incidence of adverse drug reactions
- May increase incidence of drug interactions
- Leads to a waste of already scarce resources

*Percentage of drugs prescribed by generic name*. The purpose of this indicator is to measure the tendency to prescribe by generic name.

This indicator uses the percentage, and is calculated by dividing the number of drugs prescribed by generic name by the total number of drugs prescribed, multiplied by 100 (WHO, 1997a). A generic medicine is a pharmaceutical product, usually intended to be interchangeable with the innovator product, which is usually manufactured without a license from the innovator company and marketed after the expiry of patent or other exclusivity rights (WHO, 1997a). Generic substitution is a proven cost effective strategy for containing drug expenditure (Brundtland, 2000).

Promoting the use of generic names of drugs will lead to the following positive results:

- Ensures procurement of quality medicines at the lowest possible prices
- Supplies quality low cost medicines to patients
- Ensures use of a common language between health workers who were trained in different countries and thus are used to different brand names (WHO, 1997a).

*Percentage of drugs prescribed from EDL and National Drug Formulary*. The purpose of this indicator is to measure the degree to which practices conform to a national drug policy, as indicated by prescribing from the national essential drugs list or formulary for the type of facility surveyed.

This indicator uses percentage, and is calculated by dividing the number of products prescribed which are listed on the essential drug list or local formulary, by the total number of products prescribed, multiplied by 100 (WHO, 1997a).

#### 2.10.1.2 Health facility indicators

It is obvious that prescribing drugs and using them rationally is influenced by many factors, and of these factors the working environment of the health facility, therefore relevant health facility indicators are cited in the literature and used in this study.

*Availability of a copy of EDL and PNF*

The purpose of this indicator is to indicate the extent, to which copies of the national EDL and PNF are available at health facilities.

*Availability of key drugs*

The value of this indicator is to measure the availability of key drugs at health facilities. This indicator uses percentage, and is calculated by dividing the number of specified products actually available in the facility by the total number of drugs on the checklist, multiplied by 100 (WHO, 1997a).

Based on the literature, a practical way to ensure the overall availability of essential drugs in the health facility is to identify a short list of specific drugs (less than 15) that are essential to treat common health problems, and to examine their availability in the health facilities being studied (WHO, 1997a) .

## 2.11 Promoting rational use of drugs

Strategies to promote rational drug use can be educational, managerial or regulatory. All of these strategies must be implemented after investigating the problems of drug use and prescribing practices before the interventions. Although, variety of tools and methods available to help in measuring and understanding the irrational drug use problems, the WHO manual how to investigate drug use in health facilities can help (WHO, 1988). In this regard, standardized methods for studying drug use in the community are available (WHO, 1992).

The development of clinical guidelines leading to essential drugs lists and formularies are very effective in efforts to promote rational prescribing (Laing, Hogerzeil and Ross-Degnan, 2001). It is obvious now that promoting appropriate use of drugs is achieved by increasing the availability of drugs and enhancing their rational use, both are interrelated aims (Kanji et al 1992). Without the availability of essential drugs, their rational use can't be achieved.

In Ghana, pioneer studies found that if the prescriptions had followed the recommendations of the rational health authorities, the cost of the drugs prescribed would have been reduced by 70% (Barnet et al 1980). Many approaches are cited in the literature to promote the rational use of drugs as discussed below.

### 2.11.1 Educational approaches

Of the most important factors on which rational use of drugs depends is the knowledge, attitudes and practices of health care practitioners and consumers.

Educational approaches attempt to inform health care practitioners especially prescribers, dispensers, or patients to use drugs in the proper way. This approach includes, in service training, face to face education, small group discussions, seminars, workshops and using printed education materials (Ross-Degnan et al, 1992).

Many studies regarding the improvement of the drug use have shown that a short, interactive, problem- oriented training courses and using appropriate training materials significantly improved drug prescribing practices (Laing and Ruredzo, 1989). Many studies were done in this field, of them, a study conducted in United States of America which was done to describe an intervention directed to authoritative senior department members on rational drug use focusing an antibiotic prophylaxis. The intervention involved guidelines development; these guidelines were presented to the leaders in the obstetrics and gynecology departments. The compliance with these guidelines showed a dramatic change in usage patterns (Avorn and Soumerai, 1983).

Another study was done in Indonesia about efficacy of the interactive group discussion demonstrated a significant decrease in injection use from 69.5% to 42.3% in the intervention group compared to decrease from 75.6% to 67.1% among controls (Santoso et al, 1996). The conclusions of the study were that interactive group

discussion significantly reduces the over use of injections and had long term impact as well as injections were not substituted for other drugs (Santoso et al, 1996).

Scientific literature, pharmacy and therapeutics news letters, and printed guidelines are examples of printed materials used for such intervention. These materials can improve prescribing practices based on two assumptions. The first is that the reason for incorrect prescribing is the lack of information. The second is that when the prescribers have the correct information, their prescribing would automatically improve (WHO, 1997b). Studies in Western countries showed that the effect of distributing printed educational materials alone resulted in brief, very small improvement in prescribing. As many times, these materials are not even red by prescribers (Soumerai, 1990).

### 2.11.2 Managerial approaches

It is one of the three broad categories of interventions to improve drug use. The managerial approach attempts to improve drug use by improving the drug decision making by a variety of techniques, of these techniques, the use of specific processes, forms, packages and monetary incentives. One of these important interventions is developing and implementing EDLs and drug formularies, STGs, monitoring and feedback, establishing representative pharmacy and therapeutics committees, establishing structured drug prescribing forms, implementing drugs kit system, providing cost information and set-up financing (Quick, Laing and Ross, 1991).

EDLs and drug formularies provide the prescribers with a list of the drugs which are the most effective and economic in treating the common health problems in their country, where standardized diagnostic and treatment protocols simply are decision rules; these rules help the health workers to follow the most appropriate actions based on patient symptoms and clinical signs. There are many factors contributed in the

effectiveness of these guidelines including how the guidelines are produced, how they are disseminated and whether they are "user-friendly" (Kafuko, Zirabamuzaale and Bagenda, 1999). A study conducted in Uganda showed that implementing STG followed by training and supervision was very effective in reducing the average number of drugs prescribed per prescription compared to distributing STG alone (Kafuko, Zirabamuzaale and Bagenda, 1999).

Drug supply kits is a very important system represents the essential drug list concept. By this system, limited numbers of drugs which are considered essential are supplied in fixed quantities at a regular interval to health facilities. These kits are usually used in peripheral areas which are difficult to supply effectively (Laing, 1990). A study of an essential drugs kit program was done in Yemen, showed that the number of drugs prescribed in the intervention district was 1.5 per patient, compared to 2.4 in the comparison area (Hogerzeil, et al, 1989).

Another important managerial intervention, is implementing self–monitoring prescribing practices in health facilities. This intervention includes three steps. The first is identifying suspected problems in drug use. The second is developing self–monitoring tools and the third is implementing self–monitoring method (Laing, Horgerzeil and Ross-Degnan, 1997).

A study of self-monitoring of drug use indicators at health facilities in Indonesia, showed that the self–monitoring method was effective in reducing the average number of drugs, compared to previous baseline study, where the average number of drugs (poly pharmacy) had been reduced by 26% (from 4.2 to 3.1) (Guierrez, 1994). The utilization audit is another managerial approach, which is based on the evaluation of the prescribers practices by collecting and analyzing data on past or current prescribing by health facilities, clinical departments, or individual prescribers. The most important

step is that the findings on performance are usually feedback to prescribers (Ross-Degnen, 1997).

From the financial and economical point of view, it is important to provide cost effective information for the physicians which can encourage them to consider costs in their selections. This can be done using cost bar graphs, drawing up facility drug budgets, and printing prices in drug manuals and on requisition forms, interventions which combine both managerial and educational elements to improve prescribing results in savings by reducing unnecessary drug expenditures (Soumerai et al, 1990).

### 2.11.3 Regulatory approaches

Regulatory approach attempts to restrict allowable decisions, by placing absolute limits on availability of drugs. This can be achieved by relying on rules or regulations to change behaviors (WHO, 1997b). These interventions can be limiting or banning registration, changing product registration status as well as prescribing and dispensing controls. One of the most important regulations which can be taken is to develop regulations that encourage the use of generic, non–branded drugs.

It is important to explore that the generic products offer therapeutic efficacy equals to their branded equivalents at much lower cost. This regulations must be paired with education and training for the physicians on the exact ingredients of drug. A study conducted in Philippines showed that the implementation of a drug generic law without education had a lower impact on prescribing practices than regulation paired with education and sanctions (Ross-Degnan, 1999). The MOH of Indonesia promotes the use of generics by developing the generic drug program in 1991 (Arustiyono, 1999).

Finally to achieve the best results in improving drug use, combining interventions is likely to have a synergistic effect. A study in Indonesia showed that disseminating

leaflets combined with face to face education have reduced antibiotic use and increased Oral Rehydration Salt (ORS) use in diarrhea at health centers (Gani, Tangkilisan and Pudjilestari, 1999). As a result, the combining intervention strategies involving educational, managerial and regulatory strategies are the most effective interventions, which lead to maximum impact. Also, with regard to improve the drug use by health professionals, WHO developed a guide to good prescribing and has proved to be another tool to rationalize drug use. This guide was translated into 18 languages including Arabic language (WHO, 1998b). The guide provides step by step guidance on the process of rational prescribing (Devries et al., 1995).

## 2.12 Primary health care

The early PHC definition had two elements, which were the level of services and the activities themselves (Walt, and Vaughan, 1982). Alma-Ata Declaration considered PHC as essential health care and adopted it as means for providing a comprehensive, universal, equitable and affordable health care service for all countries. Furthermore, the conference addressed the economic and political steps needed to fund the initiative: *"an acceptable level of health for all people of the world by the year of 2000 can be attained through a fuller and better use of the world's resources, a considerable part of which is now spent on armaments and military conflicts"* (Declaration of Alma-Ata, 1978).

Nowadays we recognize that the world did not take the above recommendations into consideration regarding savings from the military conflicts and as a result it was not important to provide an acceptable level of health for all people in the world, as we recognized from recent world events the United States of America was preparing to spend $ US 100 billion on the war in Iraq (Sach, 2002), but only contributes $ US 200

million to the global fund to fight tuberculosis, malaria and AIDS (Kleinert, 2002). This is against the concept of global equitable and comprehensive PHC system and is a frustrating sense in countries with poor resources. Hall and Taylor (2003) said that *"It is time to put political and* economic *ideology aside and determine the methodology that will yield the greatest gains and provide access to even the most basic of services for all people beyond the year 2000"* (Hall and Taylor, 2003).

From the public health point of view, primary health care is very important area as it provides the needed services for most of the population and represents a protective as well as curative health services, such as, immunization, family planning and dental health services. The curative services include first aid, general practitioner and medical specialist care, laboratory, dental care, gynecology and obstetric, radiology, health education and emergency medical services (MOH, 2002a).

Health for all and/or all for health is the WHO goal which has been approached in many countries through PHC, and the governments recognize health care as a basic right of their people. In order to make PHC works appropriately, providing the PHC facilities with regular supplies of drugs to treat the most common conditions and to be prescribed by the physicians rationally is an essential part. In 1978 the Declaration of Alma-Ata, identified "provision of essential drugs" as one of the eight elements of PHC.

## 2.13 Compliance

According to Longman dictionary, compliance is defined as obedience, adherence or the tendency to yield too willingly to the wishes of others (Longman, 1982).

In this study, compliance of PHC physicians therefore is the adherence of the PHC physicians to the EDL and PNF. Compliance in many studies can be determined by

different ways according to the specific objectives and the availability of data. For example, a study aimed to explore the compliance of Dutch general practitioners with the recommendations for blood test ordering as defined in the guidelines of the Dutch College of General Practitioners, determined compliance by comparing the recommendations for test ordering with the test actually ordered (Marc et. al., 2002).

Another study done in Netherlands at Groningen University aimed to assess the general practitioners adherence to the regional formulary, the study determined the compliance (adherence) by examining the prescriptions of the general practitioners and if the drugs on it are from the formularies or not (Kamps et al, 2000).

According to WHO, the drug use indicators and the questionnaires which support it can reflect the prescribing practices of the physicians and their compliance with the EDL (WHO, 1993).

It is important to develop guidelines as well as formularies to facilitate effective, efficient and cost–conscious prescribing. This is very important in the field of pharmacotherapy simply because the most frequent therapeutic interventions used by the physicians especially in the PHC facilities is drug prescribing. The development of these guidelines is not enough to close the quality circle, it must be followed by two other steps which are an assessment of performance with respect to guidelines, formularies and EDLs followed by a critical evaluation and monitoring (Kamps et al, 2000). It is obvious that even when authoritative guidelines are available; changing the behaviors of physicians is difficult (Grimshaw and Russel, 1993).

To deal with this issue, there must be research to assess the dissemination and implementation of the guidelines in order to know the compliance with these guidelines (Lomas, 1991). Compliance with any guidelines or formularies is linked and reflected by the appropriate implementation strategy (Forrest, Hoskins, and Hussey, 1996). This

can be achieved and the compliance can be increased if there is training and an educational strategy (Onion and Bartzokas, 1998).

According to the department of health and human services in United States of America, the components of effective compliance guidance for individuals and small group physicians practice contain seven components but this does not suggest that physicians must implement all the seven components. The seven components include conduction internal monitoring and auditing, implementing compliance and practice standards, designating a compliance officer or contact, conducting appropriate training and education, responding appropriately to detected offenses and developing corrective action, developing open lines of communication and enforcing disciplinary standards through well publicized guidelines (USA, Federal Register, 2000). Based on the fact that, patient care should be the first priority of a physician practice, this practice can be enhanced by increasing compliance with any guidelines and formularies, for example, the increased accuracy of documentation that may result from a compliance (USA, Federal Register, 2000).

Finally, assessing compliance using different methods in order to reach the accuracy as much as possible is very important not only to determine whether the physicians implement the essential drugs program but also to make compliance principles or concept an active part of the practice culture of the physicians.

## 2.14 Studies relevant to the drug use indicators

Any step or intervention needed to promote the rational use of drugs can be achieved through encouraging a standard approach to measure problems in drug use (WHO, 1993). In order to reach this issue, it is very important to initiate drug use research, that describes the current drug use situation in the country, region, or individual health

facility, to give a solid base on which any intervention can be decided; by this drug use promoting can be based on scientific base and can be practically useful.

For the above reason INRUD developed drug use indicators, which were tested in developing countries with the collaboration of WHO as aforementioned.

After testing them, the drug use indicators were again revised and refined, and thereafter the methodology for collection of data indicators was developed (WHO, 1993).

### 2.14.1 The standard values for the WHO indicators

According to the study which was done in Nigeria with the support of DAP – WHO to develop standard values for drug use indicators, the results were as the following in Table 2.1.

**Table (2.1) standard values for drug use indicators**

| Indicator | Standard value |
|---|---|
| **Average number of drugs per prescription** | **1.6 – 1.8** |
| **Percentage of drugs prescribed by generic names** | **100%** |
| **Percentage of drugs prescribed from the EDL or formulary** | **100%** |

(Isah et. al., 1999).

For the indicators measuring the generic prescribing, availability of key drugs and availability of EDL, the ideal value should clearly be 100%. However, internationally, valid standard for average number of drugs per prescription is recommended to be below 2 (Dumoulin, 1998).

## 2.14.2 Developed countries studies

According to the findings of a study in United States of America on economic activities, the average price of generic drugs can fall by as much as 30% of the innovator drug price when the number of generic drugs on the market increases (Caves, Whinston and Hurtwitz, 1991).

A study conducted in United Kingdom found that the average number of drugs prescribed per prescription was 2.6; another study in United Kingdom showed that the percentage of drugs prescribed by generic name was 42% (Trap, 2000).

Wallack et. al., (2002) conducted a study in United States of America and found that boosting the rate of generic use by roughly 50%, would reduce drug spending per person from US $1.647 to US $1.377 and save a total of US $250 billion between 2003 and 2012 (Wallack et. al., 2002). A study done in Spain to evaluate and improve generic drug prescription, showed that the generic drugs prescribed was 2.7% but after the utilized corrective interventions the percentage increased to 17.63% (Lopez-Picazoferrer et. al., 2002).

## 2.14.3 Developing countries studies

A study was carried out in 12 developing countries to quantify the impact of essential drug programs, and to assess drug use practices in primary health care facilities showed that in Uganda, the average number of drug prescribed was 1.9, in Malawi the average number of drugs prescribed was 1.8 and the percentage of key drugs availability was 67% (Hogerzeil et. al., 1993). In Indonesia, the average number of drugs prescribed was 3.3 and the percentage of drugs prescribed by generic name was 59% (Hogerzeil et. al., 1993). In Bangladesh the average number of drugs prescribed was 1.4, the percentage of generic was 78%, the percentage of drugs prescribed from EDL was 85%

and the percentage of key drugs availability was 54 % (Hogerzeil et. al., 1993). In Zimbabwe the average number of drugs prescribed was 1.3, the percentage of generics was 94% (Hogerzeil et. al., 1993). In Tanzania, the average number of drugs prescribed was 2.2, the percentage of generics was 82%, the percentage of drugs from EDL was 88% and the percentage of key drugs availability was 72 %(Hogerzeil et. al., 1993). In Nigeria the percentage of drugs prescribed was 3.8, the percentage of generics was 58% and the percentage of key drugs availability was 62% (Hogerzeil et. al., 1993). In Nepal the average number of drugs prescribed was 2.1, the percentage of generic was 44%, the percentage of drugs from EDL was 86% and the percentage of key drugs availability was 90% (Hogerzeil et. al., 1993). In Ecuador the average number of drugs prescribed was 1.3, the percentage of generics was 37% and the percentage of key drugs availability was 38% (Hogerzeil et. al., 1993). In Zimbabwe a study conducted in order to evaluate the essential supplies and rational drug use showed that the availability of key drugs was 56% in 1989, 87% in 1991, 73% in 1993, 75% in 1995 and 75% in 1996 (Trap, 1996).

A study conducted in Bangladesh aimed to describe the prescribing patterns of medical prescribers, showed that the average number of drugs per prescription was 1.6, the percentage of drugs from EDL was 88.33% and the percentage of drugs prescribed by generic names was 84.58% (Baqui and Chowdhury, 1996).

Another study done in South Africa aimed to create a system for the training and support of primary care health workers in the rational, cost effective and safe use of drugs showed that the average number of drugs per prescription was 2.76, the percentage of drugs prescribed from EDL was 74% and the percentage of drugs prescribed by generic name was 25% (Orrell and Kishuna, 1997). Another study in South Africa aimed to assess the essential drug program, showed that 86% of facilities

had a copy of EDL for PHC, 65% of prescribers had a personal copy of the EDL, 85% of key drugs were available, and 70% of the drugs prescribed were from the EDL (WHO, 1999c). In Ghana, the average number of drugs prescribed was 4.3 which were the highest in the region. Another study conducted in Pakistan to assess the current drug use practices showed that the average number of drugs prescribed per prescription was 3.5, and the percentage of drugs used from EDL was 70% (Memon, 1998). A study conducted in the city of Kragujevac aimed to measure and analyze the drug use in Serbia showed that the average number of drugs prescribed was 1.9, the percentage of drugs prescribed by generic names was 27.5% and the percentage of drugs prescribed from EDL was 43% (Jankovic et. al., 1999). Another study conducted in Kalahari District of the Northern Cape aimed to assess and measure drug use patterns and prescribing behaviors showed that the average number of drugs per prescription was 2.1. The percentage of drugs prescribed by generic name was 74.7%, and the percentage of drugs prescribed from EDL was 92.5% (Kwik-Skwiz, 1999).

A study conducted in Uganda, aimed to assess the degree of rational drug use in the country, and to determine the effect of the different interventions on drug use in the country. The study used three types of training to explore the results of each type, the first one was A1, which includes the dissemination of national guidelines and timely feedback and targeted training of health workers combined with support supervision. The second one was A2 which includes the same without supervision and the third was B which includes only dissemination of national guidelines alone to health units.

The following Table 2.2 shows the results for some of the drug use indicators in this study (Kafuko, Zirabamuzaale and Bagenda, 2000).

**Table (2.2): Effect of interventions on the drug use indicators.**

| Indicator | Type of intervention | | |
|---|---|---|---|
| | A1 | A2 | B |
| **Average no of drugs prescribed** | 2.14 | 2.09 | **2.45** |
| **% use of generic** | 94.4 | 92.7 | **86.6** |
| **% of drugs on EDL** | 98.3 | 97.8 | **98.7** |
| **% health units with EDL** | 100 | 79.5 | **82.9** |
| **% of health units using EDL** | **68.1** | **47.7** | **34.1** |

A study done in the Durban, Metropolitan area in South Africa, aimed to analyze the prescribing patterns in different patient categories within public sectors, using the WHO and INRUD prescribing indicators. The study showed that the average number of drugs prescribed was 3.5 where the percentage of drugs prescribed by generic was 24.4% (Suleman, Dangeor and Jinabhai, 2000).

