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AL-QUDS UNIVERSITY
SCHOOL OF PUBLIC HEALTH
القدس – فلسطين

Deanship of Graduate Studies
Al-Quds University

Co-payment Effect on Drug Rational Use and Cost Coverage at Governmental Primary Health Care in Gaza Governorates

By

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MPH Thesis

Jerusalem Palestine

November, 2008

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A Thesis Submitted In Partial Fulfillment Of Requirements For The Degree Of Master Of Public Health

Al- Quds University
2009 / 1430

Dedication

To my parents,

To My wife,

To My son,

To My brothers and sisters

For their patient, endless support and encouragement

I dedicate this study

Declaration

I certify that all this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed: ……..

Khalid M. Abu Saman

Date: Novembar-2008

Acknowledgements

The researcher would like to acknowledge all the teaching staff at School Of Public Health, Al-Quds University, for their effort and encouragement throughout this study.

The researcher would like to acknowledge his supervisor Dr. Yehia Abed for his unlimited encouragement, and who was fully supportive and generous in his assistance in preparing this study. My special thanks go to Dr. Bassam Abu Hammed for his advices and encouragement throughout this study.

From the Primary Health Care Administration, the researcher deep thanks go to Dr. Ali Queder , Dr. Fouad El- Essawy, Dr. Faek Hassan for their facilities, encouragement and support. The researcher would like to acknowledge all governorates pharmacies managers in Primary Health Care, all pharmacists, and pharmacist assistant in clinics who participated in this study and make it possible.

The researcher gratitude also goes for all his friends and colleagues, for their friendly support.

Finally but importantly, researcher respects and love go to his source of supportive power, parents, brothers, sisters, father in law, mother in law, wife *Nour*, and his son *Yazan* for their continuous love, encouragement and support during the study difficult time.

Abstract

Drug expenditure represents large amount of health care spending in most countries. Large spending on drugs causes loss of resources which could be deployed to other health care services. Also, the irrational use of drugs can lead to wasting of resources and health hazards as well. This study aimed to study the effect of co-payment on patients' drugs utilization, and also to study drugs cost coverage at the governmental PHC sector in Gaza Strip.

The researcher used a descriptive, analytical, cross sectional design. A retrospective multistage sample of 1620 prescriptions was taken from randomly selected 15 PHC clinics from the different geographical areas and the different PHC levels. 108 prescriptions from each selected clinic were taken. Additionally, the researcher reviewed the pharmacy registry at the targeted clinics to ascertain drug cost coverage and drugs availability.

The study showed that, there are drugs exploitation particularly for the exempted patients, where the average number of drugs prescribed per prescription was 2.9 (4.5 for exempted, 2.2 for under 3 years and 2 for over 3 year); the average percent of prescriptions including antibiotics per clinic was 64% (79.1% for exempted, 66.3% for under 3 years and 47% for over 3 years). The availability of key drugs was 82.8%. The percent of attendants treated with drugs is 75.4% (88.2% for under 3 year, and 70% for over 3 year visitors). The average drug cost covered by drug co-payment was 84%, more in rural areas than urban ones and the average prescription cost per clinic was 4.9 NIS (1.4US$) more in urban than rural areas.

The study concluded that the introduction or increasing co-payment will decrease the quantity of the consumed drugs; helping in drug rational use. The study recommends reviewing the current exemption and co-payment system. Additionally, interventions to increase patient and physician knowledge about economical and healthy adverse effect for irrational drug use are needed.

ملخص الدراسة

تأثير التعرفة الدوائية على ترشيد استخدام وتغطية نفقات الدواء في مراكز الرعاية الأولية الحكومية بمحافظات غزة

تمثل النفقات على الأدوية جزءاً كبيرا من حجم النفقات على القطاع الصحي، و الإنفاق الكبير على الأدوية يسبب قلة في حجم النفقات على الخدمات الصحية الأخرى. إلى جانب أن الاستخدام غير الرشيد للأدوية يسبب إهدار للموارد. تهدف هذه الدراسة إلى معرفة مدى تأثير الرسوم الدوائية على نمط استخدام الأدوية و مساهمتها في تغطية النفقات على الأدوية

أهداف الدراسة الخاصة

- معرفة مدى نسبة تغطية إيرادات التعرفة الدوائية لتكلفة الأدوية المستخدمة بمراكز الرعاية الأولية الحكومية
- معرفة مدى تأثير الإعفاء من الرسوم و كذلك اختلاف قيمة التعرفة الدوائية في نمط استخدام الدواء
- معرفة مدى تأثير التعرفة الدوائية في توفر الأدوية بمراكز الرعاية الأولية الحكومية
- توضيح العلاقة بين مستوى المركز الصحي ونسبة تغطية التعرفة الدوائية لتكاليف الأدوية المستخدمة بالمركز
- وضع توصيات تساعد في تحسين نظام الإعفاء و نظام التعرفة الدوائية في تكاليف الأدوية المستخدمة بالرعاية الأولية بوزارة الصحة

محيط الدراسة و أدواتها

. بناء على توصيات منظمة الصحة العالمية لقد تم إجراء هذه الدراسة في ١٥ مركز من مراكز الرعاية الأولية تم اختيارهم عشوائيا من مختلف محافظات غزة ومختلف المستويات. إن هذه الدراسة دراسة وصفية مقطعية، وقد أستخدم في الدراسة ١٦٢٠ وصفة طبية تمثل جميع أنواع المرضى حسب قيمة مساهمتهم بالتعرفة الدوائية، بواقع ١٠٨ وصفة (٣٦ للمعافين من الرسوم، ٣٦ للأطفال أقل من ثلاث سنوات، ٣٦ للمرضى أكبر من ثلاث سنوات) من كل عيادة وأخذت العينة من أوقات مختلفة من الأشهر الستة الأولى للعام ٢٠٠٨.بينما تم دراسة جميع الوصفات المصروفة خلال نفس الأشهر لمعرفة حجم تكلفة الأدوية المصروفة ومدى تغطية العائدات من الرسوم الدوائية لهذه التكلفة. وكذلك تم الاستفادة من البيانات المتوفرة بالصيدلية من سجلات التسجيل اليومي و الشهري للحصول على المعلومات اللازمة و تم تفريغ المعلومات في جداول خاصة ثم تمت دراستها حسب المؤشرات المستخدمة في الدراسة.

تحليل البيانات

تم استخدام البرنامج الإحصائي SPSS لتحليل المعلومات، و تم اختبار النتائج باستخدام كل من Cross tabulation لتوضيح الفروق بين مختلف المتغيرات و كذلك تم استخدام ANOVA-Test و Regression testلإيجاد الفروق بين بعض المتغيرات.

نتائج الدراسة

وقد أظهرت النتائج أن متوسط عدد الأدوية الموصوفة في الوصفة الدوائية الواحدة هو ٢,٩ (٤,٥ للمعافين من الرسوم، ٢,٢ للمرضى أقل من ثلاث سنوات و ٢ للمرضى من عمر ٣ سنوات فأكثر)، بينما كان متوسط عدد الوصفات التي احتوت على مضاد حيوي هو ٦٤% (٧٩,١% للمعافين من الرسوم، ٦٦,٣% للمرضى أقل من ثلاث سنوات و٤٧% للمرضى من عمر ٣ سنوات فأكثر). كان توفر الأدوية الأساسية بنسبة ٨٢%، بينما كانت نسبة الزائرون التي تمت معالجتهم بالأدوية ٧٥,٤% (٨٨,٢% للمرضى تحت سن ثلاث سنوات و ٧٠% للمرضى من عمر ٣ سنوات فأكثر). ومثلت متوسط إيرادات التعرفة الدوائية ما قيمته ٨٢% من تكلفة الأدوية المصروفة و كانت نسبة التغطية في المناطق الريفية أكثر منها في المدينة، وأوضحت الدراسة أن متوسط تكلفة الأدوية المكتوبة في الوصفة الطبية هو ١,٤ دولار في العيادة الواحدة وكانت في المدينة أكثر منها في المناطق الريفية. .

توصيات الدراسة

- تعزيز البرامج التدريبية والتعليمية للأطباء و التأكيد على التزامهم بالبرتوكولات العلاجية سوف يساعد في ترشيد استهلاك الدواء
- زيادة الوعي لدى الجمهور في الأضرار الصحية و الاقتصادية للاستخدام المفرط للدواء
- اجراء بعض التعديلات على نظام ال التعرفة الدوائية و نظام الاعفاء من هذه الرسوم للحد من استغلال الدواء
- تشكيل لجان صحية واجتماعية لتحديد ألية الاعفاء من الرسوم ومدة الاعفاء
- اضافة أي قيمة مهما كانت ضئيلة من التعرفة الدوائية على المريض سوف يزيد من احساسه بالمسؤولية اتجاه الدواء المستخدم
- تحسين نظام المشتريات بوزارة الصحة بالحصول على أقل الأسعار و الأكثر جودة سوف يساعد في تقليل النفقات

توصيات بحثية

- إجراء دراسة لمقارنة جودة الخدمة المقدمة بين مقدمي الخدمة الصحية بأنظمة رسوم دوائية مختلفة مثل وزارة الصحة ووكالة الغوث و المنظمات الأهلية.
- إجراء دراسة لمعرفة مستوى رضا المرضى عن حجم الرسوم الدوائية وتأثير هذه الرسوم في الحصول على الدواء عند الحاجة
- عمل دراسة لتقييم نظام المشتريات بوزارة الصحة الفلسطينية .

Contents

List of abbreviations

BI	Bamako Initiative
CCPA	Coalition for community pharmacy action
CMH	Commission on Macroeconomics and Health
DAP	Action Program of essential Drugs
EDL	Essential Drug list
GDP	Gross Domestic Product
GHC	Group Health Cooperative
GHI	Governmental Health Insurance
GNP	Gross National Product
GS	Gaza Strip
HMO	Health Maintenance Organization
ICIUM	International Conferences on Improving Use of Medicines
JD	Jordanian Dinnar
MOF	Ministry of Finance
MOH	Ministry of Health
NGO's	Non Governmental Organizations
NIS	New Israeli shekel
OECD	Organization for Economic Co-operation and Development
PCBS	Palestinian Central Bureau of Statistics
PHC	Primary Health Care
PNA	Palestinian National Authority
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNCTAD	United Nations Conference on Trade And Development
UNICEF	United Nations International Children's Emergency Fund
UNRWA	United Nations Relief and Works Agency
USD	United States Dollar
WB	West Bank
WHO	World Health Organization

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Chapter (1)

Introduction

Chapter 1: Introduction

1.1 Research background

Since Alma Ata Declaration, in most countries there is no strategy to improve the health of population without focus on primary health care as a vital part. Many slogans emanate from World Health Organization (WHO) during various committees, conferences, and declarations was talking about right to health and health for all, which contain a serious of elements such as availability, acceptability, accessibility and quality of health goods, services and programs; which include the necessary of essential medicines to be available within Primary Health Care (PHC) in adequate amounts at all times, in the appropriate dosage forms and at price that the individual and the community can afford (Declaration of Alma Ata 1978) .

Drugs and money are inextricably entwined Economic factors will affect on everyone who uses, prescribes and affect on way in which drug used, where the drug consumer decisions are influenced by their economical status, by their perceptions of a drug's value and by other factors (ICIUM, 1997).

Drugs availability at primary health care is a tangible indicator to good health system, and necessary to meet client expectation. Despite globalization, increase the pharmaceutical production in many countries, and new industrial technology, the rational use and availability of drugs remain a problem for much of the world's population. These problems drive from irrational drugs describer, dispensing, behavior of health system, self-medication, financial and budgetary constraints. Rational drug use by dispenser, distributor, and public is crucial to reduce morbidity and mortality from both communicable and noncommunicable diseases, as will as to contain drugs expenditure (WHO, 2000[a]).

Most countries face large increases in expenditures on pharmaceuticals. Expenditures on drugs account for between 7% and 22% of spending on healthcare in Organization for Economic Co-operation and Development (OECD) countries (Aaserud, Dahlgren, Kösters, Oxman, Ramsay, and Sturm. 2006). Large drugs spending will cause less money for other health care services. There is also irrational use of drugs represented by misuse, overuse, and underuse of appropriate drugs, which can lead to wasted resources and health hazards. In many developing countries, including the Arab countries the drugs availability and access problems related to lack of fund. Therefore, there is a pressure to ensure better use of drugs and to control the costs of drugs, but without decreasing health benefits (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm, 2008). Simultaneously, growing expenditures on prescription medications represent a major challenge to public policies (Ess, Schneeweiss, Szucs, 2003). Increasing expenditures on drugs puts pressure on policy makers to control drug costs and ensure that this money is well spent.

Such issues will be more sensitive to about a million and a half citizens living in the Gaza Strip under real health and economic crisis, about 85% of households live under the poverty line, and 65% unemployed (UN, 2007). Additionally to zero available for some essential drugs list and medical supply, quantity shortage of others items in governmental primary health care, despite the steady increase in demand for drugs and medical supplies due to the huge number of casualties and martyrs (UN, 2007).

These issues also are worrying for the Palestinian Government in general and for the Ministry of Health (MOH) in particular. Palestinian MOH has scare resources to fund its needs, as there are increase from people to seek treatment at governmental health facilities due to deterioration of the economical situation of the Palestinian people, where health care services are free (through insurance for workers and intifada wounded). Palestinian National Authority responds to all WHO recommendation to improve health situation in

Palestine through developing of essential drugs list, and use of drugs co-payment as ways to achieve rational drug use and reduce drug expenditure.

The health expenditure per capita varies between and within different countries, the share of health expenditure from total of World Gross Domestic Product (GDP) increased from 3% in 1948 to over 8% in 2004, The world spent US$ 3.8 trillion on health in 2001(WHO, 2004). The bad economic performance in poor countries force the government to cut real per capita budget for health and the public health policy adopting new strategies including cost containment and cost recovery strategies, by using indiscriminate fees. As a result many household especially poor portions have facing large health expenditure relative to their income, difficulties in paying for necessary health services, which push them into poverty, with catastrophic consequences. In most poor and middle-income countries out-of-pocket spending represent 50% of total health expenditure (WHO, 2004).

Significant portion of world population denied the accessibility to needed health services because people can't afford to pay, or because government cannot afford to provide them (WHO, Website. 2008[a]), in many of the poorest countries, the level of spending is still insufficient to provide essential health services. Huge number of donors and international agencies work to help these countries to ensure adequate and equitable resource mobilizing for health, therefore the health policy focus on how to ensure adequate and sustainable resource mobilizing for health. (WHO, Website. 2008[a]).

The 58th World Health Assembly (2005), was related to strengthening the development of health financing system. The assembly adopted the resolution 58.33 on "Sustainable health financing, universal coverage and social health insurance". In it prepayment and risk sharing mechanism are necessary to included in the health financing system to avoid catastrophic health-care expenditure, and to achieve universal coverage (WHO, 2005). According to WHO *universal coverage* is defined as access to key promotive, preventive,

curative and rehabilitative health interventions for all at an affordable cost , which consistent with WHO's concepts of health for all and all for health (WHO, 2005). The principle of *financial-risk protection* ensures that the cost of care does not put people at risk of financial catastrophe. A related objective of health-financing policy is *equity in financing*: households contribute to the health system on the basis of ability to pay (WHO, 2005).