Another study conducted in Namibia in 1999, after the decision of the Namibia's MOH, to repeat the national drug use survey every two years within which training in diagnosis and prescribing at all levels to be done. The study showed that the percentage of drugs by generic was 61.3% and the percentage of key drugs available was 92.7% (Shiyandja and Schumann, 2000). A study in Namibia in 1997, showed that 49.5% of drugs were prescribed by generic names, and 87.7% of key drugs were available (WHO, 2001b).

According to the third national survey on the use of drugs in Namibia's public health institutions, which use some of the WHO drug use indicators, the results showed that

the average number of drugs per prescription was 2.72 with a range from 2.03 to 4.33 (Namibians' MOH, 2001). The percentage of drugs prescribed by generic name showed that 60% of drugs were prescribed by generic names with a range from 31% to 93% (Namibians' MOH, 2001). The percentage of drugs prescribed from the EDL was 91% with a range of 57% to 100% (Namibians' MOH, 2001). This indicator was used in the survey as a reflection of physicians' adherence to EDL, and the percentage of key items in stock varied from 78% to 100% with a mean value of 93% (Namibians' MOH, 2001). The availability of EDL was 76% in facilities, the Namibians' MOH undertaken the following measures to promote the use of generic names of drugs:

- Drugs contained in the EDL are listed by generic names.
- Central medical stores procurement section use generic names when tendering and ordering.
- Order books for health institutions contain generic names only. These efforts led to increase generic prescribing from 50% in 1997 to 60% in 2001 (Namibia's MOH, 2001).

In Brazil, the MOH has begun a campaign to disseminate information on generics to patients, doctors, hospitals and pharmacies (WHO, 2002c). This campaign was along with many supportive actions, from which the new labeling for generic drugs, television and radio spots to help consumers recognize generic products (WHO, 2002c). All the doctors were being sent pocket–size generic information guides with the list of approved generic medicines and their technical details, as well the hospitals and pharmacies were provided with posters and basic patient leaflets on generic (WHO, 2002c).

A study conducted in Thailand after the establishment and implementation of the drug formulary and after the development of the generic dispensing policy, which aimed to

evaluate the impact of the new policy, by comparing the prescription patterns of Kingchulalorn Memorial Hospital before and after the formulary and policy implementation. The results showed that the average number of drugs per prescription before and after the implementation was almost similar (2.52 vs. 2.45 respectively), while after the implementation, physicians increasingly prescribed drugs by generic names (37.1% before vs. 44.85% after) (Limpanasithikul et. al., 2002). A study conducted in Zimbabwe, aimed to assess the prescribing practices of the physicians by the Zimbabwe essential drugs program showed that the average number of drugs prescribed was 2.3 (Trap and Hansen, 2003). The same study showed that, prescribing practices were influenced by the doctor's place of education, the practice of poly pharmacy and prescribing more drugs seemed to be related to the site of education. Prescribers who were educated in Zimbabwe had better prescribing practice compared to those educated elsewhere. This was related to the inclusion of the essential drugs concepts and STGs in the curriculum for medical students in the country (Trap and Hansen, 2003).

According to WHO, Department of essential drugs and medicines policy, the percentage of ciprofloxacin drugs (as example) prescribed by generic name was 10.6% in Armenia, 30.1% in Brazil, 62% in Peru and 0.8% in Sri Lanka (Laing, 2004). In Uzbekistan a drug use study showed that the average number of drugs per prescription was 2.9, the percentage of drugs prescribed by generic names was 36% and the percentage of drugs prescribed from EDL was 78% (Laing, 2004).

### 2.14.4 Arab countries studies

A study was conducted in Yemen, aimed to evaluate the essential drug program and to assess the knowledge of health workers about the program, by comparing between

health units which were included in the program and those where it had not yet been implemented. The results showed that, health workers at units included in the program had statistically significantly higher levels of rational drug knowledge and better drug prescribing in terms of the average number of drugs per prescription (1.5 Vs 2.4) all P values were less than 0.001 (Walker, 1990).

A study done in Saudi Arabia aimed to evaluate the prescribing patterns in PHC, showed that the average number of drugs prescribed per prescription was 2.3 (AL-Nasser, 1991). A study that was carried out in twelve developing countries to quantity the impact of essential drug programs, and to assess drug use practices in primary healthcare facilities showed that the average number of drugs prescribed in Yemen was 1.5, in Sudan it was 1.4 (Hogerzeil et. al., 1993). The average number of drugs prescribed by generic name in Sudan was 63% (Hogerzeil et. al., 1993).

A study done in Sharjah in United Arab Emarates aimed to assess drug utilization in PHC centers in Sharjah, showed that the average number of drugs prescribed per prescription was 2.7, the percentage of drugs prescribed by generic was 100%, and the average number of drugs prescribed from EDL was 100% (Hasan, Das and Mourad, 1997). The national formulary was always available and 90.5% of key drugs were available during the period of the study (Hasan, Dasand Mourad, 1997).

Another study done in Saudi Arabia aimed to assess the prescribing patterns at PHC level in the Asir region showed that the average number of drugs prescribed per prescription was 1.44 and the percentage of drugs prescribed by generic names was 2.9% (Mahfouz et. al., 1997).

In Morocco a study aimed to assess drug prescription and utilization after the statement of the action program for essential drugs, showed that the average number of drugs

prescribed per prescription was 3.27, and the percentage of drugs prescribed from WHO EDL ranged from 29.8% to 82.4% (Simon, 1998).

In Egypt the EDL was not available in any of the clinics which was studied in Alexandria according to a study done to give an overview of the use of prescribed medication over one month period in infants (Zaki et. al., 1999). The study also showed that the average number of drugs per prescription was 2 (Zaki et. al., 1999).

In Oman a study using some of the rational drug use indicators showed that the percentage of drugs prescribed by generic names in Muscat Region at three primary care facilities showed that the three results were 15%, 13% and 84%. The study recommended that there is a real need for knowledge, attitudes and practices survey to be planned and implemented at the near future (Suleiman and Gunn, 2001).

### 2.14.5 Palestinian studies

An assessment of prescribing practices was undertaken by the General Directorate of Pharmacy between January and March 1997. The results showed that, in Nablus PHC clinics, the number of drugs per prescription was 2.6, the percentage of drugs prescribed by generic name was 5 %(Obeidallah et. al., 2000). In Tulkarem governmental clinic the number of drugs per prescription was 2, and the percentage of drugs prescribed by generic names was 0% (Obeidallah et. al., 2000). In Rimal governmental PHC Clinic the average number of drugs per prescription was 3.1 and the number of drug prescribed by generic names was 1% (Obeidallah et. al., 2000). The overall result was, the average number of drugs prescribed per prescription in Gaza Strip and West Bank was 2.55 and the percentage of drugs prescribed by generic names was 2.66% (Obeidallah et. al., 2000).

A study aimed to provide insights about the pharmaceutical and medical situation by assessing health related activities in the PHC in West Bank, showed that, the average

number of drugs per prescription was 1.68 with a range of 1.25 to 2.3. The percentage of drugs prescribed by generic name was 0.37% with a range of 4 to 0%, the percentage of drugs prescribed from EDL was 95% with a range of 80 to 100% and the availability of PNF copies was 16.7% (Pharmaciens Sans Frontieres, 2003).

To summarize the related drug use studies showed some problematic areas in the drug use and the compliance with the EDL. The next chapter illustrates the methodology used in this study.

# Chapter 3: Methodology

This chapter presents the study methodology. The chapter commences with study design, type of study sample, study population ethical consideration. Also it presents the instruments which were used in this study, its validity, piloting, data collection process, data processing, and data analysis. Finally, it presents selection criteria and limitations of the study.

## 3.1 Study design

The design of this study is cross sectional descriptive co relational one as it describes the compliance of the PHC physicians in Gaza Strip with the EDL, as well as it measures specific indicators that reflect the prescribing practices of the PHC physicians and their compliance with the EDL. Cross sectional design was chosen because it is useful for descriptive analysis. It is less expensive and enables the researcher to meet the study objectives in short time. It also studies the cause and effect at the same point of time and thus provides some possible indications about causation relationships (Burns and Grove, 1997).

## 3.2 Study population

The study population in this research included two populations, first study population was all the PHC physicians who were working at the time of data collection in the governmental PHC clinics in all the five Gaza Strip governorate, (they were 276

physicians according to the Department of Human Resource Management in PHC Directorate/MOH.

Second study population was a sample of patient encounters (prescriptions) of general illness encounters, representing a mix of health problems and ages (WHO, 1993).

A sample of 36 prescriptions from each PHC clinic in Gaza Strip were taken, therefore a sample of 1656 prescriptions were selected and studied.

## 3.3 Sample size

Data triangulation was used in order to ensure credibility of the results. Since the target population of the study consists of two type of populations (physicians and patient prescriptions), the sample size also consists of two samples. The first was all the physicians working in the PHC governmental clinics in Gaza Strip. This is because the target population is not so big and also to ensure data representativness and credibility. The second sample was 1656 prescriptions. Meaning that 36 prescriptions were selected randomly from each PHC clinic. It is worth noting that, the total number of governmental PHC clinics was 46. The researcher followed the WHO recommendations on the sample size for the WHO indicators; the minimum sample size recommended for a basic cross-sectional study consists of 20 health facilities and 30 patient encounters per facility is taken (WHO, 1993).

## 3.4 Sampling process

Physicians who were working in PHC clinics at the time of data collection were included and the researcher studied all of them. Regarding the prescriptions sample for drug use indicators, a retrospective multistage sample of patient's encounters was

drawn. As the WHO recommends, the basic indicator study calls for a sample of at least 30 prescriptions per each health facility when 20 or more health facilities included or 100 prescriptions if 10 health facilities were included (WHO, 1993). The researcher included all the PHC facilities which was 46 and 36 prescriptions were selected to meet the study objectives.

Piloting revealed the availability of the prescription records on the store of each clinic. The researcher found that the data systems in all the clinics are similar, so the process of sampling was standardized and carried out as follows:

- Choose the prescriptions for the 6 months proceeded the study which are June, July, August, September, October and November of the year 2003 as what is recommended by the WHO. The retrospective data must be twelve-month period prior the survey date, and if the necessary medical record data are too difficult or time consuming to extract, the list should cover as much of the study period as possible (WHO, 1993). Given that, the study is conducted in all Gaza Governorates, time was limited and the way of old prescribe storage is very difficult to deal with, so the interval of 6 months was sufficient and subsequently used.
- From each month in each clinic, the prescriptions were divided into two groups as the recording system in the PHC facilities three years and less children and the other more than three years.
- From each month and each group, 3 prescriptions were randomly drawn, one from the first 10 days of the month, one from the middle 10 days and one from the last 10 days randomly.
- According to the recommendations of WHO which recommends that if the sample of adult and pediatric cases are drawn from separate sources, half the

sample should be taken from each age group, spread even by over the chosen period and month this approach was utilized and exactly followed in this study (WHO, 1993).

## 3.4.1 Selection criteria

### 3.4.1.1 Inclusion criteria for physicians

All the formally employed physicians who were working in the governmental PHC facilities distributed through the five governorates of Gaza Strip (have official job numbers).

### 3.4.1.2 Exclusion criteria for physicians

- Not formally employed physicians were excluded from the study.
- Physicians who were abroad or in long holidays during the implementation period of the study.
- Physicians who were working in the facility in managerial jobs only and don't practice medicine.

### 3.4.1.3 Inclusion criteria for prescriptions sample

- Prescriptions that were dated in June, July, August, September, October, and November 2003.
- Prescriptions written on the official prescribing forms.

### 3.4.1.4 Exclusion criteria for prescriptions sample

- PHC clinics which didn't start working yet or it started working for less than six months.
- Prescriptions written on unofficial prescribing forms or from months other than the above specified ones.

## 3.5 Study setting

The study was conducted at the governmental PHC clinics in Gaza Strip Governorates. All the clinics were selected to reflect representative results and to ensure the reflection of the difference in organizational and managerial systems and to identify factors that might contribute to the PHC physicians' compliance with EDL in this regard.

## 3.6 Ethical consideration and procedures

Real commitments to the ethical considerations developed by Helsinki declaration were maintained throughout the study. First, ethical approval was obtained from both the School of Public Health Al-Quds University and Helsinki Committee (Annex 6) to carry out the study. Second, an approval letter was sent to both the Director General MOH (Annex 7) as well as the General Director of PHC in Gaza Strip (Annex 7).
Third, an explanatory letter was attached to every questionnaire as an informed consent in order to maintain participants' rights (Annexes 8 and 9).

## 3.7 Period of the study

The study was conducted in the year 2003; started with literature review in June 2003. After the approval of the proposal by School of Public Health- Al Quds University, ethical letters were sent to the General Directors of the MOH as well as to the General

Directors of PHC Directorate in October 2003 and to the Helsinki Committee. The pilot study was conducted in November 2003. Actual data were collected in December 2003 through January 2004. Data analysis was completed during March, April, and May. The study took almost one year from its beginning.

## 3.8 Method of the study

A quantitative approach, using two instruments which are structured questionnaire and selected adopted WHO drug use indicators checklists were used in this study.

The traditional scientific quantitative research comes under the umbrella of the positivistic paradigm, which emphasizes rationality and scientific orientation to phenomena (Polit and Hungler, 1999). The positivistic approach assumes that there is a material reality out there that could be studied and revealed (Burns and Grove, 1997). Believers in the scientific approach assume that nature is basically ordered and regular and that an objective reality exists independent of the human experience (Polit and Hungler, 1999). Positivistic approach seeks to be as objective as possible in the detection of knowledge; therefore, researchers attempt to hold their personal beliefs and biases away as much as possible (Holloway and Wheeler, 1996). Further, the positivistic scientific approach involves the use of systematic statistical procedures that are assigned to test the research hypotheses (Duffy, 1987). Meaning that, the quantitative method searches for quantifiable or measurable data (Holloway and Wheeler, 1996).

However, in this study, the researcher elected to use a quantitative research for its fitness for the study purpose particularly measuring the WHO drug use indicators through using self-administered questionnaire and prescriptions assessment for its advantages, such as wide coverage (Bell, 1993), generalisability, saving time

(Holloway and Wheeler, 1996), enhancing confidentiality, supporting internal and external validity, facilitating analysis, saving resources and limiting researcher's effect on the study (Polit and Hungler, 1999).

Self administered questionnaire (Annex 10 and 11) was used as it saves time, ensures equity in administration for all participants. The questionnaires were distributed by the researcher herself and/or her assistants with an empty envelop, and participants were asked to return back the completed questionnaires without names. The subjects were given the opportunity to fill the questionnaire at their homes in other to maintain confidentiality and convenience. The researcher sent a cover letter with the questionnaire to explain the objectives of the study and to illustrate how to answer the questionnaire.

Selected WHO drug use indicators were used according to the study objectives including, average number of drugs prescribed in the prescription, percentage of drugs prescribed by generic name, percentage of drugs prescribed from EDL or formulary, availability of copy of EDL or formulary at health facility and the availability of key drugs. A checklist list of key drugs (12 drugs) was established (Annex 12) according to WHO recommendations (10 to 15) drugs and the health problems in Gaza Strip.

The WHO drug used indicators checklists were adopted to meet the study objectives and to facilitate data collection according to the recording system in the facilities.

The researcher also revised some of the relevant documents and observations which helped in exploring the reality, these documents include:

- Some of the patient files in the PHC facilities.
- Prescribing forms and the system used for their storing.
- Registration documents in pharmacies of the PHC facilities.
- Essential drug lists and Palestinian National Formularies in the PHC facilities.

- Standard Treatment Guidelines in the PHC facilities.

## 3.9 Construction of the instruments used in the study.

In this study more than one instrument were used to ensure credibility as well as to meet the study objectives.

The first instrument was self administered structured questionnaire (Annexes 10 and 11). The researcher developed the questionnaire, based on the literature review and field observation with consultation of the experts in this field.

*The questionnaire consisted of five parts:*

- The first part covered facility data which were relevant to the study.
- The second part explored the physicians' knowledge and attitudes toward the EDL concept and it related issues.
- The third part assessed physicians' practices regarding their compliance with the EDL and the rational use of drugs.
- The fourth part included three open-ended questions, in which the physicians were asked to give their opinions in the actions needed to increase their compliance with the Palestinian EDL, their role if possible in contributing in the next updating EDL and they were asked also to write any thing important related to the ED program implementation which wasn't mentioned in the questionnaire.
- The last part covered personal data including personal characteristics and socioeconomic profile of the physicians for example gender, age, qualifications, job position and place of graduation. This was the last part because it included some sensitive personal questions so the participants may feel more comfortable when reaching the end of the questionnaire.

*The second instrument was two checklists for the selected WHO drug use indicators*

- The first checklist was the prescribing indicators form which was adopted from the WHO form (Annex 13). It started with some items which explored the requested data related to the PHC facility including PHC level, community served by the facility and governorate, also the form included the prescriptions data such as date of prescription year of birth of the patient, number of drugs prescribed in the prescription, number of drugs prescribed in generic name, number of drugs prescribed from the EDL.
- The second checklist was the key drugs form (Annex 12). It stared with some items which explored the requested data related to the PHC facility including PHC level, community served by the facility and governorate. Additionally, the selected key drugs were provided and participants were asked about the presence of these drugs also the form includes an item to explore the presence of the PNF in the facility or not.

## 3.10 Pilot Study

Before starting the actual data collection process, a pilot study was conducted, as a pre-test for the data collection instruments in order to predict the appropriateness of the instruments and to detect if there is a need for any modifications to be done for the instruments.

A convenient sample of 15 physicians was selected from the PHC centers. The self constructed questionnaire has been used to conduct the interview, after informing subjects about voluntary participations and the freedom not to participate. Also the checklist for the WHO indicators was checked in two clinics one in Gaza the other in the North for 72 prescriptions. Modifications were introduced into the questionnaire after piloting. The pilot subjects of physicians were not included in the study.

## 3.11 Data collection

The questionnaire was self-administered as the target population were highly professional and to encourage giving credible answers about his/her feelings and practices. The researcher and her assistants (3) distributed the questionnaire to all physicians and described the general rules for filling and participation and then asked them to return back the questionnaire to the researcher. The collected questionnaires (236) were checked for completeness and logical filling and then coding prior to input onto the computer as detailed later.

Data collection with regard to the WHO indicator checklists for the selected indicators was adopted and a list of key drugs was chosen depending on the definition of WHO literature review and consultation with the Director General of the Pharmaceutical stores, Director General of the Pharmacy in MOH and field observations. The assistants who collected the prescriptions data were chosen to be pharmacists; they were two and trained well on how to select samples and fill in the checklists in the same way as the researcher is doing. The researcher also revised some of the relevant documents and made some observations which helped in exploring the reality.

## 3.12 Response rate

The study population consisted from 276 physicians from the five governorates and all PHC facilities, from them 242 (87.68%) responded.

## 3.13 Data management

### 3.13.1 Data entry

- Questionnaires and checklists were overviewed
- Data entry was done after the over viewing of the filled questionnaires and WHO drug use indicators forms. The questionnaires which were filled were 242, from which, 6 questionnaires were excluded because they were not properlly filled (236 questionnaires were usable).
- The second step was designing a data entry model using the computer Statistical Package for Social Sciences (SPSS) for the two used data collection instruments.
- The questionnaires and the WHO drug use indicators checklists were coded then were entered onto the computer by the researcher.
- The next step after data entry was data cleaning which was done to ensure that all data was entered correctly. This process was done through checking out a random number of the questionnaires as well as the checklists and through conducting descriptive statistics and frequencies for all variables.

### 3.13.2 Data analysis

Data analysis was done by the researcher with support from the supervisor. Starting with the descriptive analysis, frequency tables were conducted for the study variables.

- Means and standard deviation were computed for the continuous numeric variables.
- Recoding of certain variables took place.
- Cross tabulation for specific study variables was formed.
- The selected WHO drug use indicators were computed using the statistical formulas developed by WHO.
- Then, in order to explore the potential relationship between the study variables, advanced statistical analysis were conducted, including:
    - Independent t-test,
    - One Way ANOVA test,
    - Chi square test for categorical variables, P value was considered as a statistically significant if it belows 0.05.

## 4.14 Validity of the instruments

Content validity:

The drug use indicators checklists were adopted from the WHO forms, so they were internationally approved and there were no need for their validation.

The questionnaire as well as the suggested key drugs list was discussed with expert committee to assess the relevance, clarity and comprehensiveness of the used instruments. In order to validate the questionnaire and the key drugs used in this study, the researcher sent them to 12 different experts including, researchers, managers, PHC physicians, pharmacists, specialist physicians and statisticians.

All of the comments of the experts were taken into consideration and as a result some modifications for some items were introduced.

## 4.15 Reliability of the instrument

In order to ensure the reliability of the instruments used in this study, two steps were taken, they are:

- Standardization of the implementation of the questionnaire as well as the drug use indicators forms was guaranteed.
- Also the same method of data collection was implemented by training the data collectors in a same manner about how to use the instruments, regarding the drug use indicators forms.