According to the Palestinian Ministry of Finance (MOF) estimate, in 2005 there is deterioration of the Palestinian health care due to further steep in all Palestinian economic indicator in comparison with 2000, with effect on health finance source. The Figures confirm the existence of the problem in financing the health sector where the total ministry expenditure in 2005 was 139,584,400 USD and 22% from it used for drugs, medical supplies, and vaccine (MOH, 2006). The same percentages reported during the years 2004 and 2003 (23% and 25% respectively). MOF is the main source of funding health sector, depending on revenue from taxation, health insurance, co-payment and other governmental revenues. The MOH revenues decrease from 39,315,769USD in 2004 to 35,289,333USD in 2005, 85% out of which from the health insurance which constituted 25% of the total MOH running budget in Palestine and 15% from co-payment which constituted 4% of the total MOH running budget. The consequential decrease in co-payment revenue science 2000 while membership of the governmental health insurance (GHI) is expanding as result to deteriorated people economic situation during Intifada and irrational use of drugs especially at PHC clinic in Gaza Strip where it consume 2,397,214 USD, antibiotics cost constituted 33% of the total cost of the dispensed medication in the PHC, the average cost per prescription in Gaza governorate was 5.9 NIS which related to number of medication per prescription (MOH, 2006), all of these reasons increase the complexity of availability ,accessibility and fund of medication at governmental PHC, and patient unsutisfaction.

Improving the use of drugs can improve health outcomes and, in many circumstances, can result in large savings without adverse health consequences. On the other hand, inappropriate cost-containment strategies can have unintended effects on health and costs.

This study is the first one to be done in the Gaza Strip to study the drugs co-payment effect on drugs cost coverage and pharmaceutical utilization, so it will be a base for decision maker to review the drugs financing and exemption system development, and also for further research regarding drugs finance policy.

1.2Research problem

Despite all the efforts made by the Palestinian National Authority (PNA), the problem of financing and delivery of drugs is still a real problem. The figures show the decline of expenditure on health in primary health care as well as lower revenue from the health services across time, while the demand for the service is increasing. Furthermore, the excessive use of drugs, which has lead to serious waste of drugs and so financial, overloads. The co-payment is one way used by government to overcome irrational use of drugs; it is considered an important source of financing for health in the country of scare resources such as Palestine.

The study could help in illustrating the drugs co-payment importance in health finance, drugs rational use, and exemption system development at governmental PHC.

1.3Justification of the study

There is a global interest to issues of excessive use of medication, polypharmacy, drugs financing, and primary health care services development. The World Health Organization (WHO) raised these issues in conferences, and committees showing the importance of the subject. The Palestinian Ministry of Health used several ways to overcome the irrational drugs use, including workshops, public awareness, describer directing and development of the national essential drug list, as well as used several means to increase funding for health, as coordination with international donor and agencies, but the co-payment was the procedure used to achieve both purposes. While the Government was considering drugs co-payment from this perspective, from other view, many of the public have seen it as a form of exploitation of people suffering from poverty. Uncontrolled exemption system especially during Intifada increases the problem consequences. This study will explain the extent of drugs co-payment covers the cost of drugs consumed by PHC centers, this may help decision makerS in thinking about co-payment as drugs financing at PHC, which may also help in dealing with drug shortage in governmental PHC centers. Palestine like others developing countries, face irrational drug use problem due to prescribing pattern as one reason (WHO, 2000). The researcher will show the role of co-payment as a factor in overuse drugs control, this thing will help in reviewing the exemption system for certain population. The study will also try to explain, if co-payment amount change among different ages (under and over 3 years) has an effect on prescription pattern, the thing which may help in reviewing and developing of overall drugs co-payment system overall at governmental PHC. The researcher hopes that the result of the research may help in organizing the supply and dispensing of drugs, at primary health care, and that the research be the beginning of a full interest in all issues related to drugs in Palestinian Ministry of Health.

1.4 Objectives

1.4.1 General objective:

To study the effect of co-payment on patients drug service utilization and drugs cost coverage at governmental PHC sector in the Gaza Strip .

1.4.2 Specific objectives:

- To calculate the percent of PHC dispensed drugs cost covered by co-payment.
- To compare between dispensed drugs per prescription at co-payment paid and exemption prescriptions.
- To explore the effect of co-payment amount on drugs utilization.
- To explore the relationship between the level of PHC center and drug co-payment revenue to coverage drugs cost.
- To examine the co-payment effect on drug availability in PHC centers.
- To develop recommendations to improve the drugs co-payment including exemption system for some special cases.

1.4.3 Research questions

- Is there inverse relationship between co-payment paying and number of medicine written in prescription?
- Is there a negative relation between co-payment paying and antibiotics prescribing among prescriptions?
- Does the co-payment amount has effect on drugs dispensing at PHC?
- Dose the number of exempted prescriptions in clinic has effect on drug availability in that clinic?

1.5Context of the study

The demographic, socioeconomic, and political situations may force us to provide health services by specific way in suit with these situations. The pharmaceutical service is one of the first health services that are affected by this situation.

The coming paragraph will present some of the information related to health and could effect the pharmaceutical services regarding the demographical, socioeconomic, political in the Gaza Strip in Palestine , where the study was conducted.

1.5.1Demographic context

The entire area of historical Palestine is about 27,000 square Km, constitutes the southwestern part Belad El-Sham which is eastern part of the Arab world, palatine region stretches from Ras Al-Nakoura in the north to Rafah in the south. Palestine boarded by Lebanon in the north, the Gulf of Aqaba in the south, Syria and Jordan in the east and by Egypt and Mediterranean Sea in the west (Annex 1). Premier strategic location of Palestine as it cross road three continents, Asia, Africa, and Europe making it coveted place to many of the rapists over the centuries. Palestine was placed under British mandate, ended by Israel establishment in 1948 in implementing the Balfour Declaration in 1917 to providing a homeland for Jews, the result was uprooted most of Palestinian from their cities, towns, and villages and migrate to West bank, Gaza strip, Jordan, Lebanon, Syria, and others countries (Abu-Lughod, 1971). Now Palestine is limited to two geographically separated area, Gaza Strip (GS), and West Bank, total both area is 6020 sq, km (WB), which represents 22% of historical Palestine area (MOH, 2006).

Gaza Strip is a narrow land, located on the south of Palestine on the coast of Mediterranean sea (Annex 2); it has a 51 kilometers border with Israel, and an 11 km border with Egypt (Wikipedia). Gaza Strip is high crowded area, where approximately 1.5 million live in 365

sq. km, three-quarters them are registered refugees, estimated density is 4,000 people per square kilometer, the population is concentrated in 7 town, 10 villages, 8camps (PCBS, 2007). The density is increase refugee camps, for example over 80,000 refugees live in Beach camp whose area is less than one square kilometer (UNRWA, 2006). High density is reflected in schools, clinics, hospital. GS is classified into five governorates, North of Gaza, Gaza city, Mid-Zone, Khan-younis and Rafah.

The population under 15 year old percentage in Gaza Strip is 49% and 2.5%of age 65 years and more (MOH, 2006). The researcher assumes that all the previous demographical situation and political sequences could have effect on health care system plan and consumer behaviors.

1.5.2Socio-economic situation

Israeli closure policies against GS people among different times has serious negative effect on Palestinian economic situation, in 1998 there are economic recovery when Israel reduce security procedures on the movement of Palestinian goods and labor into Israel, which ended by al-Aqsa Intifada in 2000, which leading to many of Palestinian workers have lost their work in Israel and sharp down turn in wage income from Israel (World Bank, 2003).

According to World Bank estimation, the following results was recorded by comparison economic situation in Palestine in 2000 and 2005: the Palestinian (GNP) decreased from 4,454 million USD (1,806USD per capita) to 4,169 (1,039USD per capita), (GDP) also decreased from 4,517million USD (1,496USD per capita) to 3,832 (955USD per capita, number of worker in Israel decrease from 135,000 to 36000, workers in Palestine also decreased from 453,000 to 135,000, increase of unemployment rate from 12% to 32% (MOH, 2006).

After Palestinian legislative election in 2006, all funds to the Palestinian government from Israel, the United States, Canada, and the European Union have frozen, the severity of closure increase after political unrest in June,2007, Causing the closure of most factories to the lack of raw materials, loss of farmers by preventing the export of their crops. Prosecute deteriorating economic situation on the Gaza Strip led to the rise in unemployment rate to 65%, and 85% of households are living under the poverty line (UNCTAD, 2007).

Overall bad economy impact negatively on the size of the government revenues from taxes, which are an important source of financing for health and increased adoption by the Government to donors, as well as the impact on the ability of patients to obtain medicine and make them more dependent on the Ministry of Health in the health service

1.5.3The health care context

The Palestinian's overall health is relatively good compared to several countries of the region. Major outbreaks of diseases prevented and health indicators also improved by effective health services (WHO, 2006). Life expectancy in 2005 was 72 years for male and 73 years for female, infant mortality rates were 20 per 1000 live births (MOH, 2006). The main cause of death among adults is Noncommunicable diseases, in particular cardiovascular diseases. A study carried out by Johns Hopkins University and Al-Quds University for CARE International in late 2002 revealed a bad nutritional situation among the Palestinian population. The study found that 17.5% of children aged 6–59 months suffered from chronic malnutrition and 53% of women in reproductive age and 44% of children were found to be anemic (Al Quds University,2002). Iron-deficiency anemia represents the major nutritional problem; followed by subclinical vitamin A deficiency, rickets and iodine deficiency. Level of Chronic malnutrition among children under five years appears to be slowly increasing (WHO, 2006). The stressful life condition, Israel

violence against Palestinians lead to prevalence of common mental disorders, in 2003 was reported to be 40.3% among the 59% of the population whom directly exposed to violence, compared to 12.6% among the 31% of the population whom not exposure suffering from mental disorders(WHO, 2006).

Health care system in Palestine consist from four main health providers; MOH, United Nations for Relief and Working Agency for Palestinian Refugees (UNRWA), Non-Governmental Organizations (NGO's), and the private profit sector(Abed, 2007), MOH has regulatory responsibility for the health system, UNRWA serving 1,635,000 refugees as primary services. There is fragmentation of health service delivery due to absence unified policy among the multi health providers (WHO, 2006). There are quantitative developing of health facility network in Palestine; by end of 2005 there were 654 PHC center in Palestine (129 in GS and 525 in WB); 416 owned to MOH (56 in GS and 360 in WB) The number of PHC centers per 10,000 person was 1.7 while it was 1.9 in 2000 (MOH, 2006). In Gaza Strip MOH- PHC centers classified to level II, III, IV; 30 centers are level II, 19 level III, 7 level IV, the number of MOH- PHC per10,000 person was 0.4 in GS (MOH, 2006).

Now health conditions in Gaza Strip faces new challenges exacerbated by the intensified Israeli closure after Israeli declaration of Gaza Strip as a "hostile entity".

1.5.4Health sector financing

There are four main primary sources of health care funding in Palestine; MOF (from revenues of taxation, health insurance, co-payment), the seconded source is international donors and agencies including UNRWA, third source is private for profit investment. And the last one is household expenditures in form of out of pocket payment (Abed, 2007), in the year 2002 the health sector financed by donors (48%), households (38%) (Including

health insurance premiums, co-payments and fees in public and private facilities), and MOF (15%) (Abed, 2007; WHO, 2006[a]).

MOH was responsible for 47% (represent nearly half of it for salaries) of total health expenditure, UNRWA (10%), NGO,s (25%), and (17%) the private for profit sector, with take in consideration excluded of the private for profit sector, 29% of health expenditure was directed toward PHC, while 49% toward the hospital sector (Abed, 2007)

The Palestinian per capita health expenditure is higher than regional countries (WHO, 2006), it was 94 USD in 2002, which is lower than 1996 where it was122USD, the per capita health expenditure still decreased due to decrease of MOH budget, and Israeli closures where figure show MOH per capita expenditure was 41.5USD in 2005 (MOH,2006). Approximately 25% of MOH budget expensed on drugs, medical supplies and vaccine, in 2003 estimated 27% of MOH budget used for this purpose (15.5WB and 11.5 GS), of these 18% for hospital and 9% for PHC(Abed,2007).

In 2004 it was reported that 76% of Palestinian's people covered by health insurance, more than 50% had government coverage, and about 30% were covered by UNRWA. The remaining percent covered by social security or military health-insurance schemes (WHO, 2006). It is noteworthy that the UNRWA provide free of charge health services to refugees.

Revenue from health insurance (85%) and co-payment (15%), represent in 2005 about 29% of the total MOH budget (4% from co-payment), MOH revenue decreased in 2005 than in 2004, the remarked decrease was in Co-payment revenue where it was represent 22% of total revenue (MOH,2006).

1.5.5Drugs co-payment and exemption

According to the Palestinian legislation on governmental health insurance system, to take advantage of pharmaceutical services in governmental PHC the patient paid 3 New Israeli Shekel (NIS) versus each item for adult over 3 years old, and one (NIS) per each item for child under 3 years old. But the ministry did not want to be co-payment reasons to obstructed access to medication to the patient who needs. The law exemption some activities from drugs co-payment in governmental PHC as, vaccine, treating of communicable diseases like tuberculosis, prophylactic drugs to avoid public threaten by specific outbreak, Intifada wounded; patient of diagnosed cancer, renal failure, Thalasemia, Hemophilia, dangerous pregnancy, and mother and child centers services. Addition to that, the public health legislation law empowers health minister to exempt cases which he deems are unable to pay drugs co-payment (PNA, 2004).

Exemption license and low amount for child are a mercy from law for those patients, but it will be bad if it exploited by exaggerated way from patient or describer. Exemption license also consider as kind of compliance to WHO recommendation to avoid health expenditure catastrophic and achieve universal coverage (WHO, 2005).

1.6 Operational definition of terms

Caps

Maximum number of prescriptions or drugs that are reimbursed (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm, 2008)).

Ceilings

Patients pay the full price or part of the cost up to a ceiling, after which drugs are free or available at reduced cost (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008)

Coinsurance

Patients pay a percent of the price (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm, 2008).

Co-payment

Medical dictionary define the co-payment as: A payment made by an individual who has health insurance, usually at the time a service is received, to offset some of the cost of care. Co-payment size may vary depending on the service (Medical dictionary).

Costs:

The products of price (or unit costs) and the number of units consumed (or service Intensity) (Egyptian MOH, 1997).

Cost-effectiveness analysis:

The technique used for identifying which health interventions achieve the greatest level of health impact per unit of investment (Egyptian MOH,1997).

Drugs price elasticity

The price elasticity for a drug is the percentage change in its consumption related to one percentage change in the price or charge that patients pay for that drug (Johnston, 1991).

Economic inefficiency:

Economic inefficiency occurs when the hospital is not using the least expensive combination of inputs for a given output (Egyptian MOH, 1997).

Essential drugs

According to WHO definitions; Essential medicines are those that satisfy the priority health care needs of the population (WHO, 1993).

Essential drugs list

Essential drugs list, are essential medicines which are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price the individual and the community can afford (WHO, 2001[a)].

Financial-risk protection

Ensures that the cost of care does not put people at risk of financial catastrophe (WHO Website, 2008[a]).

Fixed co-payments

Patients pay a fixed amount per prescription or drug (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm, 2008).

Health economics

The study of how scarce resources are allocated among alternative uses for the care of sickness and the promotion, maintenance and improvement of health, including the study of how healthcare and health-related services, their costs and benefits, and health itself are distributed among individuals and groups in society (Peter's,2006)

Key drugs

A short list of specific drugs (less than 15) those are essential to treat common health problems in specific countries (WHO, 1993).

Physician

The word physician always applies to a person who practices some type of human biological medicine. Physicians are traditionally considered to be members of a learned profession, because of the extensive training requirements and also because of the occupation's special ethical and legal duties (Wikipedia, 2008)

Prescription

A physician's order for the preparation and administration of a drug or device for a patient contains the names and quantities of the ingredients; the subscription or directions for compounding the drug (Medical dictionary).

Rational drugs use

According to WHO definition of rational drugs use it mean; careful selection of a limited range of essential medicines results in a higher quality of care, better management of medicines, including improved quality of prescribed medicines and a more cost-effective use of available health resources (WHO, 1993).

Tier co-payments

Differential co-payments usually assigned to generic and brand drugs (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm, 2008).

Universal drugs coverage

Universal coverage defined as access to key promotive, preventive, curative, and rehabilitative health interventions for all at an affordable cost (WHO Website, 2008[a]).

Chapter (2)

Literature review

Chapter 2: Literature Review

In this chapter the researcher, reviews the critical points of all knowledge on a drugs co-payment as resource for drugs financing, and as way to promote rational drugs use through reviewed co-payment concept, ways to promote rational drug use, ways of drug financing. Then reviews the ways of measurement drug use and Who drug use indicator. Finally, reviews relevant studies and experience of other countries in this field.

2.1Conceptual Framework

"Conceptual frameworks are a type of intermediate theory that has the potential to connect to all aspects of inquiry (e.g., problem definition, purpose, literature review, methodology, data collection, and analysis). Conceptual frameworks act like maps that give coherence to empirical inquiry" (Wikipedia, 2008). Framework can use as the basis for measurement of the performance of the public health system as a whole or of a specific public health organization. The developed model will allow public health researchers, practitioners, and policymakers to more effectively examine the relationship between the practice of public health and population outcomes and will contribute to the development of a science base for the public health system (Arden, Michele, and Bernard. 2001).

After the reviewing, the status of the pharmaceutical service in addition to the economic situation of the place of study, the researcher was able to sketch map-showing lines of the interdependence of the factors that affect the co-payment role in the provision of pharmaceutical service.

There are various factors related and affecting the co-payment role on rational drug use and drug cost coverage. All these factors are developed by researcher in general framework

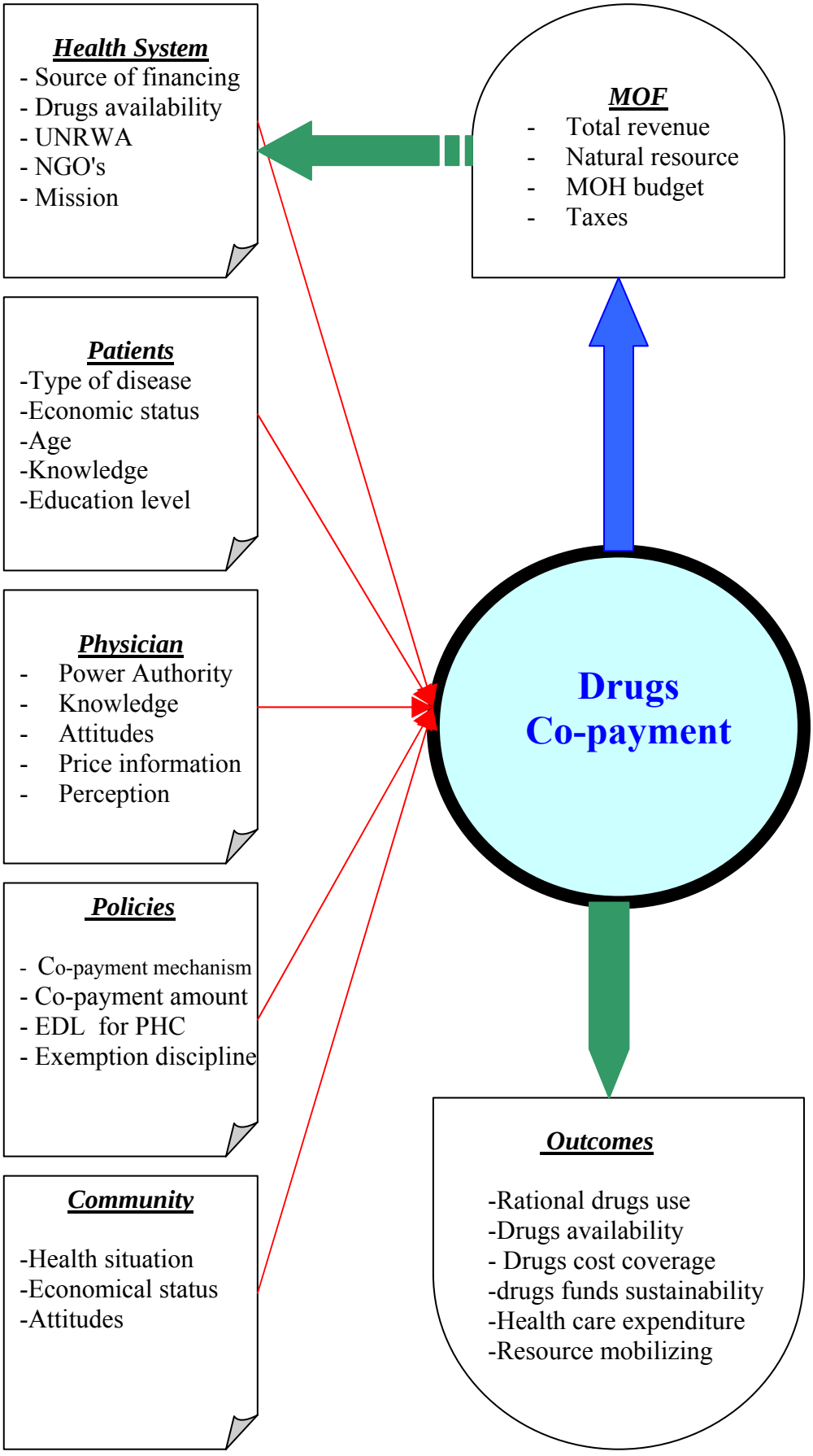
(Fig 2.1). According to developed framework the factors can be divided into three parts; first part has direct effects on co-payment role and includes five categories.

First category, which is factors related to health system including four main branches. Firstly, source of drug financing, which measure the relationships between drug financing role and co-payment effect in cost coverage. Secondly, drug availability; study the relation from two directions to measure the mutual relation between drug availability and co-payment amount. Thirdly, presence of UNRWA and NGO's PHC centers, is there effects of free drug service in these agencies on drug services in governmental PHC centers.

Fourthly, mission of health system, is the mission of health system will affect co-payment amount?

Second category; includes five factors related to patients and effect on drug co-payment. Firstly, patient's disease, if the patient has chronic or non chronic disease will effect on co-payment amount, drug demand, and price elasticity? Secondly, economic status, measure the relation between economic status of patient and his demand on private and public drug services, and role of that on co-payment on governmental PHC. Could the co-payment be obstacle on drug affordability on governmental PHC? Thirdly, age of patient; is the co-payment difference for different ages will affect on drug rational use? Fourthly, knowledge of patient, measure the relation between drug co-payment and patient knowledge about drug co-payment and danger of drugs overuse. Finally, educational level and perception, measure if there is relation between patient's education level and his convince by drug co-payment and drug value. Third category, include four physician's related factors on drug co-payment. Firstly, power authority, this factor can measure the physician effect on co-payment if he given the authority to exempt some patients from drug co-payment. Secondly, physician knowledge is there relation between physician knowledge about drug effect, cost, side effect, and co-payment.

(Fig 2.1) Conceptual Framework



Thirdly, physician attitude, like attitude to prescribe expensive drugs or strong antibiotics, is there relations between physician different attitude and co-payment? Finally, price information, measure if the presence of price information guide will has effect on co-payment.

Fourth category, subdivided into four main factors related to policy effect on drug co-payment. Firstly co-payment mechanism, this factor can measure the effect of different co-payment mechanism on prescription pattern and rational drug use. Secondly, co-payment amount, measure if the co-payment amount has positive effect on rational drugs use or counterproductive. Thirdly, essential drugs list for PHC, what is the relation between types of drugs on PHC and co-payment? Exemption discipline, these factors study the relation between exempted population and drugs use.

Fifth category includes three main factors related to community. Firstly, health situation, is there relation between co-payment and health situation of the community? Secondly, economical status, is there are difference between community economical status (urban, rural, camp) and co-payment? Finally, community attitudes, these factors can measure if drug co-payment affected by community attitudes such as convince on public service or private service.

Second part, this part includes indirect factors affecting the drug co-payment related to Ministry Of Finance. This part includes three main factors. First, total revenues, second natural resources and direct effect of these factors on third one, which is MOH budget, these factors, will measure natural of indirect relation between MOF and drug co-payment, through effect on drugs financing, and availability on governmental PHC centers.

The last part includes the outcomes, which measure to give the extent of co-payment effect on drug services in governmental PHC centers. These outcomes includes, Rational drugs

use, drugs availability, drugs cost coverage, drugs funds sustainability, health care expenditure and resource mobilizing.

Time and natural

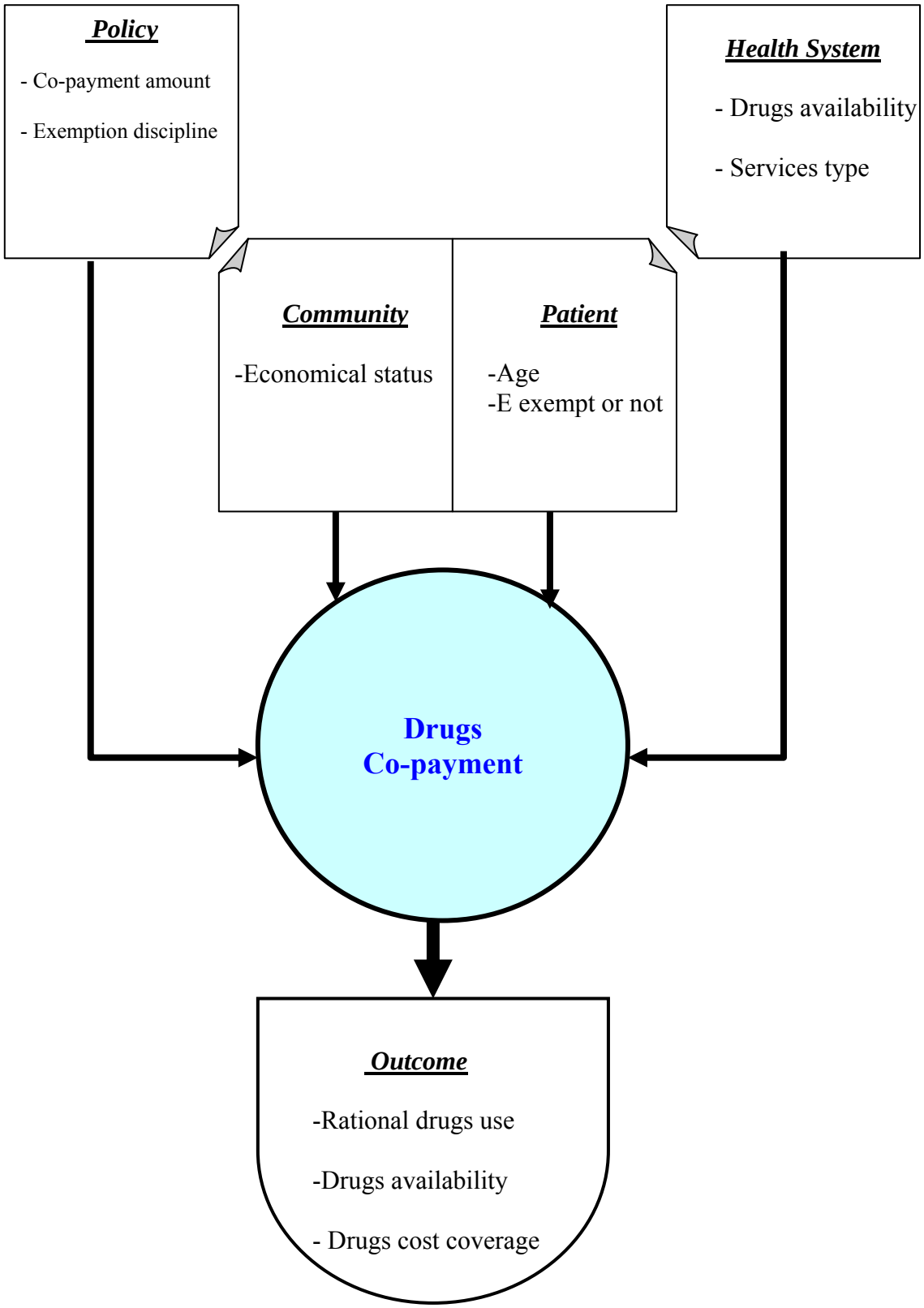
Time and the nature of the study did not allow a study of all these variables and therefore a researcher will focus on part of these variables affecting co-payment and developed new brief model (Fig 2.2) including possible measuring variables.

The new framework consists from four categories. First category includes drug availability and service type as factors related to health system. The drugs availability will measure by the availability of key common used drugs, group of less than 15 drugs (WHO, 1993), then the result will compared with number of exempted patients among each clinic to explain the relation between drug availability and drug co-payment. Service type effect could be measure by explain the relationship between clinic level and percent of co-payment coverage to drug cost.

Second category, includes two possible measured factors related to policy. Firstly, co-payment amount, this factor could be discussed by study the relation of co-payment amount difference on number of items or antibiotics written per prescription. The same way also measure the effect the second factor which is exemption discipline by study if there are significant difference in prescription pattern among paid and exempted prescription or not.

Third category includes patient's age as factor related to patient; this factor could measure by effect of co-payment on rational drug use, by study effect of co-payment different among different ages on prescription pattern by comparing the number of item and antibiotics per both ages' prescriptions.

(Fig 2.2) Conceptual Framework



Finally category, include economical status factors to explain the effect of community on drug co-payment, this factor could be measure by comparing between percent of drug co-payment coverage to drug cost among different communities includes urban, rural, and camp which has different economic status for their populations.

Judging on statistical results of reacting between previous factors and drug co-payment depend mainly on desired outcome to produce better governmental pharmacy services. These outcomes include; rational drug use, drug availability, and drug cost coverage.

2.2 Development of essential drugs lists (EDL)

In 1975 was the first effort from WHO concern with the development of essential drugs policy as recommendation from World Health Assembly in resolution WHA28.66, which request WHO to develop means to assist different countries in developing their pharmaceutical programs such as selection, procurement of drugs based on country health need (WHO, 1998). In 1977 WHO published the first WHO Model List of Essential Drugs, which then adopted as one of the eight elements of primary health care during WHO/UNICEF Conference on Primary Health Care at Alma-Ata, 1978. followed by many activities to improve the pharmaceutical situation in countries, such as Conference of Experts on Rational Use of Drugs in Nairobi in 1985, and in 1986 published Guidelines for developing national drug policies. The activities are continuous and developed over years (WHO, 1998). At present, most of WHO Member States had a national essential drugs list, in over 90 countries the essential drugs concept introduced into the pharmacy collage curriculum (WHO,2002).

In Palestine the first step to establish essential drugs list was in 1997 when two list of 550 drugs in Gaza Strip and 700 Drugs in West Bank independently choosing, then two lists are merged into one list and compared by WHO EDL , and then the draft list reviewed by

World Bank consultant (WHO, 2000b). Finally Palestinian EDL was approved by MOH on March 2000, followed by training courses on EDL and PNF using (MOH, 2001[c]).

2.3 Drugs financing problem

According to WHO estimation that there are inappropriately pattern in more than half of all dispensed or sold medicines, and that half of all patients fail to take them correctly. Which lead to wastage of scarce resources and widespread health hazards due to overuse, underuse, or misuse of medicines (WHO website, 2008[b]), this problem coincides with growing drugs expenditures - as well as total health expenditures- faster than the gross national product in all European countries (Ess, Schneeweiss, Szucs, 2003).

Drugs expenditure represent more than 10% of total health spending in nearly all Organization for Economic Co-operation and Development (OECD) countries in 2001, and even exceed 20% of health spending in Italy and France (Aaserud, Dahlgren, Kösters, Oxman, Ramsay, and Sturm. 2006). In Japan from 1996 to 2002 there is increase 1.32 times drug expenditure per patient due to rise in the number of drugs taken by one patient and increase in the drugs prices (Yufeng Chen, 2007). The problem is more crucial for developing countries where drugs spending is represent high proportion of their total health spending, 24-60%, compared with 7%–20% for developed countries. In addition, to low proportion (5-50%) from total developing countries drugs expenditure, is spending in public sector, which is much lower than developed countries pubic spending on drugs from total drugs expenditure (50%-90%), which cause increase financial burden on households (Witter,2007). In many developing countries included some Arab country the drugs availability and access problems related to lack of fund (WHO, 2000).