## 3.16 Limitations of the study

- The general political situation, and the special unstable situation of Al-Aqsa Intifada during which the study was conducted affected the study, as there were a lot of Israeli military barriers which divided Gaza Strip into three separated areas, so the free movement to Khanyounes and Rafah governorates was too difficult. Also MOH was in emergency situation because of the Israeli attacks on Gaza Strip, so the physicians were standby, and this may have some effects on their situation and reflected on their participation and compliance.
- Limited time available to conduct the study.
- Limited scientific resources like books and journals.

- The studied PHC clinics were only the MOH clinics; the other PHC clinics (UNRWA and NGOs) were not included.
- The study was cross sectional while organization situation differs by time and circumstances such as availability of needed drugs.

To summarize, a descriptive cross sectional design was used in this study, using two different instruments to collect the needed data, they were self administered questionnaire and adopted WHO drug use indicators checklists. However, the findings derived from the two instruments will be presented in the next chapter.

# Chapter 4: Results

This chapter presents the results of the study; it illustrates the descriptive analysis, mainly the characteristics and the distribution of the respondents from all the five Gaza Strip governorates. Additionally, it includes the relationships between selected studied variables concerning the physicians' compliance with the EDL as well as the analysis in reference to the WHO drug use indicators.

## 4.1 Findings derived from physicians' responses (Questionnaire)

### 4.1.1 Descriptive analysis

#### 4.1.1.1 Characteristics of study subjects

A sample of 236 PHC physicians was included in the study who were different in their personal profiles. Table 4.1, summarizes the important personal variables that revealed in this study, including gender, age, job position, place of graduation, years of working in the clinic, experience in other organizations and having private clinic.

**Table (4.1): Distribution of the study population by personal variables**

| Variables | Frequency | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 158 | 75.2 |
| Female | 52 | 24.8 |
| **Total** | **210** | **100** |
| **Age in years** | | |
| 25-34 | 70 | 33.8 |
| 35-45 | 62 | 30.0 |
| 46 and more | 75 | 36.2 |
| **Total** | **207** | **100** |
| **Position/ Job title** | | |
| Managerial | 16 | 7.4 |
| General practitioner | 92 | 42.8 |
| Specialist | 107 | 49.8 |
| **Total** | **215** | **100** |
| **Place of graduation** | | |
| Arab countries | 121 | 60.2 |
| East European countries | 70 | 34.8 |
| West countries | 10 | 5.0 |
| **Total** | **201** | **100** |
| **Years of experience in the clinic** | | |
| Less than 5 years | 117 | 56.5 |
| 5 years and/or more | 90 | 43.5 |
| **Total** | **207** | **100** |
| **Working in other organizations** | | |
| Yes | 146 | 67.9 |
| No | 69 | 32.1 |
| **Total** | **215** | **100** |
| **Governorate** | | |
| North | 48 | 20.8 |
| Gaza | 97 | 42.0 |
| Middle | 23 | 10.0 |
| Khanyounis | 37 | 16.0 |
| Rafah | 26 | 11.3 |
| **Total** | **231** | **100** |
| **Studying curriculum with a component about EDLs** | | |
| Yes | 103 | 51.0 |
| No | 99 | 49.0 |
| **Total** | **202** | **100** |
| **Having a private clinic** | | |
| Yes | 69 | 30.8 |
| No | 155 | 69.2 |
| **Total** | **224** | **100** |

*The questionnaire was self administered and there were some missing values therefore, the total is variant and this applies to the subsequent tables.*

As shown in Table 4.1, the vast majority of study population was males (75.2%), while female physicians represented only 24.8%. Regarding the age of the respondents, as shown in Table 4.1, the age of the study population ranged from 25 to 60 years with an average of 40 years (S.D=9). Respondents from the age group 25 to 34 represented 33.8%, while respondents from the age group 35 to 45 represented 30% and the respondents with age equals to 46 years and/or more represented 36.2 %. Regarding the position/job title of the studied physicians, about half of the respondents were specialists (49.8%). Of all the respondents, 42.8% were general practitioners while 7.4% of the respondents were holding managerial positions. Respondents who graduated from Arab countries were 60.2%, while 34.8% of the respondents graduated from East European Countries and only 5% of the respondents graduated from Western Countries.

As illustrated in Table 4.1, 51% of the respondents reported that their education curriculum incorporated training on EDL. As illustrated in Table 4.1, the vast majority of the PHC physicians were living in Gaza (42%), while 20.8% were living in north, 16% were living in Khanyounis, 11.3% were living in Rafah, and 10% were living in the middle zone. As Table 4.1 illustrates, 56.5% of the respondents were newly employed as they were working in the PHC clinics since less than 5 years. In contrary, 43.5% of the respondents were working in the PHC clinics for 5 years and more. Of the respondents, 67.9% reported working in other organizations prior to working at their current clinics. From all the physicians who participated in this study, 30.8% reported having private clinics and the rest which represents 69.2% do not have private clinics.

#### 4.1.1.2 Drug management related variables

The variables which reflect the managerial and organizational aspects related to the drug management are summarized in Table 4.2

**Table (4.2): Distribution of the study population by drug management related variables**

| Variables | Frequency | Percentage |
|---|---|---|
| **EDL is the base for drug orders** | | |
| To high extent | 120 | 51.9 |
| To some extent | 85 | 36.8 |
| DK | 26 | 11.3 |
| **Total** | **231** | **100** |
| **Presence of regular evaluation system for drug management** | | |
| Yes | 108 | 46.2 |
| No | 80 | 34.2 |
| DK | 46 | 19.7 |
| **Total** | **234** | **100** |
| **Having evaluation for prescribing practices** | | |
| **Yes** | 59 | 25.9 |
| **No** | 124 | 54.4 |
| **DK** | 45 | 19.7 |
| **Total** | **228** | **100** |
| **Receiving feedback about prescribing practices** | | |
| **Yes written** | 18 | 8.1 |
| **Yes verbal** | 78 | 35.3 |
| **Not at all** | 125 | 56.6 |
| **Total** | **221** | **100** |
| **Presence of any copy of STG (for those who know the concept)** | | |
| **Yes** | 85 | 79.4 |
| **No** | 22 | 20.6 |
| **Total** | **107** | **100** |
| **Presence of EDL and NDF copy** | | |
| **Yes** | 164 | 70.1 |
| **No** | 70 | 29.9 |
| **Total** | **234** | **100** |
| **Availability of EDL drugs in the pharmacy** | | |
| **Exclusively present** | 17 | 7.7 |
| **Partly present** | 163 | 73.3 |
| **No** | 29 | 13.1 |
| **DK** | 13 | 5.9 |
| **Total** | **222** | **100** |
| **Involvement in the preparation of the EDL** | | |
| Yes | 6 | 2.8 |
| No | 206 | 97.2 |
| **Total** | **212** | **100** |

As illustrated in Table 4.2, regarding whether the EDL is the base for ordering drugs, about half of the respondents (51.9%) reported practicing that to high extent, while 36.8% reported practicing that to some extent.

Regarding the presence of regular evaluation system for drug management in the facility, Table 4.2 illustrates that 46.2% of the respondents reported the presence of an evaluation system, while 32.2% reported the absence of the evaluation system and the rest (19.7%) did not know. Only 25.9% of the respondents had an evaluation for their prescribing practice at their facilities. With respect to whether physicians received feedback about their prescribing practices or not, 8.1% of the respondents reported that they received written feedback, while 35.3% received verbal feedback and the rest (56.6%) did not receive any feedback. As shown in Table 4.2, the respondents who had a copy of STG represented 79.4% while the rest (20.6%) didn't have any copy of STG.

Table 4.2 illustrates that among the respondents, 70.1% reported having copy of EDL and PNF. When asked about the availability of drugs on the EDL in the pharmacy of the PHC facility, only 7.7% of the respondents reported that drugs on the EDL were exclusively present in the pharmacy of the clinic, while 73.4% reported that drugs on the EDL were partly present in the pharmacy of the clinic. Regarding the involvement in the preparation of the EDL, as shown in Table 4.2, most of the respondents (97.2%) were not involved in the preparation of the EDL and only 2.8% were involved in the preparation of the EDL.

#### 4.1.1.3 Physicians knowledge and attitudes

**Table (4.3): Distribution of the study population by their knowledge and attitudes in relation to EDL**

| Variables | Frequency | Percentage |
|---|---|---|
| **Essential drugs mean " drugs that satisfy the health care needs of the majority of the populations, they should be available at all times in adequate amounts and in the appropriate dosage form"** | | |
| **Yes (agreed with the statement)** | 217 | 94.3 |
| **No (disagreed with the statement)** | 13 | 5.7 |
| **Total** | **230** | **100** |
| **Agreement with the statement that "essential drugs save lives and reduce suffering"** | | |
| **Agreed** | 162 | 72.0 |
| **Disagreed** | 63 | 28.0 |
| **Total** | **225** | **100** |
| **Knowing the generic names of the drugs** | | |
| **Yes all of them** | 120 | 52.2 |
| **Most of them** | 98 | 42.6 |
| **Some of them** | 12 | 5.2 |
| **Total** | **230** | **100** |
| **Importance of knowing the generic names of the drugs** | | |
| **To high extent it is important** | 219 | 94.8 |
| **To some extent it is important** | 12 | 5.2 |
| **Total** | **231** | **100** |
| **Attendance of training courses on EDL** | | |
| **Yes** | 77 | 34.4 |
| **No** | 147 | 65.6 |
| **Total** | **224** | **100** |
| **Interested to attend other training courses on EDL** | | |
| **Yes** | 200 | 88.9 |
| **No** | 25 | 11.1 |
| **Total** | **225** | **100** |
| **Familiarity with STGs** | | |
| **Yes** | 113 | 49.3 |
| **No** | 116 | 50.7 |
| **Total** | **229** | **100** |

Table 4.3 shows that the majority of the study subjects (94.3%) were knowledgeable about the essential drugs concept. Additionally, 72% of the respondents agreed that essential drugs save lives and reduce suffering.

About half of the respondents (52.2%), reported knowing the correct generic names of the drugs, while 42.6% reported knowing most of them. As illustrated in Table 4.3, the vast majority of respondents reported that it is important to know the generic names of

the drugs. About half of the respondents were familiar with STG concept (49.3%). Of all the respondents, only 34.4% had attended training courses on EDL and 65.5% did not attend any training courses on EDL. The positive thing is that, 88.9% of the respondents were interested to attend training courses on EDL on future.

#### 4.1.1.4 Prescribing practices

The findings which reflect the prescribing practices of the physicians are summarized in the next Table (4.4). Regarding the use of the EDL in the drug prescribing, Table 4.4 shows that 67.4% of the respondents were currently using the EDL; about half of them (51.6%) were using it regularly and 48.4% using it sometimes. As shown in Table 4.4, 23% of the respondents reported always prescribing drugs not from EDL, and 58.6% reported sometimes prescribing drugs not from the EDL. Table 4.4, illustrates that the respondents do consider clients' preferences when prescribing drugs, whether to a high extent or to some extent (14.5% and 50% respectively) while 35.5% of them never consider client preferences when prescribing drugs. Regarding the influence of clients' requests for drug on the physicians prescribing practices, 7.9% of respondents reported being strongly influenced by clients. In contrary, 25.6% of the respondents reported not being influenced by clients in this regard.

From the 69 (30%) respondents who have a private clinic, 31.9% of them always prescribe drugs from the EDL in their private clinics while 59.4% of them sometimes prescribe drugs from the EDL in their private clinics and 8.7% of them never prescribe drugs from the EDL in their private clinics.

**Table (4.4): Distribution of the study population by their prescribing practices**

| Variables | Frequency | Percentage |
|---|---|---|
| **Using EDL and PNF in prescribing** | | |
| **Currently using it** | 155 | 67.4 |
| **Used in the past** | 22 | 9.6 |
| **Not at all** | 53 | 23.0 |
| **Total** | **230** | **100** |
| **Regularity of using PNF and EDL (If currently using it)** | | |
| **Regularly** | 80 | 51.6 |
| **Sometimes** | 75 | 48.4 |
| **Total** | **155** | **100** |
| **EDL and PNF is easy to be used (if used)** | | |
| **Yes** | 150 | 88.2 |
| **No** | 20 | 11.8 |
| **Total** | **170** | **100** |
| **Experiencing problems in using the EDL and PNF (if used)** | | |
| **Yes, many** | 88 | 51.2 |
| **Yes, few** | 54 | 31.8 |
| **Not at all** | 28 | 17.0 |
| **Total** | **170** | **100** |
| **Prescribing drugs not on EDL** | | |
| **Yes, always** | 51 | 23.0 |
| **Yes, sometimes** | 130 | 58.6 |
| **Never** | 41 | 18.4 |
| **Total** | **222** | **100** |
| **Considering clients preference for drug** | | |
| **Yes, to high extent** | 33 | 14.5 |
| **Yes, to some extent** | 114 | 50.0 |
| **Not at all** | 81 | 35.5 |
| **Total** | **228** | **100** |
| **Influence of clients' requests for drug on physicians** | | |
| **Very strongly** | 18 | 7.9 |
| **To some extent** | 70 | 30.8 |
| **Poor** | 81 | 35.7 |
| **Absolutely never** | 58 | 25.6 |
| **Total** | **227** | **100** |
| **Prescribing drugs from the EDL in private clinic** | | |
| **Yes, always** | 22 | 31.9 |
| **Sometimes** | 41 | 59.4 |
| **Never** | 6 | 8.7 |
| **Total** | **69** | **100** |
| **Experience of drug shortage** | | |
| **Yes, memory based** | 122 | 52.4 |
| **Yes, records based** | 97 | 41.6 |
| **Never** | 14 | 6.0 |
| **Total** | **233** | **100** |

From the respondents who used the EDL, 88.2% found that the EDL is easy to use and 51.1% faced many problems in using the EDL and PNF, while 31.8% found few problems in using the EDL and PNF. The main problems that were reported by the respondents regarding using EDL are illustrated in Table 4.5.

**Table (4.5): Respondents' reported problems in using EDL and PNF**

| Respondents' reported problem in using EDL and PNF | Frequency | % |
|---|---|---|
| **Poor communication between drug policy makers and physicians** | 76 | 52.1 |
| **Quantities of drugs from the list are not sufficient for the long-term treatment of patients** | 70 | 47.9 |
| **High influence of patients on the physician** | 68 | 46.6 |
| **Poor follow up from the facility** | 59 | 40.4 |
| **Guidelines for rational drug use are not present** | 58 | 39.7 |
| **Many needed drugs are not present in the EDL** | 57 | 39.0 |
| **Insufficient training** | 50 | 34.2 |
| **Insufficient knowledge** | 35 | 24.0 |
| **The drugs in the EDL are not relevant for the diseases of the local population** | 9 | 6.2 |
| Other causes | 10 | 6.8 |

*Some respondents reported more than one answer; therefore the total exceeds 100%*

As illustrated in Table 4.5, respondents reported that the main problems they faced in using the EDL and the PNF were poor communication between drug policy makers and physicians (52.1%), quantities of drugs from the list are not sufficient for the long-term treatment of patients (47.9%), high influence of patients on the physician (46.6%), and poor follow up from the facility (40.4%). The least reported problem was drugs in the EDL are not relevant for the diseases of the local population (6.2%).

Regarding experiencing drug shortage, as illustrated in Table 4.4, 52.4% of the respondents reported experiencing drug shortage based on memory, while 41.6%

reported experiencing drug shortage based on records (Table, 4.4). The next table shows the shortage of the various drug groups.

**Table (4.6): EDL drug groups' shortage in descending order as reported by participants**

| Drug Group | Frequency | % |
|---|---|---|
| **Dermatological drugs** | 110 | 55 |
| **Muscle relaxants** | 106 | 53 |
| **Vitamins and minerals** | 106 | 53 |
| **Antimigraine drugs** | 90 | 45 |
| **Antivertigo drugs** | 88 | 44 |
| **Opthalmological preparations** | 87 | 43.5 |
| **Anti infective drugs** | 86 | 43 |
| **Nutritional supplements** | 85 | 42.5 |
| **Non opioids analgesics, antipyretics. NSAIDs and antigout** | 84 | 42 |
| **Hormones, other endocrine drugs and contraceptives** | 77 | 38.5 |
| **Gastrointestinal drugs** | 67 | 33.5 |
| **Drugs affecting U.T.S** | 67 | 33.5 |
| **Antidotes** | 62 | 31 |
| **Immunological drugs** | 57 | 28.5 |
| **Local anesthetics** | 53 | 26.5 |
| **Anti-parkinsonism drugs** | 53 | 26.5 |
| **Anti-allergic drugs and drugs used in anaphylaxis** | 51 | 25.5 |
| **Antiseptics and disinfectants** | 50 | 25 |
| **Psychotherapeutic drugs** | 49 | 24.5 |
| **Drugs affecting blood** | 47 | 23.5 |
| **Drugs acting on R.T.S** | 46 | 23 |
| **Anticonvulsants** | 46 | 23 |
| **Oxytocics and antioxytocics** | 43 | 21.5 |
| **Drugs affecting C.V.S** | 28 | 14 |

| | | |
|---|---|---|
| **Solution correcting water. Electrolyte and acid base disturbances** | 28 | 14 |
| Diuretics | 16 | 8 |

As shown in Table 4.6, the shortage was more prominent in dermatological drugs (55%), muscle relaxant and vitamins and minerals (53%) and Antimigraire drugs (45%). The least shortage was in drugs affecting C.V.S (14%), solution correcting water, electrolyte and acid base disturbances (14%) and diuretics (8%).

### 4.1.2 Inferential analysis

The following results explore the relationships between selected independent variables and the study dependent variable which reflects the physician compliance with EDL and using EDL and PNF.

The results in Table 4.7 show that physicians aged 35-45 were currently using EDL (75.4%) more than the other age groups. The variations between groups did not reach a statistical significant level (P value= 0.3). The percentage of females who were currently using EDL was higher than their male counterparts (70% and 66.9% respectively), but the difference between groups did not reach a statistical significant level (P value=0.7). Regarding the job title, the general practitioners who were currently using the EDL, had the highest percentage among the other groups, but the difference between groups did not reach a statistical significant value (P value= 0.08). The physicians who had EDL component incorporated into their basic curriculum were currently using EDL more than the other groups with (75.2% and 60.8% respectively) a statistical significant relationships (P value= 0.04).

### 4.1.2.1 Personal characteristics

**Table (4.7): Distribution of the study population by using EDL and PNF and personal variables**

| Variables | Using of EDL and PNF | | | | | | $X^2$ | P value |
|---|---|---|---|---|---|---|---|---|
| | Currently using it | | Used in the past | | Not at all | | | |
| | # | % | # | % | # | % | | |
| **Age** | | | | | | | | |
| **25-34** | 42 | 60.9 | 6 | 8.7 | 21 | 30.4 | 4.3 | 0.3 |
| **35-45** | 46 | 75.4 | 4 | 6.6 | 11 | 18 | | |
| **46 and more** | 48 | 64.9 | 9 | 12.2 | 17 | 23 | | |
| **Gender** | | | | | | | | |
| **Male** | 105 | 66.9 | 15 | 9.5 | 37 | 23.6 | 0.6 | 0.7 |
| **Female** | 35 | 70 | 3 | 6 | 12 | 24 | | |
| **Position/ Job title** | | | | | | | | |
| **Managerial** | 10 | 71.4 | 2 | 14.3 | 2 | 14.3 | 8.1 | 0.08 |
| **General practitioner** | 70 | 76.1 | 8 | 8.7 | 14 | 15.2 | | |
| **Specialist** | 64 | 60.4 | 9 | 8.5 | 33 | 31.1 | | |
| **Place of graduation** | | | | | | | | |
| **Arab countries** | 78 | 65.5 | 11 | 9.2 | 30 | 25.2 | 1.1 | 0.8 |
| **Eastern countries** | 51 | 72.9 | 5 | 7.1 | 14 | 20 | | |
| **Western countries** | 7 | 70 | 1 | 10 | 2 | 20 | | |
| **Years of experience in the clinic** | | | | | | | | |
| **Less than 5 years** | 42 | 66.7 | 7 | 11.1 | 14 | 22.2 | 0.4 | 0.7 |
| **5 years and/or more** | 50 | 68.5 | 9 | 12.3 | 14 | 19.2 | | |
| **Basic curriculum incorporated training about EDL** | | | | | | | | |
| **Yes** | 76 | 75.2 | 5 | 5 | 20 | 19.8 | 6.2 | 0.04* |
| **No** | 60 | 60.8 | 13 | 13 | 26 | 26.2 | | |
| **Working in other organizations** | | | | | | | | |
| **Yes** | 97 | 67.4 | 18 | 12.5 | 29 | 20.1 | 7.5 | 0.02* |
| **No** | 48 | 70.6 | 1 | 1.5 | 19 | 27.9 | | |
| **Governorate** | | | | | | | | |
| **North** | 31 | 66 | 7 | 14.9 | 9 | 19.1 | 20.339 | 0.009* |
| **Gaza** | 66 | 70.2 | 9 | 9.6 | 19 | 20.2 | | |
| **Middle zone** | 18 | 78.3 | 1 | 4.3 | 4 | 17.4 | | |
| **KhanYounis** | 16 | 43.2 | 3 | 8.1 | 18 | 48.6 | | |
| Rafah | 21 | 84 | 1 | 4 | 3 | 12 | | |

**Statistically significant*

As shown in Table 4.7, among those physicians who were living in Rafah, 84% were currently using EDL, while it was 78.3% in the Middle zone, 70.2% in Gaza, 66% in the North and in Khanyounis it was the lowest (43.2%). The differences between groups in this regard were statistically significant (P value= 0.009).