There are two main reasons of drug financing challenge that are; firstly, inadequate resources as a result of the combined effect of economic pressure, continued growth of

population with growing burden of disease. Demographic shift to older populations was accompanied by stretched of health care resource, with more costly chronic disease, appears of new diseases, and old disease resurgence with more resistance which need more costly drug than earlier drugs (WHO, 2001[a]). Secondly causes of drug financing challenge is achieving equity, ensuring access to essential drugs for poor people is the major challenge. Without governmental involvement, the poor may denied access to drugs. Market-oriented policies not geared to protecting the needs of the poorest people (WHO, 2001[a]).

Sustainable financing through equitable funding mechanisms such as government revenues or social health insurance was one recommendation of an international training course on drug policy issues for developing and transitional countries in Beirut in November 2000 (WHO, 2001[b]). In African countries the health financing was more difficult problem, the thing which leads to deterioration of population health and threatness of health catastrophic, which prompted the health ministers for a conference in Bamako in 1987, launched Bamako Initiative (BI) which adopted community participation as source for sustainable drugs finance in poor countries (Gilson, Kalyalya, Küchler, et al. 2000).

2.4 Community Involvement in Health Care Financing

Developed and the developing world facing crucial problem in mobilizing enough financial, resources to meet existing or anticipated health needs. Increasing attention is being focused on the subject of health service financing, on ways of bridging the health sector resource gap, and options for financing the health sector, and discusses them with respect to a number of questions: Who pays and who benefits? How much? For what? Through what mechanisms?

During the 1980s there is rapid deterioration in several African health system, drugs and items became less available, corruption, salaries became inadequate and irregular, allocation of supplies and control were directed by usually ineffective and partially corrupt central bureaucracies. The result was; empty of drugs shelves for months, only rich can buy drugs from private pharmacy. The Bamako Initiative (BI) was launched in 1987 by a group of African Ministers of Health in Bamako, Mali, in a meeting sponsored by WHO and UNICEF. The BI was a response to the bad health situation. Community participation is seen as a mechanism to build accountability to the users of health care, in that the revenues are used through revolving drug funds and community financing schemes (Gilson, Kalyalya, Küchler, et al. 2000). By late 1994, the BI had been implemented in 33 countries, of which 28 were in sub-Saharan Africa, the other 5 were Peru, Vietnam, Yemen, Cambodia, and Myanmar.

In January 2000, Director General of the WHO established a Commission on Macroeconomics and Health (CMH) to assess the importance of health to economic development and poverty reduction. The report reverse the bad health situation in poor country to governments failed to meet the most basic health needs of their populations due to lack the needed financial resource (WHO, 2001[c]). The commission submit six recommendation resource mobilization at low-income countries: "*increased mobilization of general tax revenues for health; increase goods finance by donor support to ensure access of health services to poor population; substituted of current out-of-pocket expenditure into prepayment schemes, including community financing programs; reduce dept from poor countries by donor support, address the Inefficiencies governmental allocation ways of resource in health sector; reallocating public outlays more generally in productive programs*"

The CMH stressed that community financing schemes are not the solution for all resource mobilizing problems that face low income countries, but it will step to alleviate poverty and improve health status and finally economic growth (WHO, 2001[c])

Problem is not confined to developing nations but was disturbing developed countries also. During 1990s overall drug spending in USA at private sector rose by 15-20 percent per year. In 2002 alone, national spending on prescription drugs exceeded $160 billion. These reasons push decision maker to redesigning drugs insurance plans, allowing more consumer cost sharing, they are moving from insurance systems with flat co-payments (where patients pay a specific dollar amount per prescription) to systems of coinsurance, where patients pay a fixed percentage of the total prescription price (NBER,2008).

2.5 Drug cost sharing strategies

The presence of policy shifting part of financial burden from government or insurer to patients was necessary to overcome the challenge of growing of drugs expenditure at many health systems world wide and increasing patient financial responsibility for prescription drugs.

Direct patient drug payment policies include caps; (maximum number of prescriptions or drugs that are reimbursed), fixed co-payments (patients pay a fixed amount per prescription or drug), coinsurance (patients pay a percent of the price), ceilings (patients pay the full price or part of the cost up to a ceiling, after which drugs are free or available at reduced cost), and tier co-payments (differential co-payments usually assigned to generic and brand drugs).

2.6 Drugs situation in Gaza Strip

The PNA gave more attention for drugs sectors in GS and WB, the thing which lead to satisfied quality and availability of drugs in governmental sector at normal condition, but the political restriction was the major cause to disruption of drugs supply (Obeidallah, Mahariq, Barzeq, and Zemli, 2000). The drugs cost at the private sector is quite expensive due to lack of international competition for Palestinians pharmaceutical market because Israel applies restriction to protect its own market(Obeidallah, Mahariq, Barzeq, and Zemli, 2000), in addition to that the deteriorated economic situation has increase the drugs demands in governmental sector.

In comparison with neighboring countries at the same level of economical situation, consumption of drugs in the West Bank and the Gaza Strip is very high. Absence of appropriate drugs policy, and inadequate source for drugs information, led strong patient demand and over prescription (Obeidallah, Mahariq, Barzeq, and Zemli, 2000). Over use of antibiotics in governmental primary health care in the Gaza Strip, where it represent 33% from total PHC drugs expenditure in 2005(MOH, 2006), in 1997 48% of patients were prescribed antibiotics (Obeidallah, Mahariq, Barzeq, and Zemli, 2000), which clear indicator of irrational use of drugs in Gaza Strip. Over use of antibiotics lead to resistance of bacteria and ineffective therapy, and finally lead to ineffective cost uses of drugs.

Random use of drugs is a type of wastage, which is worrying problem for PNA, because of scarcity of its resource (Burden, Rainhon and Reich, 1999). Co-payment system review is one of the importance recommendations to prevent the irrational and random use of drugs (Obeidallah, Mahariq, Barzeq, and Zemli, 2000). WHO sees co-payment as necessary way to achieve universal coverage, with regarding avoid catastrophic health care expenditure (WHO, 2005).

2.6.1 Drugs financing and expenditure in Palestine

Internationally, share of health expenditure from total of world GDP increase from 3% in 1948 to over 8% in 2004 (WHO, 2004), the average drugs spending in 1993 account for 5% to 20% of total health spending (World Bank,1993). For most ministries of health in many countries like Palestine drugs expenditure represents largest health expenditure after staff salaries (Govindaraj, Chellaraj, and Murray, 1997; MOH,2006). Cost of medication purchased by Palestinian MOH in 2005 was represent 23% of actual MOH running expenditure, out of which 30% for PHC (MOH, 2006).

The Poor economical situation in Palestine is return to scarcity of natural resource, and political situation that restrict the utilization of these rare resources. Health financing is one of issues which worrying PNA. The financial status of the Palestinian Authority makes that task difficult performed alone, so it depends on other sources included UNRWA, and NGO's (Abed, 2007), ensuring a regular supply for drugs in governmental sectors lead Worryingly increased MOH cost (Obeidallah, Mahariq, Barzeq, and Zemli, 2000), the bad financial situation also hampers the ability of providing drugs services free of charge.

2.6.2 MOH Revenue

There are two main sources of the Palestinian MOH revenues; health insurance premium and the co-payment that collected from the insured people for drugs dispensing, laboratory test and X-Ray, and non-insured people when they receive medical care in governmental institutions, licensing fee for the medical professionals and treatment of injured people in road accident through insurance companies (MOH, 2006). In 2005 the MOH revenues was represented 28% of the total MOH running budget, out of which 25% from health insurance, and 3% from co-payment (MOH, 2006). The revenue value from drugs dispensing is unknown.

2.7 Factors affect on direct drugs payment policies.

There are several factors which may effect the payment polices of the drugs, the policy may has negative impact for some patient but at the same time has high suitable for others. However different drugs payment polices has advantages and disadvantages which must be accounted by decision makers to ensure the success of policy, and prevention the health deterioration which may appear as result to unsuitable policy. Factors which may has impact on direct payment policies includes; drugs price elasticity; co-payment size and restrict; vulnerable populations; drug groups included in the policy; enforcement; information provided to patients and providers; exemptions (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008).

2.7.1 Drugs price elasticity:

The price elasticity for a drug is the percentage change in its consumption related to one percentage change in the price or charge that patients pay for that drug (Johnston 1991). This will measure the sensitivity of drugs consumptions due to change of its price, or due to change in co-payment size. In economical science the drugs considers as goods which has low elasticity because the value the drug as more important than the burden of cost sharing, so the change in drugs cost or co-payment is expected to follow with no change in drugs consumption, but this theoretical statement is destroy in real life especially in poor households and vulnerable people. But for high income patient or chronic patient the theory may be right especially if patients value the drug as more important than the burden of cost sharing, for those patient the change in co-payment amount don't cause significant change on drugs consumption (less sensitivity) (Smith 1992).

2.7.2 Size of co-payment:

Size of co-payment in the policy must be reasonable, if it is high, it may decrease the drugs use, but at long time view it may be the reasons for health deterioration and unexpected drugs overuse due to progress of problem as results to drugs unaffordability. The effect of the policy will be dependent on how the co-payment policy is strict.

2.7.3 Vulnerable populations:

The vulnerable population to co-payment include; chronic patients who need a high volume of pharmaceuticals, low income population because he is also more likely to be sick (Adams, 2001), and pregnant women, children and the elderly can be considered as vulnerable groups (Rice, 2004). Any increase of cost sharing for drugs may become a financial barrier for that population to access drugs, so the they are called vulnerable population, due to there sensitivity to co-payment change. If this population not taking into consideration, the policy may lead to higher overall healthcare expenditures due to deterioration of health, and higher healthcare utilization (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008).

2.7.4 Exemptions:

Exemptions can be embedded into the cost sharing policy for certain drugs or patient groups based on specific criteria, such as disease, age, or income. Exemptions are often made to protect the disadvantaged patients, downside of exemption is appear in co-payment per prescription or per item policies, when prescriber attain to increase the volume (doses) allowable per prescription or increase prescription items (Soumerai 1994). Presence reasonable mechanisms for patients that need exemptions for medical reasons or economical reasons is necessary to protect some patients from drugs catastrophic

expenditure. Too restrict exemption mechanism may leads to reducing drugs use and expenditure but will cause also increase of patient drugs expenditures. However, too generous exemptions may minimize the potential effects of the policy (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008).

2.7.5 Enforcement:

The enforcement of the policy may also have an impact on the effect of the policy. The policy must support by law, regulation, discipline, and training to ensure right implementation of this policy. Some polices give the pharmacist or physician the power to exempt patients from the co-payments in some cases, but will then be liable for these expenses themselves. If such an exemption is easy attainable for the patient, expected reduction in drugs use can be little and the policy will lead to shift of cost from insurer or patient to enforcer (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008).

2.7.6 Information provided to patients and providers:

Beside the science information that is important to physician to be informed about drugs cost, possible substitutions, and patient ability to pay the drugs. This information will cause physician more sensitive to high patient payments, which help the policy success to change irrational drugs use and reduce economic burden on patients.

The information provided to patients is also important, because patient knowledge about his health and drugs effect will help him to know the drugs which are more important to his health. Lack of this information may be the reason for patients prioritise less essential drugs rather than more important drugs, which cause decrease of important drugs use and followed by deterioration of health and increase the drugs expenditure (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008).

2.7.7 Drug groups included in the policy:

Suitable drug groups included in policy are essentially to support the policy. Most countries depends on national essential drugs lists to involve it in the policy. All health ministries included Palestinian MOH determines specific drugs to be available in its PHC centers according to community priorities. Suitable drugs list will lead reduce the over-use of drugs and to control expenditures. If the drugs list in Governmental PHC is not suitable, it may success to reduce drugs use and health care utilization, but it also may increase patient drugs expenditure from private sector.

2.7.8 Drugs market failure:

In a perfect market, reasonable price is result to balance between supply and demand, due to buyers and consumers interaction (WHO, 2001a). However, conditions for such markets are rarely met in pharmaceuticals because of the following three factors

■ Information imbalance.

The patient knows less information than the prescriber or the dispenser about the efficacy, quality and appropriateness of the drug. Which lead to inappropriate drug use as result potential misleading advice. For markets to work properly both buyers and sellers should have complete information.

■ Failure of competition.

This occurs when market power is obey to exclusive small number of supplier.

■ Externalities.

Externalities are the benefit persons from health services when others receive it. Some health services (such as childhood immunizations) benefit for whole society not only the person using them. Such health services, with large public health benefits for society as a whole, cannot be left to the market and justify public investment (WHO,2001[c])

2.8 Drugs use indicators.

As one action on essential program, WHO develop simple indicator as tool to investigate drugs use in health facilities, include core drugs use indicator and complementary indicators. Core drugs use indicators are highly standardized, and don't need national adaptation. It consist from three major categories; pharmaceutical prescribing practices of health providers, key elements of patient care covering both clinical consultation and pharmaceutical dispensing and availability of facility-specific factors that promote rational drugs use (Annex 3). Drugs use indicators considered as quick and reliable tools to assisting different aspects of drugs used in PHC, and recommended for inclusion in all studies related to drugs use, then the results are more examination in more detail. Complementary indicators are less standardized, and difficult to measure (Annex 4) (WHO, 1993).

2.8.1 Methods of drugs use measuring

To study any issue related to drugs use, the problem must be investigated and determine underlying causes of these problems. Identifying the objectives of data collection, availability of resources and the time available and information accessibility will helping to choice the method design of the study. Most used methods for collecting drugs use data was published by WHO health facility survey manuals (WHO, 1993). The manual explain for researchers when it is preferred to use data collection retrospectively or prospectively. Sample of prescribing encounters can be collected retrospectively by drawing random encounters from drugs prescription in pharmacy store, or prospectively from current patient in facility on the day of the study visit. Information on prescribing indicators can be collected by both methods; however patient care and facility indicators always required

prospective data collection (WHO, 1993). There is no absolutely appropriate method and each method has its strength and weakness. Retrospective data are easier to collect with lower biases, but these methods are often incomplete due to record missing or not recorded. Prospective data collection usually complete, but its collected during short time cause it more suffer from seasonally biases and provider will aware when there behaviors is observed (WHO, 1993). To ensure representative and credibility of data, and obtain clear drugs use issue picture, WHO manual recommended combining quantitative and qualitative methods (WHO, 1993)

2.8.2 The standard values for the WHO indicators

A research result of study which done in Nigeria in 1999 with the support of DAP-WHO itemed by; *"The development of standard values for the WHO drug use prescribing indicators"* was introduce during International Conferences on Improving Use of Medicines (ICIUM). The results were as in the following ; Average number of drugs per prescription (1.6-1.8), Percentage of prescriptions with an antibiotic prescribed (20%-26.8%). However, standards for the indicators may not be globally generalized since the clinical case mix, which is the main determinant of the indices, may be influenced to varying degrees by other local factors (Isah, Ross, and Quick, 1999). After that many studies conducted regarding drug use indicators and in light of their results the WHO submitted recommended standards values for drug use indicators as following; Average number of drugs per prescription (2), percentage of prescriptions with an antibiotic prescribed (less than 30%) (WHO, 2006[b]). And recommend being the availability of essential key drug 100% during different time of month (WHO, 2006[b]).

2.9 previous relevant studies.

2.9.1 Developed countries studies:

A study was carried out in the USA to study effects of cap and co-payment on rational drug use, the researchers reviewed 21 studies that evaluated policies implemented by governments, non-governmental agencies, and health insurance companies to improve drug use or to save (third-party) drug spending or both. Five policies were evaluated in which people pay directly for their drugs when they fill their prescription; caps, fixed payment, tier co-payments, coinsurance and ceiling. "The study results found that introducing or increasing direct co-payments reduced drug use and saved plan drug expenditures ". But there are also reduction in life sustainability and chronic patients drug,' which may have adverse effects on patients' health and could lead to an increased use of healthcare services and therefore, overall spending. Study recommendations including non-essential drug in co-payment system or exemptions are built into the policies to ensure that people receive needed medical care (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008).

Another study was conducted to analyze The effect of a Medicaid drug co-payment program on the utilization and cost of prescription services. Data were collected from Medicaid files in South Carolina (experimental program) and Tennessee (control program) for a 4-year period, 1976-1979. Utilization rates and expenditures for 1 year prior to co-payment and 3 years after co-payment computed from a stratified sample of 18 counties. The study concluded that a small co-payment for prescription service is a successful mechanism to control the cost and assist in financing a Medicaid prescription drug program through decline drugs utilization and level of expenditure (Nelson, Eugene, and, Michael, 1984).

Another study conducted in USA, titled by "The Effect of Drug Co-Payments on Utilization and Cost of Pharmaceuticals in a Health Maintenance Organization". This study analyzed how the use and cost of pharmaceuticals varied by level of drug co-payment in a staff model health maintenance organization (HMO). An historical cohort design used to examine 19,982 continuously enrolled beneficiaries. The beneficiaries initially had no drug co-payments, but changing co-payment rates of $1.50, $3.00, and $3.00 plus other benefit during a three-year period. A comparison cohort of no drug co-payment 23,164 beneficiaries selected from the same settings who were during the same period. Study found that, there are drop of 10.7% in the number of prescriptions filled by initial $1.50 drug co-payment with a relative to change in the comparison cohort. The decrease was greatest with increase level of co-payment, where reduction in drug utilization was 10.6% with the $3 co-payment and 12.0% when the $3 drug co-payment. Co-payments were associated with lower per capita drug costs and higher per prescription unit costs (Brian, Andy, and Douglas, 1990).

By commissioned of Coalition for Community Pharmacy Action (CCPA), another study was conducted in the USA aimed to study cost dispensing by an independent comparative analysis of US prescribing disbanding cost, the study found that the average cost of prescribed drug per prescription was 10 US$.

Regarding the drug use indicators there are many studies in developed countries was interested by describe the drug situation these studies shown that, in England, the number of prescribed drug per prescription was 2.6 (Trap, 2000), another study shown percent of prescriptions which include antibiotics was 60% (Majeed, and Moser, 1999) . While another study conducted in Norway showed that, the percent of prescriptions, which included antibiotics, was 48% (Lindbaek M 1999),

2.9.2 Israeli studies:

"A cross-sectional study was conducted in Israel to investigate the influence of the co-payment policy in a community setting on the purchase of prescription medications for children with acute infections. was gathered from a pediatric health care center. Researcher asked sick children Parents and controls about reasons for not purchasing (either partially or completely) necessary medications, primarily antibiotics. Of the 779 children who received a prescription for antibiotics during the 6-week period, 162 (20.7%) failed to take the complete course of antibiotic treatment. 101 parents of these children (62.3%) were interviewed, the cost was the main reason for not buying the full course of antibiotic in 30 (29.7%). This group is characterized by bad socioeconomic situation; low income, overcrowded housing conditions, and a large quantity of prescription medications. The cost of prescribed medication under the co-payment policy is a serious barrier to the purchase of prescribed medication for children with acute infections in the primary care setting. Which occur as contradiction with justice and equality principles of obligatory Israeli National Israeli Health Insurance Law (Haim, 2002).

Another study conducted in Israel "to examine the satisfaction with organizational and financial access to services of chronically ill patients, and compare them to those of healthy consumers". The researcher used telephone interviews with a random sample of 1790 permanent residents of Israel over age 22, 512 (28%) of whom reported having a chronic illness. The study found no significant differences between chronically ill and healthy respondents in satisfaction with services, but differences were found in financial access where co-payment was restrict chronic patients from care accessibility. researcher recommends lower co-payment ceiling for chronic patients to lighten the burden on vulnerable populations (Bentur, 2004).

2.9.3 Developing countries studies:

Since the "Bamako Initiative" Nepal was one of countries which use single (flat) fees per prescription for ease of administration. However, there is an evidence that charging single fees per prescription may encourage irrational prescribing. Which push Nepal government plan to use different charging mechanisms, to achieve rational drug use. In 1997 Dr. Holloway K.A introduces his study about the effects of different charging mechanisms on rational drug use in eastern rural Nepal during WHO International Conferences on Improving Use of Medicines (ICIUM). The researcher used a before-after non-randomized controlled trial design to study three different mechanisms of drugs co-payment, used between 1993 and 1994 on three different districts in Nepal. All three districts charged a flat fee covering a full course of all drugs in 1992. One district changed to a one-band item fee where patient pay fix co-payment per each item, another district changed to a two-band item fee where patient pay low fixed co-payment per item of cheap drug and higher fixed co-payment per item of expensive drug like antibiotics and injections, and the third district continued charging a flat fee. The study found a "significant improvement in prescribing indicators in both item districts which use drug fee as compared to the control district where there was no change. In the one- and two-band areas, items per prescription were reduced by 0.8 and 0.5 items respectively ($p<0.001$). The percent prescriptions with antibiotics was reduced by 7.1% and 7.3% respectively compared to an 8.1% increase in the control area ($p<0.01$). The percent prescriptions with injections was reduced by 2.7% in the one-band item fee area and by 10.2% ($p<0.001$) in the 2-band item fee area. The percentage of patients remembering their dosing schedules decreased as the number of items per prescriptions increased". The researcher concluded that any drug co-payment policy will lead to success rational drug use plan and advice all developing countries to adapt his finding (Holloway, 1997). In Kenya a conducted study aimed to study charge

effect on drug demand, shown the drug demand dropped by 27% when a registration fee was introduced and increase again when the registration fee was suspended (ICIUM, 1997). .

Regarding the drug use indicator a study was carried out in 12 developing countries to assess the prescribing practices in primary health care. Study result showed that, the number of prescribed drug per prescription was 1.9 in Uganda, 1.8 in Malawi, 3.3 in Indonesia 1.4 in Bangladesh, 1.3 in Zembabwe,2.2 in Tanzania, 3.8 in Nigeria, 2.1 in Nepal, and 1.3 in Ecuador (Hogerzeil, Ross, Laing, Ofori-Adjei, Santoso, Chowdhury, et, al. 1993). The availability of key drug was 67% in Malawi, 54% in Bangladesh, 72% in Tanzania, 62% in Nigeria, 38% in Ecuador and 90% in Nepal (Hogerzeil, Ross, Laing, Ofori-Adjei, Santoso, Chowdhury, et, al. 1993).

Another study conducted in India aimed to describe patterns of prescription and drug dispensing was found that, the number of prescribed drug per prescription was 2.9, percent of prescriptions which include antibiotics was 39.6% and percent of drug availability was 85% (Karande, Sankhe, and Kulkarni, 2005). And as shown in other Indian study there are more drug overuse in rural area than urban area (Ayesha , Shekhawat , Eltayb, Sunil, and Vinod ,2008). But the average cost of prescribed drug per prescription in India was (4.5 US$), (Gupta, Malhotra, Jain, Aggarwal, Pandhi., 2005).

Another study was conducted in Iran shown that; the percent of prescriptions which include antibiotics was 62% (Moghadamnia, Mirbolooki, and Aghili .2002). While the average cost of prescribed drug per prescription in Nepal was (3.29 US$) (Alam, Mishra, Prabhu, Shankar, Palaian, and Bhandari, et, al, 2006)

2.9.4 Arab countries studies:

Many studies conducted in different Arab countries to describe the drug situations found that, in Lebanon the number of prescribed drug per prescription was 1.6, and percent of prescriptions which include antibiotics was 17.5% (Hamadeh, Dickerson, Saab, Major, 2001). In Dubai, a study aimed to prescribe the prescription pattern in Dubai hospitals found; the number of prescribed drug per prescription was 2.2, and percent of prescriptions which include antibiotics was 21.4% (Sharif, Al-Shaqra, Hajjar, Shamout, and Wess, 2007). In Egypt the number of prescribed drug per prescription was 2 (Zaki., Abed-Fattah, Bassili, Arafa, and Bedwani, 1999) while prescription cost was 0.7 US$ (Egyptian MOH 1997). Another studies conducting in Saudi Arabia interested by quality of primary health care by comprehensive review of 31 published literatures. Result reported that number of prescribed drug per prescription was 1.44, and percent of prescriptions which include antibiotics was 87%, while the percent of patients who treated with drugs was 85% the researcher conclude that, the health services in urban area is better than rural area and return overuse of drug to charge free services (AL-Ahmadi and Martin, 2005). Another Saudi study showed that, the low socioeconomic groups in rural area received less care than urban areas (El-Gilany, and Aref, 2000). A study done in United Arab Emarates aimed to assess drug utilization in Al Sharja PHC center shown that that number of prescribed drug per prescription was 2.7, percent of prescriptions which include antibiotics was 45% and percent of drug availability was 90.5%, while the percent of patients who treated with drugs was 92% (Hasan, Das and Mourad, 1997). In Sudan, study was carried out to investigate current prescribing and dispensing practices in Sudan hospitals reported that, the number of prescribed drug per prescription was 1.9,and 65% of prescriptions was include antibiotics (Abdelmoneim, and Hossam , 2006). In Morocco number of prescribed drug per prescription was (3.27) (Simon, 1998).`

2.9.5 Palestinian studies:

Co-payment is one of the most important differences that distinguish the provision of drugs service in MOH from UNRWA, which may affects the quantity of medicine consumed by the patient. The results of drugs situation analysis among UNRWA agency wide indicate that Gaza has the highest expenditure on medical supplies per outpatient, USD1.5, than others regions. The average expenditure on medical supplies per registered refugee in Gaza was 4.5USD, which also the highest than other regions Agency wide where it was where it was 1.6$ in Jordan, 2.4$ in Lebanon, 2.8 in Syria and 2.9 in West Bank (UNRWA,2004). Another studies on antibacterial prescribing practice revealed more than 50% of visitor UNRWA outpatient clinics receiving antibiotics, but the highest rate was in WB 60% and GS 58% (UNRWA, 2004).

Regarding drug utilization another study conducted in 2005 in Gaza strip, the study found that, the number of prescribed drug per prescription was 1.9, and 82.6% of key drugs are available (Fattouh, 2005) Another study conducted in different Gaza strip and West Bank Governorates aimed to analyze the drug situations in theses region. The results showed that, in Nablus PHC the number of prescribed drug per prescription was 2.6, the percent of prescriptions including antibiotics was 46%. In Tulkarem clinic the number of prescribed drug per prescription was 2, the percent of prescriptions including antibiotics was 45%. In Rimal Governmental PHC the number of prescribed drug per prescription was 3.1, the percent of prescriptions including antibiotics was 48% (Obeidallah, Mahariq, Barzeq, and Zemli, 2000). The overall result was the number of prescribed drug per prescription was 2.55 and the percent of prescriptions including antibiotics was 46.7%. The figures show presence real problem on drugs consuming in Gaza strip. Unfortunately, there is no study analyze the cost of drugs per each visitor, or comparison studies in prescribing pattern between different health providers in Palestine.

2.10 Pharmaceutical polices in consumer cost sharing strategies.

Financial sustainability requires a balance between demand, the cost of meeting this demand, and available resources (WHO, 2001[a]). The sustainability of drugs financing depends mainly on extent of balance between three angle of equation which are; demand, demand meeting cost and available resource (WHO, 2001[a]). Demand can be change through improve drug use education, barriers to care and user charges, while reduce cost of demand meeting can be achieved through improved efficiency and rational drugs use. Available resource can increase from patient co-payments, prepayment (insurance) schemes, government funding from general tax revenue, development loans, endowment funds or donations (WHO, 2001[a]).

All governments provide various pharmaceutical polices to control expenditure, and regulate drugs use, to achieve drug coverage which is a way to economically securing patient's access to needed drugs and alleviate economic burden for people needing expensive drugs. systems can be public or private, compulsory or voluntary, but drugs coverage is the final aim of various polices.

Some polices use drug insurance premiums (either through taxes or premiums), which not related to drug types. After the insurance premium is paid, theoretically, the drugs price becomes zero, which may economically incentives patient to use more drugs than they need (Gross, 1994). Previous reasons push many governments to shifting a part of financial burden to patient and thus create financial responsibility for prescription drugs (Gibson, Ozminkowski,Goetzel, 2003). Direct cost-share policies by different procedure were use as way to overcome the problem, and intended as incentive to reduce drugs over use, and help in using more cost-effective available drug as treatments for specific condition, and to reduce governmental drugs expenditures (Huttin, 1994).

With respect the drugs included in the policy, patients target groups, socioeconomic status of patient, exemption, enforcement and the units on which the payments are imposed (prescriptions, items, doses, expenditures), there are different mechanisms used as Direct patient drug payment policies. These mechanisms can be categorized into five main groups (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008) as the following:

Caps:

In this policy the patients can receive free of charge (zero-price) limited number or volume of prescription during a defined period of time, after the patient reach this limit he must pay the full price of further prescriptions. This policy may be applied to enforcement uses of more cost-effective prescription drugs, influencing patients and physicians to priorities the use of the most needed drugs, reduce overall drug use, and to reduce drugs expenditures. The policy is full drug coverage for patients with lowest drugs needs, not exceeding the cap limit. But this policy will be more vulnerable for Multi-drug users, like elderly and chronic patients whom need more important drugs which may be life-sustaining.

Fixed co-payments:

Fixed co-payment is also called a prescription charge, consumer charge, prescription fee, patient fee or cost-sharing. In which fixed amount of money paid per drug or prescription. This policy is good to reduce overall drug expenditures and utilization. In some systems when the patient has the choice to receive specific brand name the fixed co-payment is not effective to choose cheaper substitutions, because the patient will attend to use more expensive drug.

Coinsurance:

Coinsurance is a co-payment in which the patient is paid percentage of the drugs price is, rather than a fixed fee. This is sometimes also called co-payment or cost-sharing. This policy help in provides an incentive for patients to choose cheaper drugs and also important role in reduce overall drug expenditures and utilization.

Ceilings:

A ceiling is a maximum contribution policy where patients must pay full prescribing drugs cost up to a certain amount per defined period of time. After the patient reach the maximum amount he can receive the drugs free or at reduced cost. In some systems the percent of drug cost which paid by patient is gradually reduce after certain specific cost until reach patient zero paid. This is sometimes called a maximum contribution, a deductible, or a safety net. This policy is suitable for multi-drugs user, like patients with chronic disease who are most likely to exceed the ceiling. But the policy is not benefit for patient with only a few drug need during the period and if the ceiling is high the policy may be hard on low-income and bad socioeconomic populations. The policy also will be less effective in rational drugs use after the patient reach the ceiling.

Tier co-payments:

Tier co-payment system have similar feature to reference drug pricing systems, it dealing with two co-payment level; generic drugs with lowest Co-payment (first tier) and higher co-payments for brand drugs (second tier). Tier co-payments are also called incentive-based formularies or differential co-payments. This policy encourage consumer to choose his preferred products that are assumed to be more cost-effective for the insurer and shifting drugs use from expensive brand drugs towards cheaper first-tier drugs. This policy

reduce drugs expenditure for insures, but increase the drugs expenditure for patient if substitution is not possible or if patient unwilling to substitute for cheaper drugs. Tier co-payment also gives insurers more bargaining power to attain lowest cost from drug manufactures.