### 4.1.2.2 Factors related to drug management variables and using of EDL and PNF.

**Table (4.8): Distribution of the study population by using EDL and PNF and drug management related variables**

| Variables | Using of EDL and PNF | | | | | | $X^2$ | P value |
|---|---|---|---|---|---|---|---|---|
| | Currently using it | | Used in the past | | Not at all | | | |
| | # | % | # | % | # | % | | |
| **EDL is the base for drug orders in the facility** | | | | | | | | |
| **To high extent** | 89 | 76.1 | 12 | 10.3 | 16 | 13.7 | 18.7 | 0.001* |
| **To some extent** | 52 | 62.7 | 7 | 8.4 | 24 | 28.9 | | |
| **DK** | 10 | 38.5 | 3 | 11.5 | 13 | 50 | | |
| **Presence of regular evaluation system for drug management** | | | | | | | | |
| **Yes** | 87 | 80.6 | 9 | 8.3 | 12 | 11.1 | 19.398 | 0.001* |
| **No** | 43 | 56.6 | 10 | 13.2 | 23 | 30.3 | | |
| **DK** | 25 | 55.6 | 3 | 6.7 | 17 | 37.8 | | |
| **The physicians have evaluation for their prescribing practices** | | | | | | | | |
| **Yes** | 49 | 83.1 | 4 | 6.8 | 6 | 10.2 | 13.221 | 0.01* |
| **No** | 69 | 58 | 15 | 12.6 | 35 | 29.4 | | |
| **DK** | 33 | 73.3 | 2 | 4.4 | 10 | 22.2 | | |
| **The physicians receive feedback about their prescribing practices** | | | | | | | | |
| **Yes written** | 15 | 83.3 | 2 | 11.1 | 1 | 5.6 | 5.888 | 0.208 |
| **Yes verbal** | 55 | 71.4 | 4 | 5.2 | 18 | 23.4 | | |
| **Not at all** | 79 | 63.2 | 14 | 11.2 | 32 | 25.6 | | |
| **Presence of any copy of STG** | | | | | | | | |
| **Yes** | 67 | 79.8 | 9 | 10.7 | 8 | 9.5 | 0.65 | 0.723 |
| **No** | 18 | 81.8 | 3 | 13.6 | 1 | 4.5 | | |
| **Presence of EDL and NDF copy** | | | | | | | | |
| **Yes** | 130 | 81.8 | 18 | 11.3 | 11 | 6.9 | 73.922 | 0.0001* |
| **No** | 25 | 35.7 | 4 | 5.7 | 41 | 58.6 | | |
| **Availability of EDL drugs in the pharmacy** | | | | | | | | |
| **Exclusively present** | 16 | 94.1 | 1 | 5.9 | | | 27.325 | 0.0001* |
| **Partly present** | 118 | 73.3 | 15 | 9.3 | 28 | 17.4 | | |
| **No** | 14 | 48.3 | 4 | 13.8 | 11 | 37.9 | | |
| **DK** | 3 | 23.1 | 2 | 15.4 | 8 | 61.5 | | |
| **Involvement in the preparation of the EDL** | | | | | | | 0.4 | 0.7 |
| **Yes** | 4 | 66.7 | 1 | 16.7 | 1 | 16.7 | | |
| No | 137 | 67.8 | 18 | 8.9 | 47 | 23.3 | | |

*Statistically significant*

Table 4.8 describes the results that reflect the relationships between factors related to drug management variables and using of EDL and PNF. Among physicians who had experienced an evaluation for their prescribing practices, 83.1% were currently using the PNF and EDL. This was higher among those physicians than others who did not have any evaluation for their prescribing practices (58%) and the differences between the two groups were statistically significant (P value= 0.01). Additionally, 83.3% of the physicians who received a written feedback about their prescribing practices were currently using the PNF and EDL. This was higher than the others who received only verbal feedback (71.4%) and/or who did not receive any sort of feedback at all (63.2%). The differences between the different groups did not reach a statistical significant level (P value= 0.208).

The percentage of physicians who reported the exclusive availability of EDL drugs in their pharmacies (94.1%) were currently using PNF and EDL, more than the other groups and the variations between groups were statistically significant (P value= 0.0001).

### 4.1.2.3 Knowledge and attitudes and using the PNF and EDL.

**Table (4.9): Distribution of the study population by their knowledge and attitudes about EDL and using EDL and PNF**

| Variables | Using of EDL and PNF | | | | | | $X^2$ | P value |
|---|---|---|---|---|---|---|---|---|
| | Currently using it | | Used in the past | | Not at all | | | |
| | # | % | # | % | # | % | | |
| **Agreement with the statement that " essential drugs increase the credibility of health care system and promote patient participation"** | | | | | | | | |
| **Agree** | 102 | 66.7 | 9 | 5.9 | 42 | 27.5 | 10.807 | 0.005* |
| **Disagree** | 44 | 64.7 | 13 | 19.1 | 11 | 16.2 | | |
| **Knowing the generic names of the drugs** | | | | | | | | |
| **Yes all of them** | 83 | 69.2 | 9 | 7.5 | 28 | 23.3 | 1.593 | 0.81 |
| **Most of them** | 62 | 64.6 | 12 | 12.5 | 22 | 22.9 | | |
| **Some of them** | 8 | 66.7 | 1 | 8.3 | 3 | 25 | | |
| **Attendance of training course on EDL** | | | | | | | | |
| **Yes** | 64 | 83.1 | 8 | 10.4 | 5 | 6.5 | 19.030 | 0.0001* |
| **No** | 85 | 58.6 | 13 | 9.0 | 47 | 32.4 | | |
| **Interested to attend other training courses on EDL** | | | | | | | | |
| **Yes** | 132 | 66.7 | 18 | 9.1 | 48 | 24.2 | 2.623 | 0.269 |
| **No** | 18 | 72 | 4 | 16 | 3 | 12 | | |
| **Familiarity with STG concept** | | | | | | | | |
| **Yes** | 90 | 80.4 | 12 | 10.7 | 10 | 8.9 | 24.603 | 0.0001* |
| No | 63 | 54.8 | 10 | 8.7 | 42 | 36.5 | | |

**Statistically significant*

The results regarding the relationships between Knowledge and attitudes and using the EDL and PNF are shown in Table 4.9. From the table, 69.2% of the physicians who know all of the generic names of drugs were currently using the PNF and EDL. This percentage was higher than those physicians who don't know all of the generic names but the differences between the different groups did not reach a statistical significant level (64.6%) (P value= 0.81).

Physicians who attended training courses on EDL were currently using PNF and EDL (83.1%), higher than the physicians who did not attend (58.6%) and the differences between the different groups were statistically significant (P value= 0.0001).

The results showed that the physicians who were familiar with STG concept were currently using PNF and EDL (80.4%) more than the other the other groups who were not familiar with STG concept (54.8) and the differences between the different groups were statistically significant (P value= 0.0001).

**4.1.2.4 Physicians prescribing practices and using PNF and EDL.**

**Table (4.10): Distribution of the study population by their prescribing practices related variables and using EDL and PNF**

| Variables | Using of EDL and PNF | | | | | | $X^2$ | P value |
|---|---|---|---|---|---|---|---|---|
| | Currently using it | | Used in the past | | Not at all | | | |
| | # | % | # | % | # | % | | |
| **Experiencing drug shortage** | | | | | | | | |
| **Yes, memory based** | 75 | 63.6 | 12 | 10.2 | 31 | 26.3 | 16.341 | 0.003* |
| **Yes, record based** | 72 | 75 | 4 | 4.2 | 20 | 20.8 | | |
| **No** | 7 | 50 | 5 | 35.7 | 2 | 14.3 | | |
| **Easiness of EDL and PNF use** | | | | | | | | |
| **Yes (easy)** | 136 | 91.3 | 13 | 8.7 | | | 17.167 | 0.0001* |
| **No (not easy)** | 11 | 57.9 | 8 | 42.1 | | | | |
| **Facing problems in using the EDL and PNF** | | | | | | | | |
| **Yes, many** | 74 | 83.1 | 15 | 16.9 | | | 3.101 | 0.212 |
| **Yes, few** | 52 | 92.9 | 4 | 7.1 | | | | |
| **Not at all** | 26 | 89.7 | 3 | 10.3 | | | | |
| **Prescribing drugs not on EDL** | | | | | | | | |
| **Yes, always** | 30 | 60 | 6 | 12 | 14 | 28 | 3.963 | 0.411 |
| **Yes,** | 93 | 71.5 | 13 | 10 | 24 | 18.5 | | |
| **sometimes never** | 28 | 68.3 | 2 | 4.9 | 11 | 26.8 | | |
| **Influence of clients request for drug on physicians** | | | | | | | | |
| **Very strongly** | 10 | 55.6 | 4 | 22.2 | 4 | 22.2 | 16.129 | 0.013* |
| **To some extent** | 52 | 74.3 | 2 | 2.9 | 16 | 22.9 | | |
| **Poorly** | 45 | 58.4 | 14 | 18.2 | 18 | 23.4 | | |
| **Absolutely never** | 42 | 72.4 | 2 | 3.4 | 14 | 24.1 | | |
| **Prescribing drugs from the EDL in the private clinic** | | | | | | | | |
| **Yes, always** | 11 | 50 | 2 | 9.1 | 9 | 40.9 | 3.875 | 0.423 |
| **Sometimes** | 28 | 68.3 | 4 | 9.8 | 9 | 22 | | |
| Never | 5 | 83.3 | | | 1 | 16.7 | | |

**Statistically significant*

Table 4.10 shows the relationships between different prescribing practices and using the PNF and EDL. Physicians who found that the EDL and PNF were easy to be used were currently using PNF and EDL (91.3%), more than the other group who perceived its use as difficult (57.9%). The variations between groups were statistically significant (P value= 0.0001).

Physicians who have been strongly influenced by clients requests for drug and were using PNF and EDL (55.6%) was less than the other groups who never being influenced by clients request for drug (72.4%). The differences between groups were statistically significant (72.4%). (P value= 0.013).

Regarding the open ended questions in the questionnaire, most of physicians surveyed reported that there is a real need for training courses related to EDL and its use and the essential drugs must be available in the clinics pharmacies all over the month. Additionally, respondents frequently reported lack of effective communications among physicians and policy makers. Many physicians reported their unfamiliarity with the concept of essential drugs and that they never ever heard about the EDL. Few respondents reported that the work overload is a real barrier for implementing EDL concepts.

## 4.2 Findings derived from prescriptions (Drug use indicators)

It is worth mentioning that, the findings presented in the subsequent pages were collected from prescriptions which were selected from the PHC facilities pharmacies and analyzed according to the WHO formulas as appears in the coming pages.

### 4.2.1 Descriptive findings related to drug use indicators

**Table (4.11): Results of drug use indicators used in the study**

| Drug use indicator | Result |
|---|---|
| **Average number of drugs per prescription** | **1.9** |
| **Percentage of drugs prescribed by generic name** | **5.4%** |
| **Percentage of drugs prescribed from EDL** | **97.8%** |
| **Availability of PNF and EDL** | **28.3%** |
| Availability of key drugs | **82.6%** |

As illustrated in Table 4.11, the average number of drugs per encounter was 1.92. Whilst the minimum value was 1, the maximum value was 8 (S.D=0.989) with a median of 2 drugs per encounter. Meanwhile, the percentage of drugs prescribed by generic name was 5.47%, the minimal found value was 0% while the maximum revealed value was 10.84, (S.D=0.347) and the median was 0. The percentage of drugs prescribed from the EDL or the formulary was 97.85% with a minimal value of 94.43% and a maximum value of 100%, (S.D=0.972).

Additionally, the availability of copy of EDL or formulary was found in only 28.3% of the health facilities surveyed. The availability of key drugs was 82.6% and the

minimum value was 41.6% meanwhile the maximum value was 100%, (S.D=15.19687) and the median was 83.3.

**Table (4.12): WHO Drug use indicators by certain variables**

| Ind. Var. | No. of drugs/prescription | % of drugs by generic name | % of drugs from EDL |
|---|---|---|---|
| **Governorate** | | | |
| **North** | 2.0 | 5.9 | 94.4 |
| **Gaza** | 1.9 | 10.8 | 96.1 |
| **Middle zone** | 1.8 | 3.3 | 100.0 |
| **Khan Yuonis** | 1.8 | 0.8 | 100.0 |
| **Rafah** | 1.6 | 0.0 | 100.0 |
| **PHC level** | | | |
| **Level tow** | 1.9 | 2.0 | 98.2 |
| **Level three** | 1.8 | 8.0 | 97.3 |
| **Level four** | 1.8 | 4.9 | 98.6 |
| **Community served by the facility** | | | |
| **Urban** | 1.9 | 7.5 | 98.4 |
| **Rural** | 1.8 | 1.6 | 99.3 |
| **Camp** | 1.8 | 7.2 | 98.8 |
| **mixed** | 1.9 | 6.8 | 95.9 |
| **Age of the patient** | | | |
| **Child(3andless)** | 1.9 | 5.9 | 98.4 |
| Adult(more than3) | 1.9 | 5.0 | 97.3 |

Regarding the average number of drugs prescribed per prescription, the maximum value was in the North Governorate (2.0), while the minimum value was (1.6) in Rafah Governorate. On other hand, the percentage of drugs prescribed by the generic name reached 0 in Rafah Governorate but Gaza Governorate elicited the maximum percentage of prescribing by generics, which reached 10.8%.

Regarding the percentage of drugs prescribed from the EDL by governorates, the maximum result reached 100% (in many governorates), while the minimum result was

94.4% (in the North). Regarding drug use indicators results and the PHC level, community served by the facility, and the age of the patient, there were not obvious differences in this regard, except in the percentage of drugs prescribed by generic names which ranged from 8.0% in the PHC level three to 2.0% in PHC level two (see Table 4.12). Additionally, the percentage of drugs prescribed by generic names was higher in urban communities (7.5%) than rural areas (1.6%).

### 4.2.2 Inferential statistics related to drug use indicators and other selected variables

In order to recognize the relationships between the drug use indicators and the age of the patients, an independent t-test was used to compare the means of the drug use indicators in regard with the patient age.

**Table (4.13): Relationships between age of the patient and drug use indicators**

| Dep. Var. *"drug use indicators"* | Indep. Var. *"age of the patient"* | N | Mean | S.D. | t | P value |
|---|---|---|---|---|---|---|
| **No. of the drugs in prescription** | More than 3years | 849 | 1.93 | 1.088 | 0.458 | 0.647 |
| | Up to 3years | 807 | 1.91 | 0.874 | | |
| **% of drugs by generic name** | More than 3years | 849 | 0.10 | 0.337 | -1.020 | 0.308 |
| | Up to 3years | 807 | 0.11 | 0.358 | | |
| **%of drugs from EDL** | More than 3years | 847 | 1.88 | 1.074 | 0.004 | 0.997 |
| | Up to 3years | 807 | 1.88 | 0.853 | | |

Table 4.13 illustrates that the two age groups of clients (up to 3 years and more than 3 years) had closely similar mean scores in all drug use indicators, and no statistical significant differences were found between the two groups.

One-Way ANOVA test was used to examine the relationship between the drug use indicators and timing of the month in which the prescriptions were prescribed (it includes first 10 days of the month, from 11th to 20th of the month and the last 10 days of the month) and the results are presented in Table 4.14

**Table (4.14): Comparison between drug use indicators results and timing of the month on which the prescription was prescribed**

| Dep. Var. *"drug use indicators"* | Indep. Var. *" time of the month"* | Mean | Sum of squares | | Df | Mean square | F | Sig. |
|---|---|---|---|---|---|---|---|---|
| **No. of the drugs in prescription** | First 10 days | 2.03 | Between groups | 14.09 | 2 | 7.047 | 7.254 | .001* |
| | From 11th to 20th | 1.92 | Within groups | 1605.900 | 1653 | .972 | | |
| | The last 10 days | 1.81 | Total | 1619.995 | 1655 | | | |
| **% of drugs by generic name** | First 10 days | 0.13 | Between groups | .465 | 2 | .233 | 1.93 | .145 |
| | From 11th to 20th | 0.09 | Within groups | 199.252 | 1653 | .121 | | |
| | The last 10 days | 0.10 | Total | 199.717 | 1655 | | | |
| **%of drugs from EDL** | First 10 days | 1.97 | Between groups | 10.120 | 2 | 5.060 | 5.38 | .005* |
| | From 11th to 20th | 1.87 | Within groups | 1553.996 | 1653 | .940 | | |
| | The last 10 days | 1.78 | Total | 1564.115 | 1655 | | | |
| **Availability of key drugs** | First 10 days | 84.4 | Between groups | 231.10 | 2 | 115.55 | .489 | .617 |
| | From 11th to 20th | 79.4 | Within groups | 10161.4 | 43 | 236.31 | | |
| | The last 10 days | 83.3 | Total | 10392.5 | 45 | | | |

* *Statistically significant*

As illustrated in Table 4.14, the timing of the prescriptions revealed statistically significant differences regarding the number of the drugs per prescription (P value=0.001). The first 10 days of the month showed the highest mean (2.03) followed by the time from 11th and 20th of the month (1.92) and then the last 10 days of the month (1.81). Also the date of the prescription revealed statistical significant differences regarding the percentage of drugs prescribed from the EDL (P value=0.005), and the first 10 days of the month elicited the highest mean (1.97). Regarding the other drug use indicators (percentage of drugs prescribed by generics and the availability of key drugs) there were no statistical significant differences between the different groups in this regard.

**Table (4.15): Comparison between drug use indicators results and governorates**

| Dep. Var. *"drug use indicators"* | Indep. Var. " *governorate"* | Mean | Sum of squares | | Df | Mean square | F | P value |
|---|---|---|---|---|---|---|---|---|
| **No. of the drugs in prescription** | North Gaza<br>MidZone<br>Khanyounis<br>Rafah | 2.07<br>1.99<br>1.86<br>1.87<br>1.62 | Between groups | 20.504 | 4 | 5.126 | 5.291 | 0.0001* |
| | | | Within groups | 1599.490 | 1651 | .969 | | |
| | | | Total | 1619.995 | 1655 | | | |
| **% of drugs by generic name** | North Gaza<br>MidZone<br>Khanyounis<br>Rafah | 0.12<br>0.22<br>0.06<br>0.02<br>0.00 | Between groups | 10.978 | 4 | 2.745 | 24.009 | 0.0001* |
| | | | Within groups | 188.739 | 1651 | .114 | | |
| | | | Total | 199.717 | 1655 | | | |
| **%of drugs from EDL** | North Gaza<br>MidZone<br>Khanyounis<br>Rafah | 1.95<br>1.92<br>1.86<br>1.87<br>1.62 | Between groups | 9.532 | 4 | 2.383 | 2.531 | 0.039* |
| | | | Within groups | 1554.584 | 1651 | .942 | | |
| | | | Total | 1564.115 | 1655 | | | |
| **Availab -ility of copy of PNF** | North Gaza<br>MidZone<br>Khanyounis<br>Rafah | 0.43<br>0.43<br>0.15<br>0.00<br>0.67 | Between groups | 1.824 | 4 | .456 | 2.493 | 0.058 |
| | | | Within groups | 7.502 | 41 | .183 | | |
| | | | Total | 9.326 | 45 | | | |
| **Availab -ility of key drugs** | North Gaza<br>MidZone<br>Khanyounis | 82.1<br>73.2<br>80.1<br>96.2 | Between groups | 3643.89 | 4 | 910.97 | 5.534 | 0.001* |
| | | | Within groups | 6748.61 | 41 | 164.60 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rafah | 97.2 | Total | 10392.51 | 45 | | | |

* *Statistically significant*

Regarding the governorate, as shown in Table 4.15 there were statistical significant differences between the different governorates with respect to the number of drugs per prescription (P value=0.0001). The highest mean was for North Governorate (2.07) and the lowest mean was for Rafah Governorate (1.62). Additionally, there were statistical significant differences between governorate groups with respect to the percentage of drugs prescribed from the EDL (P value=0.039).