One government can use one of the previous mechanisms, but many governments use mixture of two or more mechanisms, such as two different mechanisms for exempted and paid patients, and also the mechanisms in the same country may different in private sector from public sector. The success of drug policy should not only measured by its effect on drugs use and drug cost, but there many other important effect must be considered as policy effect on health, the use of healthcare services, vulnerable group and costs for patients as well as the insurer. A too-restrictive drug policy may have unfavorable consequences. For example these issues will be more crucial for consumer in low-income or other vulnerable populations; if cost is shifting from insurer to consumer it may lead to discontinuation of necessary drugs, which may cause deterioration of health, increased healthcare utilization, and expenditures for patients as well as insurers. (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008).

2.10.1 Developed countries experience.

Policymakers tend to use many policies to reduce spending on drugs and improve the efficiency of drug use through control the behavior of patients, doctors, and industry, despite a lack of evidence of those policies' cost-effectiveness. In Britain where fixed co-payment is used, the prescription charge covers about 40% of average prescription costs, with exemptions for vulnerable patients with specific chronic diseases or elderly people, therapeutic categories, , and very low income population (Freemantle, Bloor, 1996).

Britain flat rate prescription charge is less complex than that applied in some other health systems. In countries witch use a reference price scheme, where a standard price is allocated to a group of drugs, co-payments commonly include a fixed charge plus any difference between the actual price and the reference price. In Germany there is a fixed charge on the package size of a prescription item, plus any difference between the reference price and the retail price for drugs that are priced higher than the reference price for their group. In New Zealand and Sweden there is a fixed maximum prescription charge plus a premium for drugs costing more than the reference price (Freemantle, Bloor, 1996).

In France co-payments are based on the drug reimbursement rate (assessed by the transparency commission). Where drugs cost for chronic patients and expensive drugs for vulnerable are fully reimbursed. Other drugs are reimbursed at 65% or 35% for treatments for minor pain. About 10% of the population with health insurance is exempt from co-payment, and many who are liable to charges are covered at least partially by supplementary health insurance (Freemantle, Bloor, 1996).

In Italy the system drugs into three classes, (class A) for severe and chronic illness which is fully exempted. (class B) require 50% co-payment include drugs deemed to be non-essential but potentially useful, and other drugs (class C) are paid for by the patient. Exemptions include those for patients with chronic disease, elderly people, and children aged under, with some restrictions according to income (Freemantle, Bloor, 1996).

In American there are Medicare scheme, which provides health care for elderly people, with exempt only certain selected drugs (such as those for patients with end stage renal disease). The Medicaid system is provides health care services for some of the poor in the United States, exempt only drugs that are on the formulary in that state, and various restrictions limit the rate at which products are reimbursed (Freemantle, Bloor, 1996).

2.10.2 Arab experiences

In Jordanian MOH provides the health services for people who involved in governmental insurance system, which is mandatory for government employees by deducted 3% of the employee's salary to the system of insurance that does not exceed the value of 30 JD (40 USD). To take advantage of the pharmaceutical service in primary care, law provides that: Meets two hundred fils (0.3 USD) for each type of medicine for the patient described in the prescription, with the exception of medical reducing heat shall meet fifty fils for each item of it (Jordan health insurance legislation, 1983)

Despite the fund availability for drug in Gulf's countries most of countries like Saudi Arabia and United Arab Emirates start to add co-payment on drug in their PHC centers as solution to prevent irrational use of drugs (Kronfol, 1999).

2.10.3 WHO recommendations

From many experiences and many conferences, the WHO discussed the crucial issues related drugs services. These issues were represented by raising drugs funds and rational drug use. Consumer cost sharing strategy was the repeated solutions in most of these efforts; but the question is; what is the best appropriate mechanism to introduce co-payment system, with ensuring service affordability and achieving rational drug use?

During International Conference on Improving Use of Medicines (ICIUM) Thirty-two reports were found which dealt with fees for drugs, Some studies have shown that fees can lead to adverse impacts such as reduced access and inappropriate overuse, which can avoided by appropriately cost sharing mechanism. A fee per visit tends to encourage overuse of drugs. A high fee has inequitable affect on poor and children (ICIUM,1997).

Finally conference conclude that, the flat prescription fee which covering all medicines in whatever quantities within one prescription lead to over prescription, therefore user charges should be mad per drug not per prescription, or pay fixed small co-payment for each three drug per prescription (ICIUM,1997).

Regarding to decrease resource waste and drug expenditure, the WHO provided some recommendations to improve procurement system and benefits from external donors. Regarding improving procurement system, WHO recommend; procure the most cost-effective drugs in the right quantities; select reliable suppliers of high-quality products; achieve the lowest possible total cost, and complete knowledge status of internal and external markets (ICIUM, 1997). Regarding the external donations; donation should be based on recipient need, support his essential drug policy and there should be no double standards. If the quality of an item is not acceptable in donor's country it is unacceptable as a donation (ICIUM, 1997). .

Chapter (3)

Methodology

Chapter 3: Methodology

This chapter presents the study methodology. The chapter includes study design, type of study sample, study population, and ethical consideration. Also it presents the instruments which were used in this study, piloting, data collection process, data prescribing, and data analysis. Finally, it presents selection criteria and limitation of the study.

3.1 Study design

The design of this study is descriptive, analytical, cross sectional design to measure the relationship between co-payment amount and number of drugs written on prescription, and also between co-payment amount and cost of prescription. This design was chosen because it is the best design to describe the drugs situation in governmental PHC centers. It is less expensive and enables the researcher to meet the study objective in a short time. It also studies the cause and effect at the same point of time and thus provides some possible indication about causation relationships (Burns and Grove,1997)

3.2 Study population

The drugs prescriptions were the study population in conducting all research objectives. For the cost coverage study all prescriptions were taken, therefore total prescriptions through special collection document were studied for this purpose. For the rational use study, sample of patient encounters (prescriptions) of general illness encounters, representing same numbers of a mix of different co-payment amount regarding a mix of health problems (WHO, 1993). A sample of 108 prescriptions from each selected clinic in Gaza Strip were taken, therefore a sample of 1620 (representing PHC centers) prescriptions were selected and studied.

3.3Sample size and sampling process

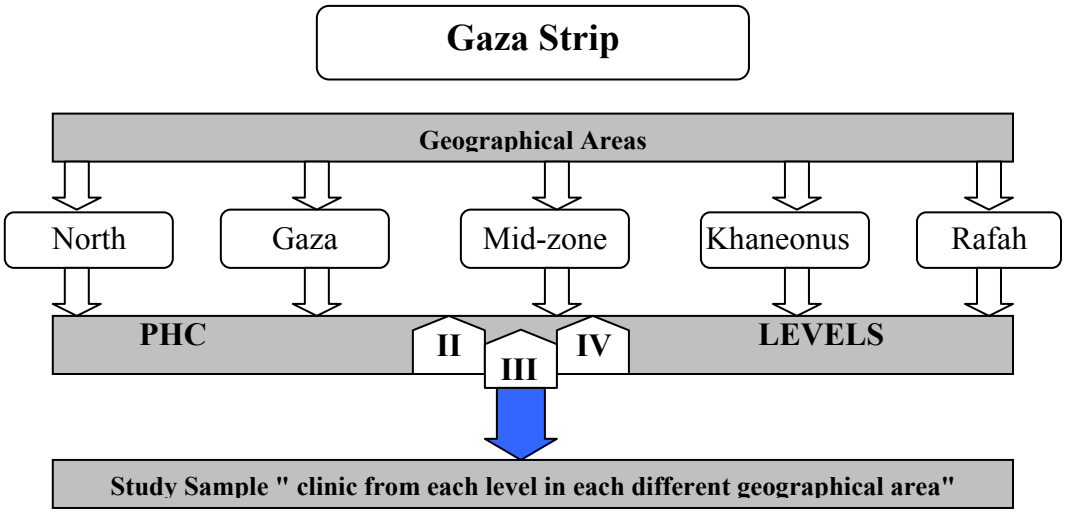


Fig (3.1) sampling process

According to WHO Recommendation on the sample size for WHO indicator; for cross sectional study , the recommended minimum sample size consist of 10 health facilities and 100 patient encounter per facility is taken (WHO, 1993), the study was conducted on 15 PHC clinics (Annex 5), one clinic from each level (II, III, IV) in each different geographical areas. All prescriptions written during first six months of 2008, was retrospectively reviewed from pharmacy files, to study co-payment coverage percent of drugs cost, and co-payment relation with drugs availability. For another purpose, co-payment effect on rational drugs use, another sample of 1620 prescriptions was used, 108 prescriptions written over the first six months of 2008 in each selected clinics .

3.4 Sampling process

The researcher followed the same basic for WHO recommendation, to study WHO indicator the sample should be 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 primary health care centers in Gaza governorates were stratified into three levels (II, III, and IV). A random sample of three clinics from each level was obtained regarding different geographical areas. The total clinics number was 15 (Annex 5).

Piloting reveals the availability of the prescription records on the store of each clinic, and all clinic use the same data system, so the researcher standardized the sampling process as follows:

A• All prescriptions written during the first six months of 2008, were retrospectively reviewed from pharmacy files. The data were recorded on designed data abstract sheet to study co-payment coverage percent to drugs cost, and co-payment relation with drugs availability.

B• For other purposes, co-payment effect on rational drugs use, another sample of 1620 prescriptions was used. In each centre, 108 prescriptions written during the first six months of 2008, selected according to the following mechanism:

- The prescriptions for the first 6 month of 2008 which proceeded the study was chosen as recommended by the WHO. The retrospective data had to be 12 month period prior the survey date, and if the necessary medical record data are too difficult or time consumed to extract, the list should cover as much of the study period as possible (WHO, 1993). The prescriptions of the previous year (2007) are difficult to extract so the chosen 6 months were sufficient to be used.
- In each clinic, for each month , the prescriptions were divided into three groups; three years and less children, more than three years, and prescriptions for patients who are exempted from drugs co-payment
- For each month and each group, 6 prescriptions were randomly drawn, 2 from the first 10 days of the month, 2 from the middle days and 2 from the last 10 days randomly.

3.4.1 Selection criteria

3.4.1.1 Inclusion criteria for clinics

- PHC centers of Governmental sector.
- Clinics from different levels which were randomly selected
- Clinics that have been working for more than six months

3.4.1.2 Exclusion criteria for clinics

- UNRWA and NGO,s PHC clinics
- Clinics out the random sample
- Clinics with special situation (psychiatric clinics, military clinics)
- PHC clinics which didn't start working yet or those starting working for less than six months.

3.4.1.3 Inclusion criteria for prescriptions sample

- Prescriptions that were dated in January till June 2008.
- Prescriptions written on the official prescription form.

3.4.1.3 Exclusion criteria for prescriptions sample

- Prescriptions written on unofficial prescription forms.
- Prescriptions from months other than the above specified months
- Prescriptions with special co-payment (milk prescriptions)

3.5 Study setting

The study was conducted at the governmental PHC centers in Gaza Strip Governorates. One clinic selected from each different level in each different geographical area (North Gaza, Gaza, Mid-Zone, khaneonous, and Rafah) to reflect geographical representative results.

3.6 Ethical Consideration and procedures

The researcher was keenly commitmented to all ethical considerations required to conduct research. First, ethical approval 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 the general director of PHC in Gaza Strip (Annex 7).

3.7 Study instrument

In this study the researcher used a quantitative research because it is the best for measuring the WHO drugs use indicators which were used in the study to reflect drug situation in governmental PHC centers, and also this research will be submitted to obtain the master degree; so there are short time to complete it.

According to study objectives, some of WHO selected indicators were used including, average number of drugs prescribed in the prescription, average number of antibiotics prescribed in the prescription, and the availability of some drugs. The researcher adopted WHO data abstracts sheets with some modifications (Annex 8) to meet the data collection, and be suitable for study objectives. According to WHO recommendation a checklist of 10-15 drugs used to study drugs availability, checklist of some drugs (12 drugs) was established (Annex 9) to study drugs situation in Gaza Strip clinics, with added new data to joint it by drugs availability and be suitable to explain the relation between co-payment and

drugs availability. Another sheet was used to calculate the total cost of consumed drug (Annex 10) through the calculation of total consumed quantity of each item multiplied by its cost.

The researcher also observed some related system procedures which may helpe in exploring the reality. These include the following::

- Some of patients' files in studied PHC centers.
- Documents of exempted patients.
- Mechanism of co-payment collection.
- Medical and financial scrutiny of a prescription in the pharmacy
- Prescribing forms and system used for their storing.

3.8 Constructions of the instruments

There are three data abstracts sheet were used as instrument for data collection in this study. The first sheet was used to study the co-payment effect on WHO recommended prescribing indicators (Annex 8). It started with some items that explored the request data related to PHC facility including PHC location, level, community served by the facility. The form of this sheet included the prescriptions data such as, date of prescription, prescription type (under, over 3 year or exempt), number of drugs prescribed in the prescription, antibiotic included in prescription or not.

The second sheet constructed to study the co-payment effect on drugs availability (Annex 9). It started with some item which explored the request data related to PHC facility including PHC Location , level, community served by the facility ,total prescriptions number per month , prescription quantity classification as , under 3 year ,over3 year and exempted prescriptions, and number of patients exempted from co-payment,. Additionally, selected key drugs were provided and participants were asked about the

presence of these drugs, and quantity amount which received during study month, and average quantity of same drugs consumed per day. And the third sheet was use to calculate the total cost of dispensed drugs in clinic (Annex 10) it started with data related to total revenue while the form of sheet include quantity of each consumed drug and its cost and finally calculates the total cost of consumed drug. Additionally to health facility situation, related information, involve number of total prescription and visitors number

3.9 Pilot Study

To test the appropriateness of data collection instrument, and standardize the suitable way for data collection, the researcher conducted a pilot study in two clinics. Some modification added to abstract sheets to be consistent with clinics situation. Additionally, the researcher observed the procedure of pharmaceutical services submitting at governmental PHC clinics.

3.10 Data collection and utilized equations

The data was collected from different 15 Governmental PHC centers (Annex 5) from 1st June 2008 to 30th July. The researcher collected the data only. The researcher also revised relevant documents and made some observations that helped in exploring the reality.

Key drugs chosen were depend of the definition of WHO literature review and consultation with PHC pharmacy manager and director general of the pharmaceutical stores in MOH.

Some data were extracted from the abstracts sheets using specific equations recommended by the WHO :

Prescribing indicators:

Interested by prescribing pattern; and includes:

- Average number of drugs per encounter = total number of drugs prescribed / total number of encounters surveyed;
- percentage of encounters with an antibiotic prescribed = (number of prescriptions during which an antibiotic was prescribed / total number of encounters surveyed) X 100;
- Average number of drugs dosage form per encounter = total number of total drugs dosage form per each encounter / total number of encounters surveyed;

Health facility indicators:

In this group two indicators are includes; Availability of key drugs and Percentage of patients treated with drugs

- Availability of key drugs = (number of specified drugs actually in stock / total number of drugs on the checklist) X 100;
- Percentage of patients treated with drugs = total number of visitors who receive drugs/total number of clinic visitor) X100

Economical indicators

The indicators used to reflect the economical status of PHC clinic, and includes:

- Average drugs cost per prescription = (total cost of consumed drug / total encounters which involved these drugs)
- Cost coverage = (total drug co-payment revenue / total cost of consumed drug) *100

3.11 Data management

3.11.1 Data entry

The following steps were used in data entry

- The data entry was done after over viewing of the filled data abstract sheets
- Designing a data entry model using the computer statistical package for social sciences (SPSS) and EXCELL software .
- The variables of abstracts sheets were coded then were entered onto the computer by the researcher.
- After that the data was cleaned to ensure correct entered of data.

3.11.2 Data analysis

Data analysis was done by the researcher with support from supervisor.

- Started by frequency of the different variables.
- cross tabulation for specific study variables
- Statistical formula developed by WHO was used to computed the selected WHO drug use indicators.
- Advanced statistical analysis was used to explore the potential relationship between the study variables, including:
    - One way ANOVA test
    - Regression test.

P value equal or less than 0.05 was considered statistically significant, with confidence interval (CI) of 95%.

3.12 Validity of instruments

The two data abstract sheets were adopted from the WHO forms, so they were internationally approved and there were no need for their validation. Some added variable on sheets, as well as the suggested key drugs list was discussed with experts to assess the relevance, comprehensiveness, and clarity of the used instrument. All comments of the experts were taken into consideration and introduced some modifications according to consultations.

3.13 Reliability of the instrument

Two steps were used to ensure the used instrument reliability:

- Standardization of data abstract sheet was guaranteed.
- Researcher preferd to collect the data by himself to ensure the reliability by avoiding interobserver variation.

3.14 Limitation of the study

- General unrest political situation, where full Israeli siege on the Gaza Strip was in place. It totally isolated Gaza from all the surrounding areas as well as the repeated attacks that led to a large number of wounded and injured persons, thus affecting drugs availability and use of medication in the governmental PHC centers.
- Limited time available to conduct the study
- Limited scientific resources like books and journals.
- Absence of computerized information system in clinic pharmacies, which lead to increase period of data extraction.
- The study was cross sectional while the drugs situation in clinics such as availability was change by time and circumstances.

Chapter (4)

Results & Discussion

Chapter 4: Results and Discussion

This chapter presents the results in illustrated and organized tables and graphs; it illustrates the descriptive analysis for included sample to reflect the real situation in Gaza governorates. Additionally, it includes the relationships between selected studied variables concerning co-payment effect on rational drug use and cost coverage as well as the analysis in reference to the WHO drug use indicators.

The results and finding will compared with other literature reviewed studies, attempt to interpret, discus results, and finding of this study.

4.1 Finding derived from data.

It is necessary to remember, that the following findings were collected by retrospectively reviewed of all prescriptions written over first six months of 2008. Data collected from 15 PHC clinic (Annex 5) selected randomly from different Gaza strip Governorates; one clinic from different level (II, III, IV). There are three different abstract sheets used; each of them was interested by specific goal. First one was involve abstracted data from random selected 108 prescription from each clinic; 36 prescription from each prescription types; exempted (don't pay), under 3 years (pay 1NIS per each drug), over 3 years (pay 3 NIS per each drug); this sheet consider as anatomical descriptive for medical prescriptions to illustrate the pattern of prescription among different types of prescriptions. The second was concerned with the key drug availability; the checklist of key drugs established before the study and it was limited to 12 products chosen according to their importance and frequency of usage (Annex 9). Third one interested count the cost of consumed drug; but also cost of each different drug dosage forms and the extent of the co-payment revenue contribute in coverage the cost of these drugs (Annex 10). Additionally to health facility

situation, related information, involve number of total prescription and visitors number, but the obtained results from last sheet was. The results highlight the factors that lead to change in value of drug consumption from clinic to another or from governorate to another.

Generally; all sheets help to reach the main goal, so all finding will merge and linked in this chapter to be able to give worth results.

4.1.1 Prescribing indicators related results

The results of this section reflects the drug prescribing pattern in Gaza governorates PHC facilities, and changing of this pattern by other variables change.

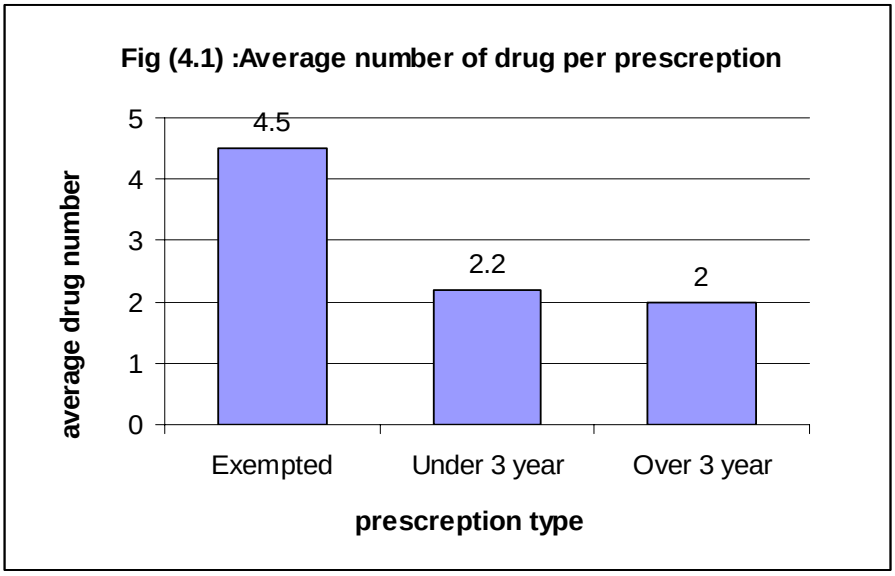
Table (4.1): Prescribing indicators by certain variables

Independent variables	Average No. of drugs/prescription	%of antibiotics included prescription	Average No. of dosage form /prescription
Prescription type			
Exempted	4.5	79.1	2
Under 3 year	2.2	66.3	1.6
Over 3 year	2.0	47	1.2
Governorates			
North Gaza	2.7	59.3	1.7
Gaza	3.2	66	1.7
Middle zone	2.9	62	1.5
Khan younis	2.9	65.7	1.5
Rafah	2.9	67	1.6
PHC level			
Level 2	2.4	62	1.5
Level 3	3.0	66.5	1.6
Level 4	3.3	63.9	1.6
Community served by the facility			
Urban	3.3	63.9	1.6
Camp	3.0	64.6	1.6
Rural	2.4	63.9	1.5
Average	**2.9**	**64%**	**1.6**

4.1.1.1 Number of drug per prescription

As illustrated in table 4.1, the average number of drug per prescription was 2.9 drug; and the minimum value per prescription was 1 meanwhile maximum value was 10 (SD= 1.7) and the median was 2. When this factor was studied in comprise different variable shown a clear difference in indicator results among different types of prescriptions, where the exempted prescriptions was had the highest mean number of drugs per prescription (4.5),

and the average number of drug per prescription is decreased with co-payment value increase (Fig 4.1). When this indicator was studied by different governorates, mean number of drug per prescription ranged from 2.7 to 3.2 among governorates. It was expected that difference refers to different physician attitude and behavior with socio economical culture variation among different governorates. Regarding PHC level in study of this indicator the mean number of drug was increase by increasing the PHC level, where the highest value shown in level IV (3.3), followed by level III (3), and then level II (2.4). The same result found among different community served by facility where highest value shown in urban areas followed by camp areas then rural areas.



The average number of drug per prescription was (2.9) drugs; this result is higher than the standard values that recommended by WHO, which is less than two drugs (WHO, 2006[b]). The uses an equal numbers of exempted and non exempted prescriptions cause an increase in the average mean, and cause the value does not reflect the real situation and increase the number because the exempted prescriptions has the highest number of drug per prescription (4.5). While the mean of drug number for non-exempted prescription despite

the co-payment value was (2.1); this number is closer to reflect the real situation, and it is slightly higher than WHO recommendation. This result is close to most of the results for most countries, the value is lower than the average result of low-income countries (2.7), and middle-income countries (2.5) (WHO, 2006[b]). The result of this study for non-exempted prescriptions is much better than the results which found in Gaza strip and West bank in 1997 which was (2.55) (Obeidallah, Mahariq, Barzeq, and Zemli, 2000). But higher than results found in 2005 which is (1.9) (Fattouh, 2005), which may highlight the political upset effect in deterioration of ministry plan in rational drug use. The result of this study is almost equal to the result in Alexandria in Egypt (2) (Zaki., Abed-Fattah, Bassili, Arafa, and Bedwani, 1999), and Tanzania (2.2) (Hogerzeil, Ross, Laing, Ofori-Adjei, Santoso, Chowdhury, et, al.1993), Dubai (2.2) (Sharif, Al-Shaqra, Hajjar, Shamout, and Wess, 2007). But the result is better than Nigeria, Indonesia (3.3) (Hogerzeil, Ross, Laing, Ofori-Adjei, Santoso, Chowdhury, et, al. 1993), also better than Moroco (3.27) (Simon, 1998), United Kingdom (2.6) (Trap 2000) and India (2.9) (Karande, Sankhe, and Kulkarni, 2005) At the other side the results is higher than which reported in Yemen (1.5) (Hogerzeil, Ross, Laing, Ofori-Adjei, Santoso, Chowdhury, et, al. 1993), Sudan (1.9) (Abdelmoneim, and Hossam , 2006) and Lebanon (1.6) (Hamadeh, Dickerson, Saab, Major, 2001). The results of exempted prescriptions (4.5) is higher than which all reported in all comprised countries, which ensure the role of co-payment in rational drug use and reducing multiple drug prescription (polypharmacy) which increases both the risk of drug-drug interactions and the incidence of adverse drug reactions, and it may also reduce compliance. The high number of drug per prescription in exempted patient's prescriptions may be as result to un proper physician prescribing practice which may be due to weakness of education program, lack of drug cost information and weakness of accountability system.

4.1.1.1.1 Comparison the number of drug per prescription by various variables

Table 4.2 illustrating the statistical results in the number of drug per prescription among different variables, which will help to know the real factors which effected on prescribing pattern, and to determine if it is related to economical or managerial or geographical factors.

Table (4.2): Comparison the number of drug per prescription by various variables

Drug use indicators	variables	mean	F	P Value
Governorates				
Average number of drug per prescription	North Gaza	2.7	4.99	0.06
	Gaza	3.2		
	Middle zone	2.9		
	Khan younis	2.9		
	Rafah	2.9		
PHC level				
Average number of drug per prescription	Level 2	2.4	38.5	0.001*
	Level 3	3.0		
	Level 4	3.3		
Co-payment size				
Average number of drug per prescription	Exempted	4.5	588.2	> 0.001*
	Under 3 year	2.2		
	Over 3 year	2.0		

** Statistically significant*

4.1.1.1.1.1 Comparison the number of drug per prescription by governorates

The mean of number of drug per prescription in Gaza is the highest (3.2) and North Gaza reported the lowest mean (2.7). One-way ANOVA test was used to examine the relation. Table (4.2) illustrate that the difference between number of drug per prescription means among different governorates is not statistically significant; where the P value was equal (0.06). The statistical results confirm that the difference in Gaza Strip governorates factors such as population density; behavior; attitude; culture and physician knowledge; attitude and behaviors not have effects on prescribing pattern and the same prescribing pattern is prevailing in all Governorates.

4.1.1.1.1.2 Comparison the number of drug per prescription by various PHC level

The relationship between number of drug per prescription among different PHC level tested by one-way ANOVA test. Table (4.2) proving that the difference in number of drug per prescription means in different PHC levels is statistically significant, where P value equal (0.001). this can be to different in type of pharmaceutical services which submitted in different PHC levels, where more number and types of therapeutically drug classes are available as the clinic level is highest; which increase the chance to increase the number of drug per prescription. Level IV and Urban area centers showed the highest mean (3.3) followed by level III (3.0) and level II (rural area) (2.4). The result may be interpreted by socioeconomic status which is better in urban area where patients more able to pay co-payment and receive more drug than rural area where patients try to receive only necessary needed drug to reduce his expenditure. This result is consistent with Saudi study where El-Gilany concludes in his study that low socioeconomic groups in rural area received less care than urban areas (El-Gilany, and Aref, 2000). But results inconsistent with Indian study which conclude that lack of awareness toward drug use in rural Indian area lead to more drugs are used in rural area than urban area (Ayesha , Shekhawat , Eltayb, Sunil, and Vinod ,2008)

4.1.1.1.1.3 Comparison between the number of drug per prescription and co-payment size

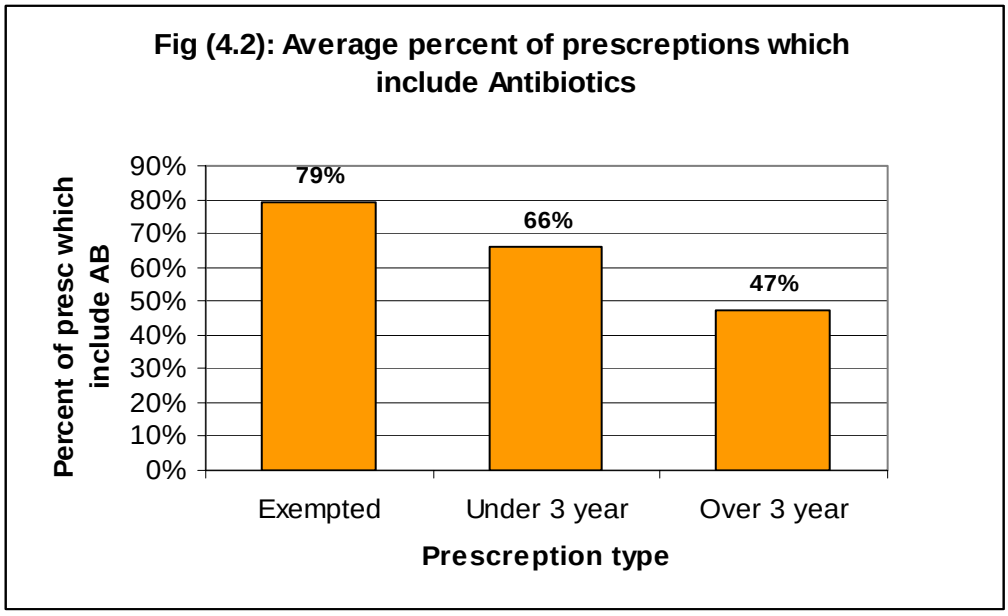
One way ANOVA test was used to examine the relationship between co-payment amount difference and the number of drug per prescription. As illustrated in table (4.2), presence or change of co-payment will cause statistical significant change in number of drug prescribed per prescription where P value was less than (0.001). The exempted patients who don't pay co-payment was have the highest mean (4.5), followed by under 3 years patient (2.2) who pay 1 NIS per each drug, and then over 3 year patients (2) who pay 3 NIS

per each item. Result is confirm the role of co-payment in limitation the extent of drug exploitation of drug. This result is consistent with which reported in USA (Austvoll, Aaserud, Vist, Ramsay, Oxman, Sturm et, al, 2008); Israel (Haim, 2002) and Nepal (Holloway,1997) which conclude that introducing or increase co-payment value will decrease the drug consumed. A Saudi study refer the overuse of drug per prescription to free of charge service (AL-Ahmadi and Martin, 2005), and consistent with Kenya situation where drug demand dropped by 27% when a registration fee was introduced and increase again when the registration fee was suspended (ICIUM, 1997). .

4.1.1.2 Antibiotics included prescription

Regarding antibiotics included indicator the percent of prescriptions that include antibiotics was 64% (table 4.1). When this indicator studied among different studied clinics; the minimum value per clinic was 53.7% in Jabalia center, meanwhile maximum value was 71.3% in Al-Remal and Tal essultan centers, (SD= 5.05) and the median was 63.9%. The same thing as in previous indicator is shown where the highest percent of prescription was include antibiotics found in exempted prescription (79%) and the percent also decreased with co-payment value increase, where the average percent was 66.3% for under 3 years patients and 47% for over 3 years patients (Fig 4.2).

The percent of pattern antibiotics prescribing per prescription varied by different governorates. The mean percent of prescriptions that includes antibiotics in Rafah is the highest (67%) and North Gaza reported the lowest mean (59.3%). While the highest mean percent of prescription which includeD antibiotics was in level III (66.5%) followed by level IV (63.9%), then level II (62%) and the same result was found among different community served by facility where highest value was shown in camp areas followed by urban areas then rural areas.