The highest mean was for the North Governorate (1.95) and the lowest mean was for Rafah Governorate (1.62). Also, there were statistical significant differences between governorates with respect to the percentage of drugs prescribed by generic names (P value=0.0001). The highest mean was in Gaza Governorate and the lowest mean was in Rafah Governorate. Moreover, there were statistical significant differences between governorate groups with respect to the availability of key drugs (P value=0.001) and according to the Post Hoc test, the highest mean was in Rafah Governorate (97.2) and the lowest mean was in Gaza Governorate (73.2). There were no statistical significant differences between governorate groups regarding the availability of copies of PNF, the highest mean was in Rafah Governorate and the lowest mean was in Khanyounis Governorate.

As illustrated in Table 4.16, PHC level of the facility showed statistical significant differences (P value=0.0001) when analyzed with respect to percentage of drugs prescribed by generic names. Results showed that the highest mean was for the PHC level three and the lowest mean was for level two. Also there were statistical significant differences between PHC level groups with respect to the availability of copies of PNF (P value=0.015), results showed that the highest mean was for PHC level four (0.63) and the lowest mean was for level two (0.07).

**Table (4.16): Comparison between drug use indicators results and PHC level**

| Dep. Var. *"drug use indicators"* | Indep. Var. " *PHC level"* | Mean | Sum of squares | | Df | Mean square | F | P value |
|---|---|---|---|---|---|---|---|---|
| **No. of the drugs in prescription** | Level two | 1.99 | Between groups | 4.729 | 2 | 2.364 | 2.419 | .089 |
| | Level three | 1.90 | Within groups | 1615.266 | 1653 | .977 | | |
| | Level four | 1.84 | Total | 1619.995 | 1655 | | | |
| **% of drugs by generic name** | Level two | 0.04 | Between groups | 4.135 | 2 | 2.067 | 17.473 | 0.0001* |
| | Level three | 0.15 | Within groups | 195.583 | 1653 | .118 | | |
| | Level four | 0.09 | Total | 199.717 | 1655 | | | |
| **%of drugs from EDL** | Level two | 1.95 | Between groups | 4.897 | 2 | 2.448 | 2.596 | 0.750 |
| | Level three | 1.85 | Within groups | 1559.218 | 1653 | .943 | | |
| | Level four | 1.82 | Total | 1564.115 | 1655 | | | |
| **Availability of copy of PNF** | Level two | 0.07 | Between groups | 1.648 | 2 | .824 | 4.615 | 0.015* |
| | Level three | 0.30 | Within groups | 7.678 | 43 | .179 | | |
| | Level four | 0.63 | Total | 9.326 | 45 | | | |
| **Availability of key drugs** | Level two | 89.4 | Between groups | 1040.25 | 2 | 520.12 | 2.391 | 0.104 |
| | Level three | 79.3 | Within groups | 9352.25 | 43 | 217.49 | | |
| | Level | 79.1 | Total | 10392.51 | 45 | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | four | | | | | | | |

* *Statistically significant*

In contrary, Table 4.16 shows that, there were no statistical significant differences between PHC level groups regarding the number of drugs per prescription, percentage of drugs from EDL and the availability of key drugs.

**Table (4.17): Comparison between drug use indicators results and community served by the facility**

| Dep. Var. *"drug use indicators"* | Indep. Var. *"community served by the facility"* | mean | Sum of squares | | Df | Mean square | F | P value |
|---|---|---|---|---|---|---|---|---|
| **No. of the drugs in prescription** | Urban | 1.94 | Between groups | 5.875 | 3 | 1.958 | 2.004 | 0.111 |
| | Rural | 1.87 | Within groups | 1614.120 | 1652 | .977 | | |
| | Camp | 1.82 | | | | | | |
| | Mixed | 1.98 | Total | 1619.995 | 1655 | | | |
| **% of drugs by generic name** | Urban | 0.15 | Between groups | 3.237 | 3 | 1.079 | 9.073 | 0.0001* |
| | Rural | 0.03 | Within groups | 196.480 | 1652 | .119 | | |
| | Camp | 0.07 | | | | | | |
| | Mixed | 0.13 | Total | 199.717 | 1655 | | | |
| **%of drugs from EDL** | Urban | 1.91 | Between groups | 2.873 | 3 | .958 | 1.013 | 0.386 |
| | Rural | 1.85 | Within groups | 1561.242 | 1652 | .945 | | |
| | Camp | 1.80 | | | | | | |
| | Mixed | 1.90 | Total | 1564.115 | 1655 | | | |
| **Availability of copy of PNF** | Urban | 0.31 | Between groups | .855 | 3 | .285 | 1.414 | 0.252 |
| | Rural | 0.11 | Within groups | 8.471 | 42 | .202 | | |
| | Camp | 0.13 | | | | | | |
| | Mixed | 0.44 | Total | 9.326 | 45 | | | |
| **Availability of key drugs** | Urban | 84.6 | Between groups | 870.09 | 3 | 290.03 | 1.279 | 0.294 |
| | Rural | 89.8 | Within groups | 9522.42 | 42 | 226.72 | | |
| | Camp | 78.1 | | | | | | |
| | Mixed | 79.1 | Total | 10392.51 | 45 | | | |

* *Statistically significant*

Table 4.17, illustrates that there were statistical significant differences (P value=0.0001), regarding community served by the facility when analyzed with respect to the percentage of drugs prescribed by generic names, and Post Hoc test showed that the highest mean was for urban community (0.15) and the lowest mean was for the rural community (0.03). But, there were no obvious differences regarding the other drug use indicators.

In the next chapter, the results will be discussed in order to understand the local situation regarding the physicians compliance and to identify areas of strengthens and weaknesses which need interventions. Also, the suggested implications regarding promoting and maximizing the PHC physicians with the Palestinian EDL will be presented in the next chapter.

# Chapter 5: Discussion

From the public health point of view, the rational drug use is one of the most important priorities of any health care system and in order to reach the best drug use, the implementation of the essential drugs program is very fundamental. Moreover, physicians must comply with the EDL to improve their prescribing practices.

After developing the EDL, follow up and monitoring must be done parallel to the implementation stage as well as evaluation must be done periodically and after every stage to assess the current situation and decide according to the findings where we are and where we have to be, and so formulate the suitable intervention strategies for improvement. Therefore, in this chapter, the researcher attempts to interpret and discuss the results and findings of this study and its implications.

## 5.1 Demographic and organizational variables

The present study shows that 75.2% of the physicians were males and 24.8% were females. This reflects the recruitment status in Palestine where the working force is mainly males and this is due to many societal factors. Female physicians represented a higher proportion in the health sector than other sectors in general as, the PCBS; reports indicate that the participation rate of women in the labor force in year 2000 was estimated to 10.4% (PCBS, 2001).

The percentage of the physicians who aged from 25 to 34 was 33.8% and this indicates that there was a high recruitment rate of relatively young inexperienced physicians. This recruitment reflects the expansion of health services after the establishment of the

PNA in 1994. The newly employed physicians can provide an opportunity through undergoing training courses on the EDL and its importance, good prescribing practices, and how to use the STGs, as a result, this investment in young generations can lead to long term achievement. However, a needed step before that is to enforce the work of the different therapeutic committees (already developed but require further empowerment) to develop protocols, policies, and STGs in order to train physicians how to use them.

To ensure updating physicians' knowledge, there must be a continuous training and educational programs for the physicians in order to keep them informed about the newly approved drugs and pharmaceutical issues including rational drug use. As citied in the literature, training materials can improve prescribing practices based on two assumptions. The first is that the reason for incorrect prescribing is lack of information. The second is that when the prescribers have the correct information, their prescribing practices would automatically improve (WHO, 1997b). Only 2.8% of the respondents were involved in the preparation of the EDL, and from the comments of many of them, they reported that many needed drugs must be in the EDL but were ignored.

This was due to not involving physicians in the preparation of the EDL despite of the fact that they are primary stakeholders and therefore, should be involved in developing the EDL. The literature indicates that, involvement in decisions can increase compliance and people showed more commitment in issues in which they have contributed (Mullins, 1999).

The study shows that physicians who had exclusive availability of EDL drugs in their pharmacies (94.1%) were currently using PNF and EDL more than the others. This is a clear indication that the availability of drugs in the clinics helps physicians to comply

with the EDL, and this forces the managerial level in the Pharmacy Directorate in the MOH to exert more efforts to ensure drugs (listed on the EDL) availability all the time. Giving that the dissemination of the PNF is a very important step, having a copy of PNF was an indication and a factor in physicians' compliance with the EDL. Although, the EDL has been disseminated, the study concludes that generally the PNF copies were absent in most of the assessed health facilities. In particular areas, the PNF copies were kept in the stores and not disseminated yet (field observation). In some facilities, there were no adequate copies to be disseminated to all physicians. This calls for further dissemination plan including printing out additional copies of the PNF and disseminating them along with training courses, monitoring and supervision to ensure physicians compliance.

From the researcher observations, in some facilities, although the PNF was available, physicians use the medic (Israeli drugs guide) to help them in prescribing, despite of the fact that medic has many branded drugs not present on the EDL or even in the clinic pharmacies.

Also from the researcher observation, the PNF copies disappeared; despite of the fact that in some clinics it was disseminated to all physicians surely and when the physicians were asked about it, 70.1% of them have it, but most of them took the copies to their homes or elsewhere. This could be avoided by raising awareness about the importance of having the copies available at the facility and providing more supervision and monitoring.

This study also indicated that physicians who had evaluation for their prescribing practices and having copies of PNF were higher than the other groups in their compliance with the EDL. Additionally, the physicians who received written feedback about their prescribing practices and having copies of PNF were higher than the others

in their compliance with the EDL. This could be promoted by combining the educational, regulatory and managerial processes including developing EDLs, drug formularies and STGs along with monitoring, follow up and provision of feedback (Quik, Laing and Ross, 1991).

The study concluded that the attendance of training courses on EDL by the physicians leads to increase the responsibility of them to maintain having the PNF copy, because they know it's important or how to use it and this was shown in the high percentage of physicians who attended courses on EDL and having copies of PNF (89.6%).

## 5.2 Prescribing practices

The study shows that 67.4% of physicians were currently using EDL and the female were higher than males in using it and this could be explained by the perceived nature of females who try to work harder to prove themselves. This result is consistent with the study which concludes that, female in general are more committed, compliant, and adherent to the rules and regulations than males (Hamad, 2001).

Also, the physicians who had EDL courses in their basic curriculum were using the EDL more than the others. This could encourage the policy makers in the field of medicine/pharmacy education to incorporate the EDL courses in the basic curriculum of medicine and pharmacy. This helps physicians to be familiar with the concepts and the importance of EDL.

The study shows that physicians who were currently using the PNF in Khanyounis governorate were elicited the lowest percentage (43.2%). From the researcher observation, in Khanyounis Governorate the PNF was not disseminated to all the facilities, the package was still in the Khanyounis main clinic. So it is very important for physicians to have copies of the PNF in order to use it.

It is important for the managerial level to follow, monitor and evaluate the prescribing practices of their physicians, and this follow up keeps the links between the physicians and managers connected. As shown from the study, a high percentage of physicians (83.1%) that had evaluation of their prescribing practices were currently using the PNF and EDL and 83.3% of those who received a written feedback about their prescribing practices were currently using the PNF and EDL. This is consistent with the study done in Uganda which showed that using of EDL was higher (68.1%) in the group of physicians to whom the EDL and national guidelines were disseminated, timely feedback was done and training as well as support supervision was provided (Kafuko, Zirabamuzaale and Bagenda, 2000). This calls for the importance of monitoring and supervision as having the PNF copies is not adequate by itself.

Another indication of physician compliance with the EDL is prescribing drugs not on EDL. The study showed that females prescribe drugs not on EDL less than males and this could be because females comply more with regulations than their male counterparts (Hamad, 2001).

The physicians who found that EDL and PNF easy to be used were elicited the lowest percentage (18.5%) regarding prescribing drugs not listed on EDL and the physicians who found many problems in using EDL and PNF always prescribe drugs not on EDL (27.3%). This leads to a conclusion that the more easy and clear PNF, the more physicians will comply with it. Therefore, management should make periodic evaluation and revision for the PNF and EDL and involve stakeholders in the evaluation process and to try to make any changes that are needed in order to give a clearer updated copy of PNF and EDL (WHO, 2001a).

The study also concluded that there are many perceived problems in using EDL and PNF. Among physicians, 52.1% reported that poor communication between drug

policy makers and the physicians is a main contributing factor for the problems in using the PNF and EDL. This is consistent with the Department of Health and Human Services in United States of America, which suggests seven components for physicians compliance one of them is developing open lines of communications between the different managerial levels and the other components include; conducting internal monitoring and auditing, implementing compliance and practice standards, designating a compliance officer or contact, conducting appropriate training and education, responding appropriately to detected offenses and developing corrective action, and enforcing disciplinary standards through well publicized guidelines (USA Federal Register, 2000). Therefore a lot of efforts must be done to ensure the involvement of the physicians jointly with the policy makers in activities related to the use of the essential drugs. It is very obvious that employees have to be part of any decision regarding their work in order to increase their compliance with it (Mullins, 1999).

This was clear in a study conducted to assess the reduction of the unnecessary drug expenditures, when the physicians were provided by cost information and encouraged to find solutions and implement them by themselves subsequently their compliance increased (Soumerai et al, 1990).

Moreover, the compliance of physicians to use EDL increases as they have positive perceptions about the EDL and its use is easy and simple; therefore, training is very important to solve non-compliance problems.

## 5.3 Knowledge and attitudes

Generally, the result about physicians' knowledge about the concept of essential drugs was good and indicates that the minimal required knowledge about the essential drugs is present. However, not all the physicians who know the correct concept of the

essential drugs agreed with its values on different aspects. The results showed that 72% of physicians agreed with the fact that essential drugs save lives and reduce suffering.

The valid assumption that, theory guides practice implies that MOH need to concentrate on increasing and promoting the physician knowledge about essential drugs using many educational tools, such as scientific literature, pharmaceutical and medical newsletters and printed materials (Ross-Degnan et al, 1992). This can improve the physicians' knowledge and subsequently their prescribing practices; again there is an assumption that one of the reasons for the incorrect prescribing is the lack of information (WHO, 1997b).

Regarding knowledge and attitudes of physicians and using the PNF and EDL, the study shows that the physicians who know all of the generic names of drugs were currently using the PNF and EDL (69.2%) more than others. This point to the need for designing and implementing more educational training programs for the physicians about generics and their importance. This result is also in accordance with the Philippines study which showed that the implementation of drugs and generic laws coincided with education had a high impact on prescribing practices (Ross-Degnan, 1999).

As the study shows that the physicians who attended a training course on EDL were currently using PNF and EDL (83.1%), more than others who did not attend training (58.6%). This concludes that the training courses on EDL are very important and helpful in increasing the physicians' compliance with the EDL and PNF. This is also consistent with the saying that compliance can be achieved and increased if there is training and a well designed educational strategy (Onion, and Bartzokas, 1998).

The literature indicates that all the other educational activities including in-service training, face to face education, small group discussions, seminars, workshops and printed educational materials, can help in the compliance of physicians with the national guidelines (Ross-Degnan et al, 1992).

Only 49.3% of physicians were familiar with the STG concept. From this result the researcher concluded that there should be a lot of efforts to increase and promote the physicians knowledge about the STGs. Moreover, the therapeutic committees should be promoted to develop more STGs and policy makers should make some regulations to ensure the STGs use and implementation. This is consistent with the prepositions that consider the knowledge and the implementation of STGs as an intervention that promotes the drug use and EDL use; therefore, physicians' compliance with EDL could be increased (Quick, Laing, and Ross, 1991).

However, the implementation of STGs alone is not enough, training and supervision must be accomplished and this was proven in a study done in Uganda which showed that the average number of drugs per prescription was reduced after implementing STGs alongside with training and supervision (Kafuko, Zirabamuzaale, and Bagenda, 1999).

## 5.4 WHO drug use indicators results

Many efforts have been made to explore the drug use practices overall the world in both developing and developed countries. This was based on WHO drug use indicators at the country level, region level and individual facilities level. According to the literature, the results of the previous studies indicated some problematic areas in the field of misuse of drugs, which was better in some countries than in the Gaza Strip and in others it was worse or the same as in our situation. In all cases, the results forcing

the health policy makers and planners at the top managerial level to set priority plans, and strategies for the needed intervention, according to each country situation (WHO, 1993).

In order to achieve the main objective of this study and to find out the current drug use practices in terms of poly pharmacy which reflects the compliance of the physicians with the EDL, using generic names, prescribing from the EDL, availability of key drugs and PNF and EDL, the data were analyzed in general to give an overall results about the situation in Gaza Strip as a whole. Additionally, the data were analyzed in relation to governorates, PHC level; community served by the facility and time of the month on which the drug was prescribed to find any variations or influence of the different variables on the drug indicators results.

### 5.4.1 The average number of drugs per prescription

The average number of drugs per prescription was 1.92. This result is slightly higher than the WHO standard values for drugs use which is 1.6–1.8 (Isahetal, 1999). However, this result is consistent with the valid international standard which is recommended by the WHO to be below 2 (Dumoulin, 1998). By comparing the result of this study with results found in other Countries, the result of this study in average is close to most of the results in all the reviewed Arab Countries.

Also, the result of this study is almost equal to the result in Uganda (1.9), Malawi (1.8) (Hogerzeil efal, 1993) and in Kraguievac in Serbia (1.9) (Jankovic et. al., 1999).

The result is much better than the result which was found in 1997 in the Gaza Strip and West Bank which was 2.55 (Obeidallah et. al., 2000). This improvement gives an indication that the essential drug program and the development of the EDL is a good

intervention that decreases the poly pharmacy, but it is higher than the result obtained in the West Bank recently (1.68) (Pharmaciens Sans Frontieres, 2003).

Moreover, the result is better than the results of Sharjah in United Arab Emarates (2.7) (Hasan, Das and Murad, 1997), Morocco (3.27) (Simon, 1998) and in Alexandria in Egypt (2) (Zaki, et. al., 1999). Additionally, the result is better than that in Indonesia (3.3), Tanzania (2.2), Nigeria (3.8), Nepal (2.1) (Hogerzeil et. al., 1993), also better than South Africa (2.76) (Orrrell and Kishuna, 1997), Ghana (4.3), Pakistan (3.5) (Memon, 1998). As well it is better than the result in Kalahari (2.1) (Kwit – Skwiz, 1999), Durban in South Africa (3.5) (Sulemen, Dangear and Jinabhai, 2000), Namibia (2.72) (Namibians'; MOH, 2001), Thailand (2.52) (Limpanasithikul, et al, 2002), Zimbabwe (2.3) (Trap and Hansen, 2003) and Usbekistan (2.9) (Laing 2004). Also the result in Gaza Strip is lower than that in United Kingdom which was 2.6 (Trap, 2000). In contrary, the result is higher than Yemen (1.5) and Sudan (1.4) (Hogerzeil et. al., 1993) and Saudi Arabia (1.44) (Mahfouzet al, 1997). As well it is higher than Zimbabwe (1.3) and Ecuador (1.3) (Hogerzeil et. al., 1993). It is higher than the result in Bangladesh (1.6) (Baqui and Chowdhury, 1996).

There were no significant differences between the average number of drugs described regarding the age of the patient, as it was 1.93 for more than 3 years and 1.91 for patients up to 3 years. There were statistical significant differences between the numbers of drugs per prescription with regard to time of the month (P value 0.001) the higher mean was in the first 10 days of the month. This can be explained by the fact that there are special dates at which the drug requisitions are distributed to the PHC clinics, and these special dates differ from each group of clinics in the five governorates. However, all the drug requisitions are distributed within the first 10 days of the month. As a result, patients become familiar with these days and they come to

the clinics more within these days to be sure that they will take the needed drugs. Moreover, the physicians also became familiar with that situation and because of the overloaded patients and customers, they prescribe drugs more within the first 10 days of the month.

Also there was a statistical significant difference between numbers of drugs per prescription with regard to governorate and the highest was in the North Governorate. This needs further research to know the factors that contribute to the variations in prescribing at the different governorate levels.

Regarding the average number of drugs prescribed per prescription, there are many factors that could contribute in this indicator. In Gaza Strip, clients have an access to other health services for example, UNRWA clinics which provide drugs freely as well as NGOs.

Clients shopping among the different providers are a well noticed phenomenon in the Palestinian context. Another factor is the drug shortage in the PHC clinics which may restrict the physicians' prescribing practices. Additionally, there is the phenomenon related to prescribing drugs on informal prescriptions, which are prescribed for clients to be dispensed from private pharmacies. All these factors need to be considered before any final judgment is made regarding physicians prescribing practices in Gaza Strip.

### 5.4.2 Percentage of drugs prescribed by generic names

Another important study indicator is the percentage of drugs prescribed by generic names. The result in the Gaza Strip as a whole was 5.47% which is very low, although this is very important element of the essential drugs concept, which emphasizes on prescribing generic names instead of brand names. This result reflects the physicians'

tendency to prescribe drugs by brand names rather than generic names. This is consistent with the result of the study which was previously done in Gaza Strip and West Bank (2.7%) (Obeidallah et al, 2000).

The result of this study is better than the result found in West Bank which was 0.37% (Pharmaciens Sans Frontieres, 2003). This can be explained by lack of training courses in the Gaza Strip and West Bank on the EDL and using it particularly in reference to the importance of the generics prescribing.

Despite of the little improvement in the percentage, still a lot of efforts are needed in this regard to reach to the standard values for this indicator which must be 100% (Dumoulin, 1998; Isah etal, 1999). The decision makers in the MOH especially in the Pharmacy Directorate should pay a lot of efforts to increase the knowledge of physicians about the importance and the positive impacts of the generic prescribing. Also the MOH must promote generic drugs in all procedures such as selection and ordering for drugs from the procurement facilities. The result also is higher than in Spain (2.7%), which was followed by intervention plans and strategies to increase generic prescriptions and it increased to 17.63% (Lopez-picazoferrer, etal, 2002). In contrary, the result of this study (5.47%) is the lowest among most parts of the Arab Countries studies except in Saudi Arabia which was 2.9% (Mahfouz et al, 1997).

In Sharjah in United Arab of Emirates the result was 100% (Hasan, Das and Mourad, 1997). Also the percentage of this study is lower than the results of Developing Countries studies such as in Zimbabwe 94% and in Ecuador 37% (Hogerzeil etal, 1993).

The finding in this study is lower than in United Kingdom which was 42% (Trap, 2000). This could be explained by the phenomenon that the denoted drugs from other countries are prescribed as it is.

Also, another factor contributing to the tendency of the physicians to prescribe brand name drugs than generic prescribing is the false impression of people including physicians that the generic drugs are of poor quality and efficacy (Pharmaciens Sans Frontieres, 2003). There were no statistical significant differences between the percentage of drugs prescribed by generic names regarding the age of the patient and regarding the timing of the month in which the prescriptions was prescribed. There were statistical significant differences between the percentages of generics regarding the governorates; the highest percent was for Gaza Governorate (10.84%) which could be related to location of the central and main Pharmacy Directorate in Gaza which implements all the training and development programs first in Gaza Governorate. Also from the observation, there was PHC facilities in Gaza Governorate which held training courses for their physicians and this was obvious from their reports to the Quality Improvement Program in MOH (MOH, 2001).

Also, there were statistical significant variations between percentages of drugs prescribed by generic names, in relation to the PHC level. The level three PHC facilities elicited higher percentage of drugs prescribed by generic names than other levels. Regarding the community served by facility, the highest percentage of generic prescribing was for urban population. This could be because in these areas more training courses and programs were done.

### 5.4.3 Percentage of drugs from EDL and PNF

The general result for Gaza Strip was 97.85% which is considered one of the highest among all countries of the world. This result shows a positive indication for the implementation of EDL and the physician compliance with it. This finding is mainly obtained as a result of the managerial intervention, where all drugs provided to

facilities are from the EDL. The result in this study (97.85%) was near the standard value which is 100% (Isahetal, 1999) and comparing it with what is in West Bank (95%) (Pharmaciens Sans Frontieres, 2003) reveals the same status. This could be resulted from the similar pharmaceutical situation and management system in the governmental sector in Gaza Strip and West Bank. This result is close to the result in Sharjah which was 100% (Hasan, Das and Mourad, 1997) and better than in Morocco, which was 56.1% (Simon, 1998).

Also Gaza Strip result was higher than Bangladesh (85%), Tanzania (88%) and Nepal (86%) (Hoerzeilet et al, 1993). The prescriptions which were not listed on the EDL were donated drugs. There must be commitment to ensure that drug donations comply with essential drugs programs and to maximize the use of donated drugs which is considered one of the drug resources in Palestine. Therefore, the donated drugs must be according to the Palestinian EDL, this is consistent with the WHO guidelines for drug donations "*all donated drugs or their generic equivalents should be approved for use in the recipient country and appear on the national list of essential drugs, or, if a national list is not available, on the WHO model list of essential drugs, unless specifically requested otherwise by the recipient*" (WHO, 1999a).

In more explicit terms, this high percent also reflects the importance of the regulatory and managerial decisions, from the drug administration and MOH, which developed the EDL and provide these drugs to the facilities pharmacy.

There were no statistical significant differences in the percentage of drugs prescribed from the EDL and PNF regarding the age of the patient, the PHC level and the community served by the facility. But there was a statistical significant difference regarding the time of the month in which the prescription was prescribed and it was higher in the first 10 days of the month. This is consistent with the fact that the ordered

drugs (formally) reach the pharmacies of the PHC facilities in the first 10 days of the month.

Regarding the differences between governorates and the percentage of drugs prescribed from the EDL and PNF the higher percentage was obtained in the North Governorate. The researcher could not make a scientifically based judgment in this regard and further research in this area could be helpful.

However, on the other end of the spectrum, the researcher noted that physicians write drugs not from the EDL on informal prescriptions (piece of paper). This finding makes bias and indicates that physician compliance is mainly based on the drug availability regardless whether these drugs from the EDL or not. The fact that the MOH only provides the drugs listed on EDL forces physicians to prescribe only the drugs without being fully aware about the value and importance of EDL, most physicians don't know they are using EDL. The percentage of physicians who dont prescribe drugs from EDL in their private clinics is supportive to this argument. Moreover, the lack of copies of EDL and PNF at most facilities and the relatively low percent of physicians who reported currently using the EDL (67.4%) are also indicative of the later assumption. Additionally, NGOs, and UNRWA don't follow the Palestinian EDL. These assumptions must be beard in mind before making final judgment about the use of the EDL in Palestine. More efforts are needed to set policies and procedures and to train physicians to use EDL in their prescribing practices at the different health facilities including UNRWA, NGOs and the private ones.

### 5.4.4 Availability of copy of EDL and PNF in the facility

The general result for the availability of copy of PNF and EDL in Gaza Strip was 28.3% and this is much lower than the standard value which must be 100% (Dumoulin,

1998). The availability of PNF and EDL copy in West Bank was 16.7% (Pharmaciens Sans Frontieres, 2003). The result of this study is lower than that in South Africa (86%) (Suleman, Dangeor and Jinabhai, 2000), and in Namibia (76%) (Namibians' MOH, 2001). In Uganda the availability of EDL when there was only dissemination for EDL was 82.9%, but when there was timely feedback and targeted training of health workers and supportive supervision it increased to reach 100%. This is what really needed in Palestine; the supervision and this was obvious from the physicians' opinions when they were asked about the PNF most of them took it to their homes for their use at home.

Kamps and Stewart (2000) found that the development and dissemination of guidelines and formularies is the first step which must be followed by a critical evaluation and monitoring for their use (Kamps, and Stewart, 2000).

From the observation and talking to physicians, there is a need for training for physicians about PNF content and how to use it and its importance in the place of work. It is worth noting that the presence of the PNF is not enough to ensure compliance, because it's difficult to change behaviors and practices of physicians only by the provision of copies of national formularies (Grimshaw, and Russel, 1993).

There were no statistical significant differences regarding the availability of a copy of the PNF between governorate and community served by the facility but there were statistical significant differences between PHC levels as the highest percentage was for PHC level four and this could be as a result of the availability of the basic store at level four clinics.

### 5.4.5 Availability of key drugs

It is worth noting that a short list of specific drugs (less than 15) that are essential to treat common health problems, and to examine their availability in the health facilities being studied were formulated based on discussion with policy makers.

The general result for the availability of key drugs was 82.6%. This result is low in reference to the standard value for WHO which is 100% (Dumoulin, 1998). This result is inconsistent with the results of the study which was done in Gaza Strip and West Bank, which concluded that there was no lack of drugs (Obeidallah et al, 2000). This could be explained by the fact that the previous study dealt with the availability of drugs in all the health providers sectors including the private one, in which the not available drug at one party are usually found at others (Obeidallah et al, 2000). The result in this study in this regard is higher than in Malawi (67%), Bangladesh (54%), Tanzania (72%), Nigeria (62%), Nepal (90%), and in Ecuador which (38%) (Hogerzeil et at, 1993).

The lack of the availability of key drugs reflects the pharmaceutical problem in the MOH regarding the availability of drug all over the month in all the facilities and this problem is due to many reasons as presented in the next paragraph.

The researcher claims that the insufficient monetary resources for drugs, the over use of drugs in the facilities from physicians, pharmacists and patients, and the Israeli closures which delay the arrival of the ordered drugs all could be possible factors leading to drug shortage. Additionally, most of the MOH drugs are funded by the World Bank through lengthily procedures which cause delay particularly in the unstable and unpredictable political situation dominating the area. The rational drug use here plays an important role in overcoming drugs shortage therefore; the people must be trained as well as the physicians and dispensers on the rational use of drugs and its impacts.

From the 26 drug groups listed on the EDL, the first seven groups which were the mostly lacking ones as reported by physicians include , Dermatalogical drugs 55%, Muscle relaxants 53%, Vitamins and minerals 53%, Antimigraine drugs 45%, Antivertigo drugs 44%, Opthalmological preparations 43.5%, and Anti infective drugs 43%. This results call for regulatory actions to ensure the availability of sufficient quantities of different drug groups in the PHC facilities.

Regarding the reasons for drug shortage, physicians reported inadequate drugs at the central store (66.2%), inaccurate estimation of the needed drugs (35.1%), management problems and bureaucracy (22.5%) and for lack of monetary resources to buy the drugs (21.2%). There was no statistical significant difference in the availability of key drugs regarding timing of the month, PHC level and community served by the facility but there were statistical significant differences cross governorates and the highest mean was noticed in Rafah Governorate.

Also the low percent of the key drugs availability is proven by the result of the availability of drugs on the EDL in the pharmacy (assessed by the research) and were congruent with results which revealed by the subjects' responses, exclusive availability was reported in 7.7% and partial availability in 73.4%.

The MOH must monitor and improve the drug management cycle which is a continuous process starting by selection, procurement, storage/distribution and use in every stage there must be a quality assurance considerations. This drug management cycle needs to be monitored with the aim of improving all its elements (WHO, 2002b).

It is difficult to generalize these results on all Gaza Strip health providers. It is worth pointing that, there are four different types of health providers, MOH which is the governmental sector, UNRWA international agency, national and international NGOs, and the private sector. These four health providers don't have any collaboration or

regulations to work in a complementary manner. MOH has no role in UNRWA, and a limited role in NGOs, and private sectors. Therefore, in order to ensure rationalization of drug use, there must be a documented national drug policy for all the health providers who must comply with all its components from which the Palestinian EDL, by this way the physicians anywhere will comply with the EDL and with the good prescribing practices.

The findings of the open ended questions, which reported any comments of the respondents regarding the physicians' compliance with the EDL, revealed that most of the respondents asked for more training courses related to the essential drugs. Another dominant suggestion was the ensuring the availability of all the needed drugs during all days of the month.

In the next chapter, the researcher presents the conclusion of this study, then the suggested recommendations to improve the physicians prescribing practices, knowledge and attitudes in a manner that could help in a better compliance with the EDL. Also, the suggested recommendations for the policy makers which help in maximizing the use of the EDL and physicians' compliance with it is presented in the next chapter.

# Chapter 6: Conclusion and Recommendations

The national essential drug list in Palestine was recently developed as a part of the essential drugs program and no evaluation for the implementation of this program has been so far carried out. So in order to give an indication for the implementation of the essential drugs program, this study tries to answer the question to what extent the primary health care physicians in Gaza Strip comply with the EDL as they must use it as a basis for their prescriptions. Also, to help in finding out any possible ways to improve the essential drugs program. Furthermore, the EDL must be updated every two to three years according to the WHO, and in order to update the EDL, it must be used in the drug prescribing, must be available for all the physicians and must be periodically evaluated. This study will help in illustrating many aspects related to the use and availability of the EDL and therefore help the decision makers in the MOH in any developmental procedures or actions.

In order to evaluate the compliance of the physicians, the researcher assessed the physicians' knowledge, attitudes and prescribing practices, which reflect and affect their compliance with the EDL. Another used tool was the WHO drug use indicators, from which the researcher selected the most relevant ones for the study objectives.

The type of this study is descriptive co relational cross sectional as it describes the compliance of the PHC physicians in Gaza Strip with the EDL at certain point of time, as well as it measures specific indicators that reflect the prescribing practices of the PHC physicians and their compliance with the EDL in a short time. Triangulation of data was used in order to ensure credibility of the results.

The first sample in this study was all the PHC physicians in all the PHC clinics in all Gaza Governorates that are managed by the MOH. The second sample of the study was a retrospective assessment of 1656 prescriptions (36 form each PHC clinic).

This study demonstrates that, a number of prescribing problems exist within the primary health care facilities in Gaza Strip. Poly pharmacy is not a major problem, as the average number of drugs prescribed per prescription was 1.92 and this is within the standard value for this indicator and better than many neighboring and developing countries. On other hand, the generic prescription was the most problematic area in Gaza Strip; as it was the lowest in the reviewed countries (5.47%). Therefore, the study demonstrates the need for intervention to improve the generic prescription by using regulatory, managerial and educational approaches as illustrated earlier.

At the PHC facilities, PHC physicians prescribe drugs almost only from the EDL, and this could be explained by the fact that drugs in the pharmacies of the PHC facilities are mainly from the EDL. The regulations and policies here play a good controlling role in this respect. Despite the dissemination of the EDL and PNF, the percentage of their availability was low (28.3% of the PHC facilities had copies of EDL and PNF). This

problem must be overcomed by a good dissemination plan and monitoring for the EDL and PNF to ensure its availability and use at the facilities.

Regarding the availability of key drugs, the study revealed shortage of the key drugs (82.6%) which is a bad signal because the availability of key drugs reflects the availability of the essential drugs which should be available all the time (100% availability).

Generally, the PHC physicians' compliance with the EDL is good in certain areas and bad in others. The PHC physicians have no choice to prescribe drugs which are not available in the clinic pharmacy. Without being fully aware of their practices, physicians prescribe drugs which are available in the pharmacy, which are mainly from EDL. At their private clinics, PHC physicians describe drugs from outside the EDL. Additionally, even inside the facilities, physicians use unofficial prescriptions to describe drugs that are not available in the clinic or not listed in the EDL and ask clients to buy these drugs from private pharmacies.

The physician knowledge and attitudes about the EDL is generally good. Regarding the attendance of training courses on EDL, the study indicated that 34.4% had attended training courses, while 88.9% were interested to attend further training courses and this could encourage the policy makers to develop more training courses and to develop, distribute and disseminate educational materials relevant to the EDL.

Although physicians mainly prescribe drugs from the EDL, as they are the main available medications at the facilities, only 67.4% of them reported currently using the PNF. Of those who currently using the EDL, 51.2% found many problems encountered in its use. From the physicians who found problems in using EDL and PNF more than half of them regarded the poor communication between drug policy makers are the physicians as one of key encountered problems. This was also obvious from the

percentage of physicians who were involved in the development of the EDL which was only 2.8%. Only 25.9% of the surveyed physicians had experienced evaluation for their prescribing practices and only 8.1% received a written feedback about their prescribing practices. This calls for strengthening management, follow up, supervision and setting policies and procedures for regulating drug use and drug management practices. In other words, the study concluded that there is a real need for immediate attention from the MOH to plan for a competancy based intervention to improve the role and involvement of the physicians in decision making to increase their commitment and involvement in enhancing both the rational drug use and the compliance with the EDL.

The findings of this study enabled the researcher to set the following helpful strategies which she sees as contributing to increasing compliance and adherence with the EDL:

## Recommendations

- The compliance level of PHC physicians working in PHCs that are managed by the MOH is generally good and resulted mainly from the managerial/regulatory aspects exhibited in the provision of drugs that are only listed on the EDL. However, further efforts are needed to encourage PHC physicians' conscious use and compliance with the EDL.
- WHO drug use indicators results were positive in certain aspects such as poly pharmacy (1.92) and negative in other aspects such as using generic names (5.47%). Conscious efforts are needed to improve the WHO studied indicators results in using generic names, availability of key drugs, and availability of a copy of EDL at the facility

- The study pointed to the relationship between physicians' characteristics and compliance level with EDL. Policy makers and managers could improve compliance if they considered the results of this study such as paying more concern to male physicians, the newly employed physicians and so on.
- The study pointed to the relationship between drug management related variables and compliance level. Policy makers and managers could improve compliance if they considered the results of this study such as paying more concern to level two PHC clinics, South and North governorates and so on.
- Official policies, procedures and regulations that are contributing to adherence and compliance with EDL should be developed and/or empowered. Functional management systems such as monitoring system, feedback, follow up, supervision and evaluation should be in place. Policy makers need to improve drug management cycle at PHC facilities, with special attention to ensure the availability of the essential drugs.
- The study pointed that training is a vital intervention to improve compliance and adherence with the EDL and to improve drug use practices. PHC Directorate, Pharmacy Directorate, Human Resources Development Department in collaboration with Universities, needs to develop training programs/in-service education to increase physicians' knowledge and improve their practices regarding the essential drugs concepts and practices.
- MOH has to take urgent actions to increase the use of generic drugs instead of brand names of drugs. The selection, procurement and supply of drugs should be from the essential Drugs list and all drugs should be ordered and supplied by using generic names.

- Revision, evaluation, and updating of EDL must take place periodically with adequate involvement of physicians and the concerned parties. There must be open lines of communications between decision makers in the MOH and the PHC practicing physicians.
- To ensure the availability of copies of the EDL, further dissemination of adequate number of copies should take place and should be followed by training, supervision and follow up.

## Research recommendations

- Another study is needed to explore other health providers prescribing practices such as UNRWA, NGOs and private providers in order to have national figures in this regard.
- A similar study of secondary care physicians prescribing practices might be necessary.
- Further research study could be helpful using the WHO drug use indicators relevant to the patient care and the use of antibiotics and injections.
- Further study could help in demonstrating whether improvement has took place or not after considering the findings of this study by policy makers and professionals.
- Another study is needed at the national level including all health providers in both West Bank and Gaza Strip in order to provide national figures in this regard.

The recommendations for the policy makers are presented in Arabic language in (Annex 14).

Annex 1

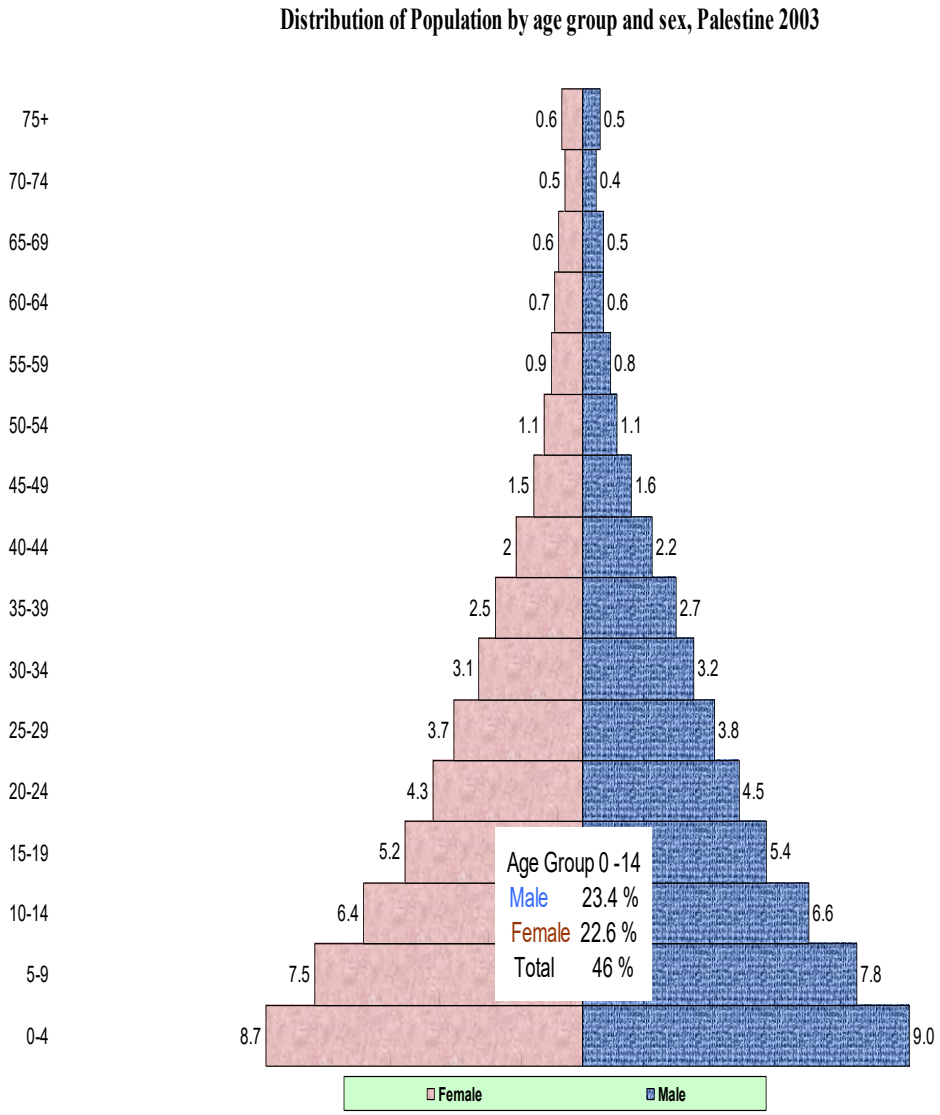
**Map of Palestine**


Annex 2

**Map of Gaza Strip**


Annex 3

**Age pyramid for Palestinian population 2003**




# Annex 4

## WHO drug use indicators

| | |
|---|---|
| **Prescribing indicators** | |
| 1 | Average number of drugs per encounter |
| 2 | Percentage of drugs prescribed by generic name |
| 3 | Percentage of encounters with an antibiotic prescribed |
| 4 | Percentage of encounters with an injection prescribed |
| 5 | Percentage of drugs prescribed from essential drugs list or formal any |
| **Patient care indicators** | |
| 6 | Average consultation time |
| 7 | Average dispensing time |
| 8 | Percentage of drugs actually dispensed |
| 9 | Percentage of drugs adequately labelled |
| 10 | Patients' knowledge of correct dosage |
| **Facility indicators** | |
| 11 | Availability of copy of essential drugs list or formulary |
| 12 | Availability of key drugs |

Annex 5

## Complementary drug use indicators

| |
|---|
| **Complementary drug use indicators** |

| | |
|---|---|
| 13 | Percentage of patients treated without drugs |
| 14 | Average drug cost per encounter |
| 15 | Percentage of drugs costs spent on antibiotics |
| 16 | Percentage of drugs costs spent on injections |
| 17 | Prescription in accordance with treatment guidelines |
| 18 | Percentage of patients satisfied with the care they received |
| 19 | Percentage of health facilities with access to impartial drug information |

# Annex 6

بسم الله الرحمن الرحيم

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

Annex 6

Date: 21/12/2003

التاريخ: 2003/12/21

Mrs./ Rasha Mohammed Fatouh

السيدة: رشا محمد فتوح

I would like to inform you that the committee has discussed your application about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

Primary Health Care Physician Compliance with the Palestinian Essential Drug List – Gaza Strip.

مدى التزام اطباء الرعاية الاولية في القطاع الحكومي بقائمة الادوية الاساسية الفلسطينية – قطاع غزة

In its meeting on december 2003

و ذلك في جلستها المنعقدة لشهر ديسمبر 2003

and decided the Following:-

و قد قررت ما يلي:-

To approve the above mention research study.

الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member
عضو

Member
عضو

Chairperson

Ministry of Health
Helsinki Committee

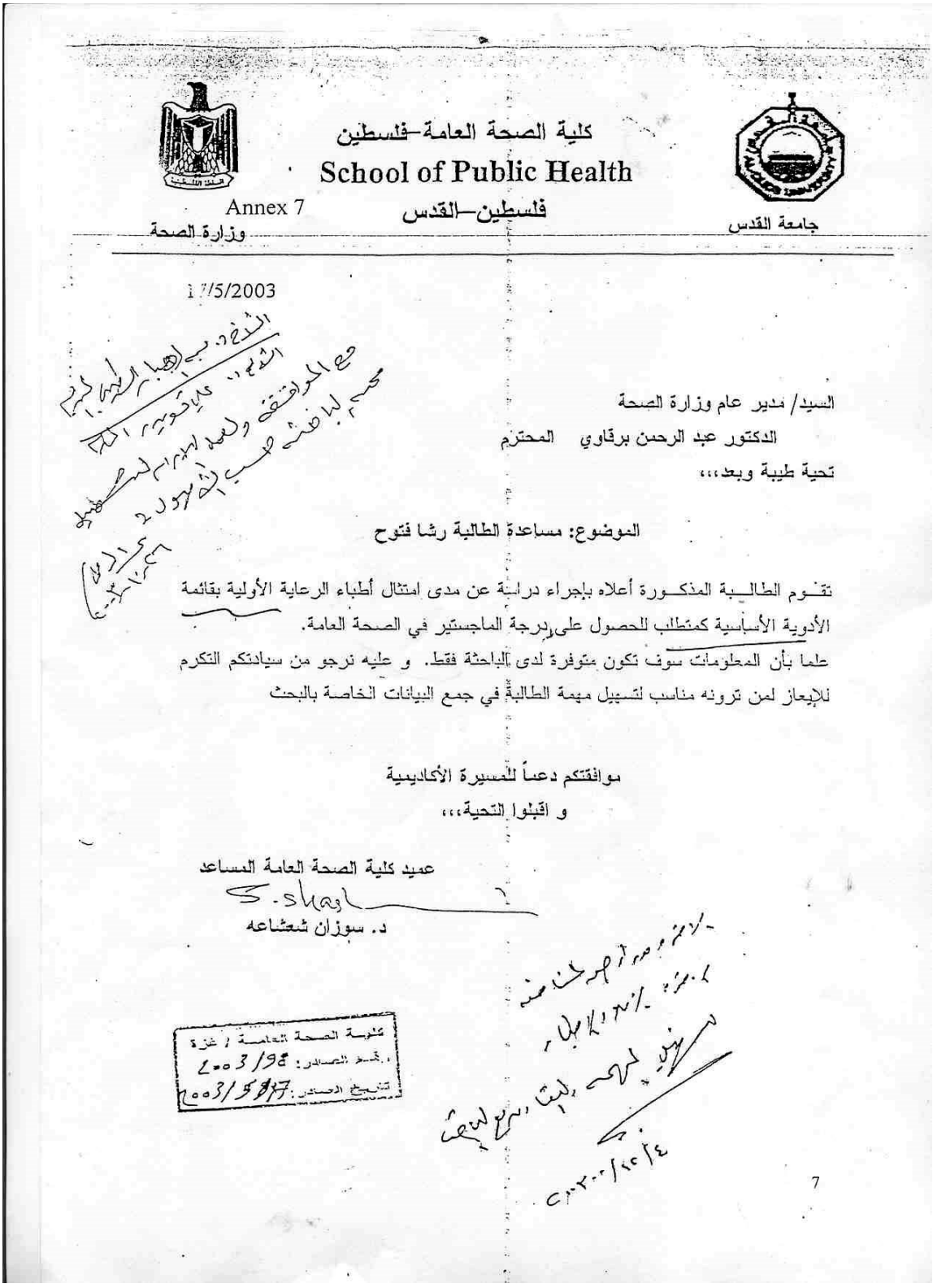
Conditions:-

- Valid for 2 years from the date of approval to start.
- It is necessary to notify the committee in any change in the admitted study protocol.
- The committee appreciate receiving one copy of your final research when it is completed.

Gaza Etwam – Telefax 972-7-2878166



Annex 7



كلية الصحة العامة-فلسطين
School of Public Health
فلسطين-القدس
Annex 7
وزارة الصحة
جامعة القدس

17/5/2003

السيد/ مدير عام وزارة الصحة
الدكتور عبد الرحمن برقاوي المحترم
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالبة رشا فتوح

تقوم الطالبة المذكورة أعلاه بإجراء دراسة عن مدى امتثال أطباء الرعاية الأولية بقائمة الأدوية الأساسية كمتطلب للحصول على درجة الماجستير في الصحة العامة.
علما بأن المعلومات سوف تكون متوفرة لدى الباحثة فقط. و عليه نرجو من سيادتكم التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالبة في جمع البيانات الخاصة بالبحث

موافقتكم دعماً للمسيرة الأكاديمية
و اقبلوا التحية،،،

عميد كلية الصحة العامة المساعد
S. Shaq
د. سوزان شعشاعه

كلية الصحة العامة / غزة
رقم الصادر: ٢٠٠٣/١٩٤
تاريخ الصادر: ٢٠٠٣/٥/٢٣

7

Annex 8

**Informed consent (the Arabic version)**

عنوان البحث

مدى التزام أطباء الرعاية الأولية في القطاع الحكومي

بقائمة الأدوية الأساسية الفلسطينية – قطاع غزة

مرحباً اسمي رشا فتوح, طالبة في برنامج ماجستير الصحة العامة في جامعة القدس– فلسطين.

إنني أقوم بعمل بحث علمي هو جزء من دراستي في الجامعة يهدف الى تقييم التزام الأطباء العاملين بمراكز الرعاية الأولية الحكومية في محافظات قطاع غزة الخمس بقائمة الأدوية الأساسي الفلسطينية, حيث ان نتائج هذه الدراسة قد تؤدي الى تحسين الالتزام باستخدام قائمة الادوية الاساسية.

هنالك خيارات للاجابة عن كل سؤال, الرجاء اختيار الاجابة الاقرب لك ولممارساتك الواقعية, مع الملاحظة انه لا يوجد اجابات خاطئة واجابات صحيحة. المشاركة في هذا البحث تطوعية ولك الحق في الانسحاب في أي وقت تشاء.

تعبئة الاستبيان تستغرق من ١٠ الى ١٥ دقيقة, مع التأكيد على ان الحفاظ على السرية تؤخذ بعين العتبار ولا حاجة لكتابة اسمك على الاستبيان.

اقدر عالياً مشاركتك بالبحث وتفضلوا بقبول جزيل الشكر

Annex 9

Questionnaire explanatory letter

**Research title: Physicians' Compliance with the Palestinian Essential Drug List in Primary Health Care in Gaza Strip**

Hello, my name is Rasha Fattouh. I am master of public health student at Al Quds University-Palestine.

I am conducting my research as a part of my study at the university.

The study aims to evaluate the compliance of the Gaza Strip physicians with the Palestinian Essential Drug List in governmental Primary Health Care (PHC) facilities. The study will help in illustrating the ways for improvement thus could lead to better utilization of the essential drug list.

I appreciate very much your participation in this study. The questionnaire takes 10-15 minutes, if you feel tired or uncomfortable, please ask to stop the interview.

Participation in this study is voluntary and you have the right to withdraw at any time.

Confidentiality will be provided, no need to write down your name.

Answer the questions as you feel and practice in the reality.

Thank you very much in advance for your collaboration.

Annex 10

**Questionnaire (Arabic Version)**

***القسم الأول: معلومات حول العيادة***

**١. مستوى الرعاية الصحية الأولية (التوضيح لمستويات الرعاية الأولية في نهاية الاستبيان)**

أ. مستوى أول ☐ ب. مستوى ثاني ☐

ج. مستوى ثالث ☐ د. مستوى رابع ☐

---

**٢- المحافظة**

أ. شمال ☐ ب. غزة ☐

ج. الوسطى ☐ د. خانيونس ☐

ه. رفح ☐

**٣- المجتمع الذي تقدم له العيادة الخدمات**

أ.قروي ☐ ب.مدني ☐

ج. مخيم ☐ د. مختلط ☐

**٤- من الذي يضع طلبيات الأدوية عادة في هذه العيادة**

أ. طاقم العيادة ☐

ب. وزارة الصحة (بشكل مركزي) ☐

ج. أكثر من جهة واحدة ☐

د. لا أعرف ☐

**٥- هل قائمة الأدوية الأساسية عادة الأساس الذي يتم طلب الأدوية بناءً عليه في هذه العيادة؟**

أ. إلى حد كبير ☐ ب. إلى حد ما ☐

ج. لا أعرف ☐

**٦- كيف تطلب هذه العيادة عادةً الأدوية اللازمة من المخزن الرئيسي؟**

أ. بانتظام/كل ..... أسبوع ☐ ب. حسب الاستهلاك ☐

ج. بشكل آخر (وضحه) ..... ☐

**٧- هل لديكم نظام تقييم لإدارة الأدوية في هذه العيادة؟**

أ. نعم، كل ..... شهر ☐ ب. لا ☐

ج. لا أعرف ☐

**٨- هل هذه العيادة قامت بعملية تقويم لممارساتك في وصف الدواء؟**

أ. نعم ☐

ب. لا ☐

ج. لا أعرف ☐

إذا نعم اذكر تاريخ آخر تقويم ..... / ...../ .....

**٩- هل تحصل على تغذية راجعة حول ممارساتك في وصف الدواء؟**

أ. نعم، بشكل مكتوب ☐

ب. نعم، بشكل شفهي ☐

ج. أبداً ☐

**١٠- إذا نعم، ماذا تفعل في هذه التغذية الراجعة؟**

أ. أحفظها في الملف بدون نقاش ☐

ب. أناقشها مع من يهمهم الأمر ☐

ج. استخدمها للتوصل لاستراتيجيات تطوير ☐

**١١- من خلال تجربتك العملية هل لاحظت نقص في الأدوية في هذه العيادة؟**

أ. نعم، اعتماداً على الذاكرة ☐

ب. نعم، اعتماداً على السجلات ☐

ج. لا ☐

إذا لا اذهب للسؤال (١٥)

**١٢- أي من مجموعات الدواء التالية التي يكون بها عادةً نقص (ضع علامة ✓ على كل مجموعة ممكنة).**

| رقم مسلسل | ✓ | مجموعات الدواء | رقم مسلسل | ✓ | مجموعات الدواء | رقم مسلسل | ✓ | مجموعات الدواء |
|---|---|---|---|---|---|---|---|---|
| **1** | | Local anaesthetics | **10** | | Drugs affecting C.V.S | **19** | | Oxytocics &antioxytocics |
| **2** | | Non opioids analgesics, antipyretics, NSAIDs & antigout | **11** | | Dermatological drugs | **20** | | Psychotherapeutic drugs |
| **3** | | Antiallergics &drugs used in anaphylaxis | **12** | | Antiseptics &disinfectants | **21** | | Drugs acting on R.T.S |
| **4** | | Antidotes | **13** | | diuretics | **22** | | Solution correcting water. Electrolyte & acid base disturbances |
| **5** | | Anticonvulsant | **14** | | Gastrointestinal drugs | **23** | | Vitamins &minerals |
| **6** | | Anti infective drugs | **15** | | Hormones, other endocrine drugs & contraceptives | **24** | | Drugs affecting U.T.S |
| **7** | | Antimigraine drugs | **16** | | Immunologicals | **25** | | Nutritional supplements |
| **8** | | Antiparkinsonism drugs | **17** | | Muscle relaxants | **26** | | Antivertigo drugs |
| **9** | | Drugs affecting blood | **18** | | Opthalmological preparations | | | |

**١٣- في أي وقت خلال الشهر يكون عادةً هذا النقص في الدواء؟**

أ. أول الشهر ☐

ب. منتصف الشهر ☐

ج. آخر الشهر ☐

**١٤- أسباب نقص الدواء التي لاحظتها؟ (يمكن اختيار اكثرمن إجابة)**

أ. كمية الدواء غير كافية في المخزن الرئيسي ☐

ب. قلة المصادر المالية لشراء الأدوية ☐

ج. المشاكل الإدارية والبيروقراطية ☐

د. التقدير الغير دقيق للأدوية اللازمة ☐

ه. لا أعرف ☐

و. أشياء أخرى (حدد)..... ☐

**١٥- هل يوجد نظام محوسب لتسجيل الأدوية في هذه العيادة؟**

أ. نعم ☐ ب. لا ☐ ج. لا أعرف ☐

**١٦- هل لديكم بروتوكولات مكتوبة لتنظيم وصف الأدوية في هذه العيادة؟**

أ. نعم ☐

ب. لا ☐

إذا لا اذهب للسؤال (٢١)

**١٧- ماهو مصدر البروتوكولات الموجودة عندكم؟**

أ. منظمة الصحة العالمية ☐ ب. على مستوى قومي ☐

ج. وزارة الصحة ☐ د. معدة من العيادة ☐

ه. أخرى (حدد) ..... ☐

**١٨- هل هذه البروتوكولات مستخدمة في هذه العيادة؟**

أ. دائماً ☐ ب. أحياناً ☐

ج. أبداً ☐

**١٩- اذا مستخدمة، هل تستخدم بسهولة؟**

أ. نعم الى حد كبير ☐ ب. نعم الى حد ما ☐

ج. لا ☐

**٢٠- مكان وجود البروتوكولات**

أ. موجودة على حائط الغرفة التي بها تقدم الخدمات ☐

ب. موجودة في درج المكتب ☐

ج. موجودة على مكتب الطبيب ☐

د. موجودة في الدولاب (الخزانة) ☐

ه. موجودة في مكان آخر (حدد)..... ☐

## *القسم الثاني: معلومات وتوجهات الطبيب*

**٢١- ماذا تعني الأدوية الأساسية لك؟**

أ. أدوية تلبي الاحتياجات الصحية للغالبية العظمى للناس ويجب أن تكون متوفرة في كل وقت ☐

ب. أدوية تعتبر درجة ثانية للبلاد الفقيرة والمناطق النائية فقط ☐

ج. أدوية رخيصة الثمن للناس الفقراء ☐

د. أدوية للأمراض الغير الحادة، لا تعمل في حال الأمراض الخطرة ☐

ه. لا أعرف ☐

**٢٢- هل توافق مع هذه العبارات**

| العبارة | موافق | غير موافق |
|---|---|---|
| أ. الأدوية الأساسية تحفظ الأرواح وتقلل المعاناة | | |

| | | |
|---|---|---|
| ب. الأدوية الأساسية تزيد مصداقية النظام الصحي وتعزز مشاركة المرضى | | |
| ج. التركيز على الأدوية الأساسية يضمن رعاية صحية أحسن بانفاقات صيدلانية أفضل | | |

**٢٣- هل تعرف الأسماء العلمية الصحيحة للأدوية التي تصفها في هذه العيادة؟**

أ. نعم جميعها ☐ ب. معظمها ☐

ج. بعضها ☐ د. لا ☐

**٢٤- لأي حد تعتقد أنه مهم أن تعرف الأسماء العلمية للأدوية؟**

أ. الى حد كبير ☐ ب. الى حد ما ☐

ج. اطلاقاً ☐

**٢٥- هل تلقيت أي دورة تدريبية حول قائمة الأدوية الأساسية؟**

أ. نعم ☐ ب. لا ☐

اذا نعم اذكر تاريخ آخر دورة تدريبية ..... / ...../ .....

**٢٦- هل أنت راغب في حضور دورات تدريبية أخرى حول الأدوية الأساسية؟**

أ. نعم ☐ ب. لا ☐

**٢٧- هل دليل المعالجة القياسي (Standard Treatment Guidelines) مألوف لديك؟**

أ. نعم ☐ ب. لا ☐

اذا لا اذهب للسؤال رقم (٣١)

**٢٨- هل لديك نسخة من أي من أدلة المعالجة القياسية؟**

أ. نعم ☐ ب. لا ☐

**٢٩- هل هذه الأدلة أثرت على الممارسة فيما يخص وصف الأدوية؟**

أ. نعم ☐ ب. لا ☐

ج. لا أعرف ☐

**٣٠- إذا نعم كيف اثرت على الممارسة**

أ. حسنت الممارسة إلى حد كبير ☐

ب. حسنت الممارسة إلى حد ما ☐

**٣١- هل الأدوية في هذه العيادة عليها ملصق تعريف باللغة العربية؟**

أ. دائماً ☐ ب. أحياناً ☐

ج. أبداً ☐ د. لا أعرف ☐

## *القسم الثالث: ممارسات الأطباء*

**٣٢- هل لديك نسخة من قائمة الأدوية الأساسية و دليل الدواء الفلسطيني؟**

أ. نعم ☐ ب. لا ☐

إذا لا اذهب للسؤال (٤٦)

**٣٣-مكان وجود قائمة الأدوية الأساسية و دليل الدواء الفلسطيني**

أ. في الدرج ☐

ب. في مكتب الطبيب ☐

ج. في الخزانة ☐

د. في مكان آخر (حدد)..... ☐

**٣٤- هل عادةً تقيم الحالة الصحية للمريض قبل وصف الدواء؟**

أ. بانتظام ☐ ب. أحياناً ☐

ج. نادراً ☐ د. أبداً ☐

**٣٥- هل توثق كل وصفة في ملف المريض بغض النظر عن عدد الزيارات للعيادة؟**

أ. نعم ☐ ب. لا ☐

**٣٦- هل تستخدم قائمة الأدوية الأساسية و دليل الدواء الفلسطيني في وصفك للدواء؟**

أ. حالياً استخدامها ☐

ب. استخدمتها في الماضي ☐

ج. ابداً ☐

اذا لا اذهب للسؤال (٤٢)

**٣٧- اذا حالياً تستخدمها**

أ. بانتظام ☐ ب. احياناً ☐

**٣٨- هل وجدت استخدام قائمة الأدوية الأساسية و دليل الدواء الفلسطيني سهل؟**

أ. نعم ☐ ب. لا ☐

**٣٩- هل لا حظت أي مشاكل في استخدامك لقائمة الأدوية الأساسية و دليل الدواء الفلسطيني؟**

أ. نعم، كثير ☐ ب. نعم، قليل ☐

ج. لا أبداً ☐

اذا لا اذهب للسؤال رقم (٤٢)

**٤٠- ما هي مسببات المشاكل الأساسية في استخدام قائمة الأدوية الأساسية و دليل الدواء الفلسطيني؟**

**ضع علامة ✓ على كل ماهو ممكن**

أ. عدم كفاية المعلومات ☐

ب. عدم كفاية التدريب ☐

ج. ضعف المتابعة من قبل العيادة ☐

د. التأثير الكبير من المرضى على وصف الدواء ☐

ه. التواصل الضعيف بين صناع السياسات الدوائية والأطباء ☐

و. كميات الأدوية في قائمة الأدوية الأساسية ليست كافية لمدة طويلة لعلاج المرضى ☐

ز. عدم وجود أدلة لاستخدام الدواء المنطقي ☐

ح. الأدوية في قائمة الأدوية الأساسية ليست ملائمة لأمراض الناس المحلية ☐

ط. كثير من الأدوية اللازمة غير موجودة في قائمة الأدوية الأساسية ☐

ي. أسباب أخرى (حددها)..... ☐

**٤١- هل لاحظت أي تحسين في عملك بعد استخدام قائمة الأدوية الأساسية و دليل الدواء الفلسطيني؟**

أ. نعم بوضوح ☐ ب. الى حد ما ☐ ج. لا ☐

**٤٢- هل تصف أدوية ليست في قائمة الأدوية الأساسية؟**

أ. نعم، دائماً ☐ ب. نعم، أحياناً ☐ ج. أبداً ☐

إذا لا اذهب للسؤال رقم (٤٤)

**٤٣- اكتب أكثر الأدوية شيوعاً التي تصفها وغير موجودة في قائمة الأدوية الأساسية والمشكلة الصحية التي تعالجها؟**

| اسم الدواء | المشكلة الصحية |
|---|---|
| | |
| | |
| | |

**٤٤- هل لهذه العيادة معايير خاصة لتقرر علاج المرضى بأدوية ليست من قائمة الأدوية الأساسية؟**

أ. نعم ☐ ب.لا ☐

اذا نعم ماهي المعايير .....

**٤٥- هل الأدوية التي بقائمة الأدوية الأساسية دائماً متوفرة في هذه العيادة؟**

أ. نعم (بشكل مطلق) ☐ ب. جزئياً ☐

ج. لا ☐ د. لا أعرف ☐

**٤٦- هل تضع تفضيل المريض لدواء ما باعتبارك عندما تصف الدواء؟**

أ. نعم الى حد كبير ☐ ب. نعم الى حد ما ☐ ج. ابداً ☐

**٤٧-ما هي قوة تأثير طلب المريض لدواء ما على وصفك للدواء؟**

أ. قوية جداً ☐ ب. الى حد ما ☐

ج. ضعيفة ☐ د.غير مؤثرة إطلاقا ☐

**٤٨- هل لديك عيادة خاصة؟**

أ. نعم ☐ ب. لا ☐

إذا لا اذهب للسؤال رقم (٥٠)

**٤٩- هل تصف الأدوية التي في قائمة الأدوية الأساسية في عيادتك الخاصة؟**

أ. نعم دائماً ☐ ب. احياناً ☐ ج. ابداً ☐

اذا ابداً اذكر الأسباب .....

**٥٠- ماهو تقييمك لالتزام الأطباء بقائمة الأدوية الأساسية؟**

أ. ممتاز ☐ ب. جيد جداً ☐

ج. جيد ☐ د. سيء ☐

***القسم الرابع: ملاحظاتك***

**٥١- في رأيك ماهي أهم الخطوات اللازمة لزيادة التزام الأطباء بقائمة الأدوية الأساسية الفلسطينية؟**

.....

.....

.....

**٥٢- هل موقعك المهني يعطيك إمكانية الإسهام في قائمة الأدوية المحدثة القادمة، وكيف؟**

.....

.....

.....

**٥٣- اكتب اي شيء لم يتم تغطيته في هذا الاستبيان وتشعر أنه مهم.**

.....

.....

.....

***القسم الخامس: البيانات الشخصية***

**٥٤- العمر.....**

**٥٥- الجنس.....**

**٥٦- موقع العمل**

أ. اداري ☐ ب. ممارس عام ☐ ج. اخصائي ☐

**٥٧- إذا أخصائي، ماهو تخصصك:**

أ. نساء وولادة ☐ ب.أطفال ☐ ج. أسنان ☐

د. أمراض جلدية ☐ ه. عيون ☐ و. أخرى (حدد) ☐

.....

**٥٨- اذكر مؤهلاتك الجامعية**

.....

**٥٩- مكان التخرج**

.....

**٦٠- هل تضمن منهاجك التعليمي الأساسي أي تدريب حول قائمة الأدوية الأساسية؟**

أ. نعم ☐ ب. لا ☐

**٦١- منذ كم سنة تعمل في هذه العيادة؟**

.....

**٦٢- هل عملت في مؤسسة أخرى من قبل؟**

أ. نعم ☐ ب. لا ☐

اذا لا اذهب للسؤال (٦٤)

**٦٣- كم سنة عملت في المؤسسة الأخرى من قبل؟**

.....

**٦٤- هل كنت مشاركا في إعداد قائمة الأدوية الأساسية الفلسطينية؟**

أ. نعم ☐ ب. لا ☐

***شكراً جزيلاً لك***

**مستوى الرعاية الصحية الأولية:**

- **المستوى الأول:** عيادة بها عامل صحة مجتمعي و ممرض يعمل طوال الأسبوع, ويقوم بزيارة العيادة طبيب مرتين أسبوعياً.
- **المستوى الثاني:** يعمل في العيادة طبيب و ممرض أو ممرضة طوال الأسبوع.
- **المستوى الثالث:** يعمل في العيادة أطباء وممرضون طوال الأسبوع, وتقدم العيادة الخدمات المخبرية الأساسية و الألتراساوند و الأشعة و الأسنان و الطوارئ لمدة ١٢ ساعة يومياً.
- **المستوى الرابع:** يعمل في العيادة أطباء وممرضون طوال الأسبوع وبها كل الخدمات المخبرية, بالإضافة إلى الألتراساوند و الأشعة والطوارئ والاسعاف وتنظيم الأسرة لمدة ٢٤ ساعة يومياً.

Annex 11

## Questionnaire (English version)

## ***Section A: Facility Information***

**1. Primary health care level (the definition for the care levels at the end of the questionnaire)**

a. level one ☐ b. level two ☐

c. level three ☐ d. level four ☐

**2. Governorate:**

a. North ☐ b. Gaza ☐

c. Middle ☐ d. Khanyonis ☐

e. Rafah ☐

**3. Community served by the facility**

a. rural ☐ b. urban ☐

c. camp ☐ d. mixed ☐

**4. Who usually places drug orders for your facility?**

a. the facility staff /clinic itself ☐

b. the mother organization / central ☐

c. more than one part ☐

d. DK. ☐

**5. Essential Drug List (EDL) is regularly the base that is used for ordering drugs in this facility?**

a. to high extent ☐

b. to some extent ☐

c. DK. ☐

**6. How does your facility usually order the needed drugs from the central drug store?**

a. regularly/routinely, every_____weeks ☐

b. based on consumption ☐

c. others (specify) ☐_____

**7. Do you have regular evaluation system for drug management in your facility?**

a. yes, every _____ month ☐

b. no ☐ c. DK. ☐

**8. Has your facility ever carried out an evaluation of your prescribing practices?**

a. yes ☐ b. no ☐

c. DK. ☐

If yes mention the date of last evaluation: _____/_____/_____

**9. Did you receive feedback about your prescribing practices?**

a. yes, written feedback ☐ b. yes, verbal feedback ☐

c. not at all ☐

**10. if yes, what do you do with the feedback?**

a. keep it in the files, without discussion ☐

b. discuss it with the concerned people ☐

c. use it in developing improvement strategies ☐

**11. Have you experienced shortage of drugs in your facility?**

a. yes, memory based ☐ b. yes, record based ☐

c. no ☐(If no go to Q15)

**12. Which type of drugs tick the group of drugs where there is usually a shortage**

| Serial # | ✓ | Drug group | Serial # | ✓ | Drug group | Serial # | ✓ | Drug group |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1** | | Local anaesthetics | **10** | | Drugs affecting C.V.S | **19** | | Oxytocics &antioxytocics |
| **2** | | Non opioids analgesics, antipyretics, NSAIDs & antigout | **11** | | Dermatological drugs | **20** | | Psychotherapeutic drugs |
| **3** | | Antiallergics &drugs used in anaphylaxis | **12** | | Antiseptics &disinfectants | **21** | | Drugs acting on R.T.S |
| **4** | | Antidotes | **13** | | diuretics | **22** | | Solution correcting water. Electrolyte & acid base disturbances |
| **5** | | Anticonvulsant | **14** | | Gastrointestinal drugs | **23** | | Vitamins &minerals |
| **6** | | Anti infective drugs | **15** | | Hormones, other endocrine drugs & contraceptives | **24** | | Drugs affecting U.T.S |
| **7** | | Antimigraine drugs | **16** | | Immunologicals | **25** | | Nutritional supplements |
| **8** | | Antiparkinsonism drugs | **17** | | Muscle relaxants | **26** | | Antivertigo drugs |
| **9** | | Drugs affecting blood | **18** | | Opthalmological preparations | | | |

**13. At which particular time during the month does this shortage usually occur?**

a. first of the month ☐ b. middle of the month ☐

c. end of the month ☐

**14. Reasons for drugs shortage you have experienced**

a. inadequate drugs at the central store ☐

b. lack of monetary resources to buy the drugs ☐

c. management problems and bureaucracy ☐

d. inaccurate estimation of the needed drugs ☐

e. don't know ☐

f. others (specify): ☐

---

**15. Is there a computerized system for drug recording in this facility?**

a. yes ☐ b. no ☐

c. DK. ☐

**16. Do you have written protocols to regulate the drug prescription in your facility?**

a. yes ☐ b. no ☐

(If no go to Q21)

**17. What is the source of protocols you have**

a. national ☐ b. WHO ☐

c. ministry of health ☐ d. facility developed ☐

e. others

**18. Are those protocols in use at the facility?**

a. always ☐ b. sometimes ☐

c. never ☐

**19. If used, are they users' friendly?**

a. yes to high extant ☐ b. yes to some extent ☐

b. no ☐

**20. Availability of the protocols**

a. present on the wall of the room where services are provided ☐

b. present in the drawer ☐

c. present at the physician desk ☐

d. present on the keyboard ☐

e. present in other places (specify)_____ ☐

## ***Section B: Physicians Knowledge and Attitudes***

**21. What do essential drugs mean to you?**

a. drugs that satisfy the health care needs of the majority of the population and must be available in all times ☐

b. drugs that are second rate drugs for poor countries and rural areas only ☐

c. cheap medicines for poor people ☐

d. medicines for mild diseases, they do not work for severe diseases ☐

e. DK/ nothing ☐

**22. Do you agree with the following statements?**

| statement | yes | no |
|---|---|---|
| **Essential drugs save lives and reduce suffering** | | |
| **Essential drugs increase the credibility of a health system and promote patient participation** | | |
| **By focusing on essential drugs best health care value for public pharmaceutical expenditure can be assured** | | |

**23. Do you know the correct generic names for drugs you prescribe at this facility?**

a. yes all of them ☐ b. most of them ☐

c. some of them ☐ d. no ☐

**24. To what extent do you think it is important to know the generic names of drugs?**

a. to high extent ☐ b. to some extent ☐

c. not at all ☐

**25. Did you receive any training course on essential drug list?**

a. yes ☐ b. no ☐

If yes indicate the date of last training course ------/------/-------

**26. Are you interested to attend another training courses regarding essential drug**

a. yes ☐ b. no ☐

**27. Are you familiar with the concept of standard treatment guidelines?**

a. yes ☐ b. no ☐

(if no go to Q31)

**28. Do you have a copy of any of the standard treatment guidelines?**

a. yes ☐ b. no ☐

**29. Did these guidelines influence practices with regard to drug prescription?**

a. yes ☐ b. no ☐

c. DK. ☐

**30. If yes how did they influence practices?**

a. improve practice to high extent ☐

b. improve practice to some extent ☐

**31. Are the drugs in your facility labeled in Arabic language?**

a. always ☐ b. sometimes ☐

c. never ☐ d. I don't know ☐

## ***Section C: Physicians Practices***

**32. Do you have a copy of the essential drugs list and the Palestinian national formulary?**

a. yes ☐ b. no ☐

(If no go to Q34)

**33. Availability of the EDL or drug formulary**

a. present in the drawer ☐

b. present at the physician desk ☐

c. present on the keyboard ☐

d. present in other places ( specify)_____ ☐

**34. Do you usually assess health condition of the patient before prescribing drugs?**

a. regularly ☐ b. sometimes ☐

c. rarely ☐ d. not at all ☐

**35. Do you document each prescription in the client file regardless of the number of visits to the clinic?**

a. yes, ☐ b. no ☐

**36. Do you use the EDL in your drug prescription?**

a. currently using it ☐ b. used in the past ☐

c. not at all ☐ ( if no go to Q42)

**37. If currently using it**

a. regularly ☐ b. sometimes ☐

**38. Do you find that the use of EDL is easy?** ☐

a. yes ☐ b. no

**39. Have you noticed any problems in using of the EDL?**

a. yes, many ☐ b. yes, few ☐

c. not at all ☐ (If no go to Q41)

**40. What causes the main problems in using the EDL?**

Mark as many as applicable

a. insufficient knowledge ☐

b. insufficient training ☐

c. poor follow up from the facility ☐

d. high influence of patients on your prescription ☐

e. poor communication between drug policy makers and the physicians ☐

f. quantities of drugs from the list are not sufficient for the long-term treatment of patients ☐

g. guidelines for rationale drug use are not present ☐

h. the drugs in the EDL are not relevant for the diseases of the local population ☐

i. many needed drugs are not present in the EDL ☐

j. others (please specify) ☐

---

**41. Did you notice any improvement in your work after using EDL?**

a. yes clearly ☐ b. to some extant ☐

c. no ☐

**42. Do you prescribe drugs that are not on the EDL?**

a. yes, always ☐ b. yes, sometimes ☐

c. never ☐ (If no go to Q44)

**43. Write down the most common drugs being prescribed that are not on the EDL and the health problem that it intend to treat**

| Drug name | Health problem |
|---|---|
| | |
| | |
| | |

**44. Does your facility have special criteria for deciding to treat a patient with drugs not from the EDL?**

a. yes ☐ b. no ☐

If yes: what are the criteria

---

**45. Are the drugs on EDL always available in your health facility?**

a. exclusively ☐ b. partly ☐

c. no ☐ d. I don't know ☐

**46. Do you consider clients preference when prescribing drugs**

a. yes, to high extent ☐ b. yes, to some extent ☐

c. not at all ☐

**47. How strongly does patient request influence your prescribing practice**

a. Very strongly ☐ b. To some extant ☐

c. Poorly ☐ d. absolutely never ☐

**48. Do you have a private clinic?**

a. yes ☐ b. no ☐

(If no go to Q50)

**49. Do you prescribe drugs that on the EDL in your private clinic?**

a. yes always ☐ b. some times ☐

c. never ☐

If never mention the reasons

---

**50. What is your evaluation about physicians' compliance with the EDL?**

a. excellent ☐ b. very good ☐

c. good ☐ d. bad ☐

## ***Section D: Your Comments***

**51. in your opinion, what are the most important actions needed to increase physicians' compliance with the Palestinian EDL**

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---

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**52. Does your professional position give you the possibility of contributing in the next updating EDL and how?**

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---

**53. Write down anything not covered in this questionnaire which you feel is important**

---

---

---

---

## ***Section E: Personal Data***

**54. Age:** ----------

**55. Gender:** ----------

**56. Job position**

a. managerial ☐ b. general practitioner ☐

c. specialist ☐

**57. If specialist what is your specialty?**

a. obstetric/gynecologist specialist ☐

b. pediatrician ☐

c. dentist ☐

d. dermatologist ☐

e. ophthalmologist ☐

f. others:_____ ☐

**58. Mention your qualification**

_____

**59. Place of graduation**

_____

**60. Does your basic education curriculum incorporate training about EDL?**

a. yes ☐ b. no ☐

**61. For how many years do you work in this facility?**

_____

**62. Did you work in other organizations before?**

a. yes ☐ b. no ☐

If yes go to Q64

**63. For how many years did you work in the other organizations?**

_____

**64. Have you been involved in the preparation of the EDL?**

a. yes ☐ b. no ☐

**Thank you very much**

**Primary health care levels:**

- Primary health care, level one: the clinic that has a community health worker and a nurse reports to duty all week working days and is visited twice per week by a physician.
- Primary health care, level two: the physician and a full time nurse works in the clinic all weekdays.
- Primary health care, level three: physicians and nurses work all weekdays at the clinic provide basic lab services, ultrasound, X-ray, dental care and emergency for 12 hours daily.
- Primary health care, level four: the facility/clinic has a full time physicians, nurses, lab services, ultrasound, X-ray, family planning and emergency for 24 hours daily in addition to some specialty services.

Annex 12

## ***Key drugs chick list***

**Location: _____ PHC level_____**

**Community served by the facility_____ Governorae_____**

**Investigator: _____ Date: ___/____/_____**

| Serial # | Drug | Present | Not present |
|---|---|---|---|
| 1 | Captopril tablets | | |
| 2 | Glibenclamide tablets | | |
| 3 | Diclofenic sodium tablets | | |
| 4 | Mebendazole tablets | | |
| 5 | Ferrous sulphate + folic acid tablets | | |
| 6 | Oral Rehydration salts (O.R.S) | | |
| 7 | Samoxicillin or cephalexin capsule | | |
| 8 | Salbutamol syrup | | |
| 9 | Tetracycline eye ointment | | |
| 10 | Paracetamol syrup | | |
| 11 | Insulin | | |
| 12 | Betamethazone ointment | | |
| Palestinian Drug Formulary | | | |

Annex 13

***Prescribing indicator form***

**Location: _____ PHC level_____ Community served by the facility_____**

**Investigator: _____ Governorate_____ Date: ___/____/_____**

| Seq. # | Date of Rx | Age(year of birth) | # of drugs | # of generics | # on EDL | Diagnosis code |
|---|---|---|---|---|---|---|
| 1 | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **2** | | | | | | |
| **3** | | | | | | |
| **4** | | | | | | |
| **5** | | | | | | |
| **6** | | | | | | |
| **7** | | | | | | |
| **8** | | | | | | |
| **9** | | | | | | |
| **10** | | | | | | |
| **11** | | | | | | |
| **12** | | | | | | |
| **13** | | | | | | |
| **14** | | | | | | |
| **15** | | | | | | |
| **16** | | | | | | |
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| **18** | | | | | | |
| **19** | | | | | | |
| **20** | | | | | | |
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| **25** | | | | | | |
| **26** | | | | | | |
| **27** | | | | | | |
| **28** | | | | | | |
| **29** | | | | | | |
| **30** | | | | | | |
| **31** | | | | | | |
| **32** | | | | | | |
| **33** | | | | | | |
| **34** | | | | | | |
| **35** | | | | | | |
| **36** | | | | | | |
| **Total** | | | | | | |
| **Average** | | | | | | |
| **Percentage** | | | | **% of total drugs** | **% of total drugs** | |

Annex 14

# التوصيات لصناع القرار

- تحديث قائمة الأدوية الأساسية الفلسطينية الحالية , ثم متابعة التحديث كل عامين إلى ثلاث سنوات.
- طباعة وتوزيع قائمة الأدوية الأساسية الفلسطينية و دليل الدواء الفلسطيني على كل المراكز الصحية الحكومية وغير الحكومية والخاصة والمستشفيات.
- متابعة ومراقبة وجود دليل الدواء الفلسطيني في المراكز الصحية.
- تحسين الدورة الدوائية لتأمين وجود الأدوية الأساسية على مدار الشهر في صيدليات عيادات الرعاية الأولية.
- تعزيز التدريب أثناء الخدمة للأطباء والصيادلة ومساعدي الصيادلة على:
  - الأسماء العلمية وتعزيز القناعة لديهم باستخدامها و أهمية الالتزام بها.
  - قائمة الأدوية الأساسية الفلسطينية ودليل الدواء الفلسطيني وأهمية استخدامهما لترشيد استخدام الأدوية.
  - مؤشرات منظمة الصحة العالمية للاستخدام الرشيد للأدوية.
- إدخال هذا التدريب في مناهج كلية الطب والصيدلة وفي برامج تدريب الأطباء والصيادلة حديثي التخرج وأطباء الامتياز من قبل دائرة تنمية القوى البشرية.
- تشجيع التواصل بين صناع القرار والأطباء والصيادلة وإشراكهم في قرارات ترشيد استخدام الأدوية و الالتزام بقائمة الأدوية الأساسية الفلسطينية.
- التقويم المستمر والمتابعة والرقابة لممارسات الأطباء في وصف الأدوية, وتزويدهم بتغذية راجعة مكتوبة لضمان تحسين وصفهم للأدوية.
- إجراء دراسات مماثلة باستخدام مؤشرات منظمة الصحة العالمية للاستخدام الرشيد للأدوية تشمل كل مقدمي الخدمات الصحية في قطاع غزة والضفة الغربية للحصول على نتائج وطنية.

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# Annexes

# The Study Conceptual Framework