As illustrated in table (4.1) antibiotic prescribing was represented by (64%) from all prescriptions (79.1% for exempted prescriptions and 56.65% for not exempted). The percent is higher than which is recommended by WHO (>30%) (WHO, 2006[b]). In general the results is higher than other reported studies but in case of non exempted prescriptions (56.6%) it is higher than which reported in Dubai (21%) (Sharif, Al-Shaqra, Hajjar, Shamout, and Wess, 2007), Norway (48%) (Lindbaek, 1999), Yemen (46%) (Hogerzeil, Ross, Laing, Ofori-Adjei, Santoso, Chowdhury, 1993). The results become closely equal which reported in Uganda (56%), but more lower than which is reported in Sudan (65%) (Abdelmoneim, and Hossam , 2006), Iran (62%) (Moghadamnia, Mirbolooki, and Aghili, 2002), England (60%) (Majeed, and Moser, 1999). The results is higher than study results in Gaza Strip in 2000 where the prescriptions which included antibiotics in PHC clinic was (48%) (Obeidallah, Mahariq, Barzeq, and Zemli, 2000), which may related to huge number of wounded person due to Al-Aqsa Intifada.

In exempted prescriptions the results (79.1%) is higher than any which reported in literature review, which indicate the important role of co-payment in rationalize antibiotic

consumption; which also shown in non exempted prescriptions, where the percent is decrease when the co-payment increased (66.3% for over 3 year and 47% for under 3 years). The overuse of antibiotics problem not confined on exempted but it considers real prescribing problem in Gaza Strip extent in all patients' ages and categories. The problem may return to lack of patients awareness about adverse effect of different antibiotics use, and physician not compliance to therapeutic protocol as result to weakness of physician education program, lack of essential drug list updating, and shortage of needs drug push physician to prescribe available alternative antibiotics which without therapeutic effect. Random overuse of antibiotics is the principle factor in the emergence of resistance strain of bacterial pathogens. The highest percent of antibiotics uses in camp areas than urban area may return to more people crowded in this area, which facilitate infections spread, and most of Intifada wounded who needs antibiotics therapy are from camps areas.

4.1.1.2.1 Comparison antibiotics included prescription by various variables

The statistical results in antibiotics included prescription among different variables will be illustrated in table (4.3). Results will help discovering the problematic reasons of antibiotic overuse in Gaza Strip.

4.1.1.2.1.1 Comparison antibiotics included prescription by various governorates

The percent of prescription that include antibiotics varied among different governorates, where the mean percent of prescription that include antibiotics among governorates ranged from 59.3% in North Gaza to 67% in Rafah (table 4.1). One way ANOVA test used to examine the relationship between antibiotics included prescription and different governorates. Table (4.3) illustrate that the difference between means among different governorates is not statistically significant; where the P value was (0.163).

4.1.1.2.1.2 Comparison antibiotics included prescription by various PHC level

The highest mean of percent of prescription that include antibiotics was in level III (66.5%) centers and level II reported the lowest mean (62%). Result of One-way ANOVA test shown that; the P value was equal (0.31) (table 4.3), which indicate that, the difference in percent of prescription including antibiotics means is not statistically significant for different PHC level. Results indicate that; the antibiotic over prescribing problem not related to submitted services but the problem spread overall communities, which push us to dealing with problem as awareness an educational issue.

Table (4.3): Comparison antibiotics included prescription by various variables

Drug use indicators	variables	mean	F	P Value
Governorates				
Percentage of prescription included antibiotics	North Gaza	59.3	1.6	0.163
	Gaza	66		
	Middle zone	62		
	Khan younis	65.7		
	Rafah	67		
PHC level				
Percentage of prescription included antibiotics	Level 2	62	1.2	0.31
	Level 3	66.5		
	Level 4	63.9		
Co-payment size				
Percentage of prescription included antibiotics	Exempted	79.1	65.9	0.001*
	Under 3 year	66.3		
	Over 3 year	47		

** Statistically significant*

4.1.1.2.1.3 Comparison antibiotics included prescription by various co-payment size

The highest percent of prescriptions that include antibiotics was reported in exempted prescriptions (79.1%) where the co-payment size equal zero, and this percent decreased with co-payment size increase where the mean was 66.3% in under 3 years, and 47% in over 3 years prescriptions. One way ANOVA test was used to examine the relationship

between antibiotics included prescription and different co-payment size. P value was equal (0.001) (table 4.3). The fact of drug exploitation from exempted patients is return to confirmed her, where there are statistically significant relationship between co-payment size difference and percent of prescriptions that included antibiotics. The results is consistent with Nepal studies which shown, the antibiotic included prescription was reduce 7.3% by increasing the co-payment value (Holloway, 1997).

4.1.1.3 Dosage forms per prescription

In addition to previous WHO recommended indicators, another indicator which is number of pharmaceutical dosage form (tablets, syrups, cream…etc) per prescriptions was used. The uses of multi dosage usually prescribing for who suffers from many diseases at same time; such as diabetic patients who suffering from dermatological and gastroenteritis problems, may be need it for insulin injection, eye drop, cream, antacid syrup. This must not be the prevailing pattern for all patients, or specific group.

As shown in table (4.1) the average number of dosage form per prescription (1.6); the minimum value per prescription was (1) dosage form, meanwhile maximum value was (4) (SD=1.59) and the median was (1). The exempted type was including the highest average number of dosage form (2), (tablets, syrups, and Cream…etc) and decreases of this value with co-payment value increase (table 4.1). Studying of this indicator among different other variables; Governorates, PHC level, or community served by facility, there are no obvious different is shown (table 4.1) where the values range (1.5-1.7) among different governorates, and ranged (1.5-1.6) among different PHC level, and communities served. The result (table 4.1) explain the extent of use multi dosage form by exempted patients (2); and reduction with co-payment value increase; (1.6) for under 3 years patient and (1.2) for over 3 years patients. The detailed of this exploitation is clearer in (table 4.4).

Table (4.4): Percent of Prescription which contain a specific dosage form

Prescription type	Dosage form					
	Tablet	**Syrup**	**Cream**	**Drops**	**Supp**	**Injection**
Exempted	90.9	22.6	43.7	20.9	10.2	8.5
Under 3 year	2.6	88.9	39.3	18.5	7.8	0.4
Over 3 year	87	13.9	7.6	5.4	5.7	4.1
Total	**60.2**	**41.8**	**30.2**	**14.9**	**7.9**	**4.3**

As illustrated in (table 4.4), with exception of the prescriptions which included syrup dosage form in highest percent of under 3 years prescriptions, the exempted prescriptions has the highest percent of any other dosage form. Moreover, this exploitation is more clearly in dosage forms that can prescribe for all ages as cream and drop. The highest percent of prescriptions which include these dosage form was in exempted patients, followed by under 3 years, and then over 3 years prescriptions, which clearly explain the exploitation of exempted license and low co-payment value for under 3 year patients in dispensing these dosage forms. Drug exploitation may be encouraged by uncompliance of physician by patients file and weakness of accountability system.

4.1.1.3.1 Comparison Dosage forms per prescription by various co-payment size

One way ANOVA test was used to examine the relationship between co-payment size difference and dosage forms per prescription. As illustrated in table (4.5), presence or change of co-payment will cause statistically significant change in dosage forms per prescription where P value was less than (0.001).

Table (4.5): Comparison dosage forms per prescription by various co-payment size

Drug use indicators	Prescription type	mean	F	P Value
Average number of dosage form /prescription	Exempted	2	188.6	> 0.0001*
	Under 3 year	1.6		
	Over 3 year	1.2		

Result is confirm the role of co-payment in limiting the extent of drug exploitation of drug not only as number but as also drug types. Compared the uses of various pharmaceutical dosage forms in various different prescriptions type will illustrated in table (4.6).

Table (4.6): Relationship between co-payment amount and type of dosage form

Drug use indicators	Prescription type	mean	F	P Value
Percentage of prescription included tablet	Exempted	91%	1826.35	> 0.001*
	Under 3 year	3%		
	Over 3 year	87%		
Percentage of prescription included syrup	Exempted	23%	691.89	> 0.001*
	Under 3 year	89%		
	Over 3 year	14%		
Percentage of prescription included cream	Exempted	44%	113.04	> 0.001*
	Under 3 year	39%		
	Over 3 year	8%		
Percentage of prescription included drops	Exempted	21%	30.87	> 0.001*
	Under 3 year	19%		
	Over 3 year	5%		

** Statistically significant*

As illustrated in table (4.6), by using the one-way ANOVA test to examine the relationship between co-payment amount and type of dosage form written over prescription, the P value was less than (0.001) for all indicators. The difference in percent of prescriptions include any dosage form is statistically significant in exempted patients than other prescription type. Where the highest mean of prescriptions that include any dosage form (except syrup dosage form for under 3 year patients) shown in exempted prescriptions. The result is confirming the exploitation of exempted license from patients to dispense any drug with different dosage forms.

4.1.1.4 Relationship between dispensing time and drug use indicator

The change in drug prescribing pattern during different time of month is studied by selecting the prescription sample in three different times a month (first 10 days of the month, from 11th to 20th of the month and the last 10 days of the month). The relationship between drug use indicator and prescribing time examined by using one-way ANOVA test, and the result represented in table (4.7).

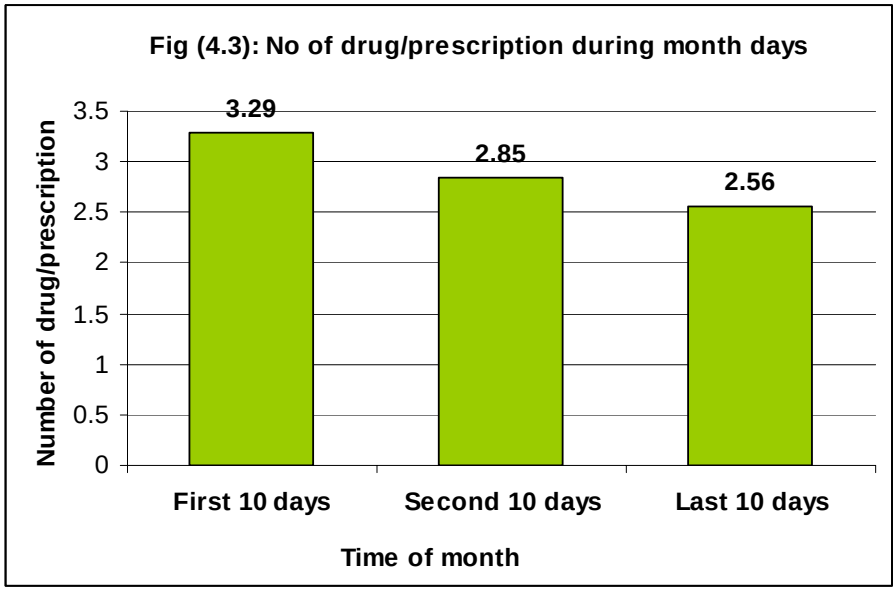
Table (4.7): Relationship between dispensing time and drugs use indicator.

Drug use indicators	Dispensing time	mean	F	P Value
No. of drug per prescription	First 10 days	3.29	25.86	0.0001*
	Second 10 days	2.85		
	Last 10 days	2.56		
Percentage of prescription included antibiotics	First 10 days	69%	9.56	0.0001*
	Second 10 days	67%		
	Last 10 days	57%		

** Statistically significant*

As illustrated in table (4.7) the change in drug use and prescribing pattern is statistically significant with the change of dispensing time. The P value was less than (.001) for number of drug per prescription; the highest mean showed in first 10 days (3.29) followed by the time from 11th to 20th (2.85) and then in the last 10 days of the month (2.56) (Fig 4.3) which is consistent with Fattouh finding in 2005 (Fattouh, 2005).

Regarding the percentage of prescription included antibiotics the P value was less than (0.001), and also the highest mean showed in first 10 days (69%) followed by the time from 11th to 20th (67%) and then the last 10 days of the month (57%).



This might be justified because of the change of economical status of most patients during the month days is the main reasons in changing the prescribing pattern cross month days. Number of drugs and antibiotics were prescribed more during first days of month because drugs are newly delivered in the first days of the month in most clinics and patients are accustomed to find their drugs in these days.

4.1.1.4.1 Relationship between co-payment amount and drugs use indicator during different days of months

As concluded in table (4.7) the change in drug use and prescribing pattern is statistically significant with the change of dispensing time; where the highest mean of number of drug per prescriptions and percent of prescriptions included antibiotics showed in first 10 days followed by the time from 11^{th} to 20^{th} and then the last 10 days of the month. However, are these patterns apply to all type with various co-payments paying patients?

The dispensing time has another related indications rather than time itself; such as economical meaning where the economical status of many patients especially employee and worker is much better in first days of month than later days. Moreover, the drug

availability changed during month days, where more drugs is available at first days than last days of month.

As illustrated in table (4.8). One-way ANOVA test used to examine the relationship between drug use indicators and different time of month for different co-payment sizes. Regarding the exempted prescriptions there are no significant relationship between dispensing time and number of drug per prescription and the relation also not statistically significant with percent of prescription included antibiotic where "P" value was equal (0.123) and (0.837) respectively for both indicator and the means was closely the same during different dispensing time. The small difference in means may relate to drug availability change with each passing day.

Table (4.8): Relationship between co-payment amount and drugs use indicator during different days of months

Drug use indicators	Dispensing time	mean	F	P Value
No. of drug per prescription for exempted prescriptions	First 10 days	4.69	2.10	0.123
	Second 10 days	4.41		
	Last 10 days	4.31		
No. of drug per prescription for under 3 year prescriptions	First 10 days	2.51	18.625	0.0001*
	Second 10 days	2.19		
	Last 10 days	1.99		
No. of drug per prescription for over 3 year prescriptions	First 10 days	2.69	94.42	0.001*
	Second 10 days	1.94		
	Last 10 days	1.38		
Percent of prescription included antibiotic for exempted prescriptions	First 10 days	78%	0.178	0.837
	Second 10 days	81%		
	Last 10 days	78%		
Percent of prescription included antibiotic for under 3year prescriptions	First 10 days	72%	5.09	0.006*
	Second 10 days	70%		
	Last 10 days	57%		
Percent of prescription included antibiotic for over 3year prescriptions	First 10 days	56%	8.52	0.001*
	Second 10 days	51%		
	Last 10 days	47%		

**Statistically significant*

Regarding under 3 year patients prescription the one-way ANOVA test give statistically significant results where the "P" value was (0.001) and (0.006) in number of drug per prescription and percent of prescription included antibiotic respectively. The same result was achieved by apply the same way for over 3 year patient's prescriptions where P value was less than (0.001) for number of drug per prescription and percent of prescription included antibiotic which indicate the statistically significant relation between dispensing time and drug use indicators in prescriptions of patients who pay any amount of co-payment.

From the finding, the co-payment role in changing prescription pattern and limitation drug exploitation clearly concluded. The exempted patient is not affected by the change in the month days and quantity needed was not affected by decline of drug availability with time, as they may take any unneeded drugs, while introducing any amount of co-payment will cause prescribing pattern change cross time. The highest mean of number of drug per prescriptions, and percent of prescriptions included antibiotics for patients who pay co-payment showed in first 10 days, followed by the time from 11^{th} to 20^{th}, and then the last 10 days of the month. At the same interval of days after first 10 days of month, there are decreases in indicators mean with co-payment size increase, where the mean of drug per prescription at last 10 days was (1.99) and (1.38) for under and over 3 years prescriptions respectively (table 4.8). The mean percent of prescriptions that include antibiotic at last 10 days was (57%) and (47%) for under and over 3 years prescriptions respectively (table 4.8)

4.1.2 Health facility indicators

The result of this section deales with managerial factors that effect the real situation in the PHC facilities and variation of these indicators among different variables.

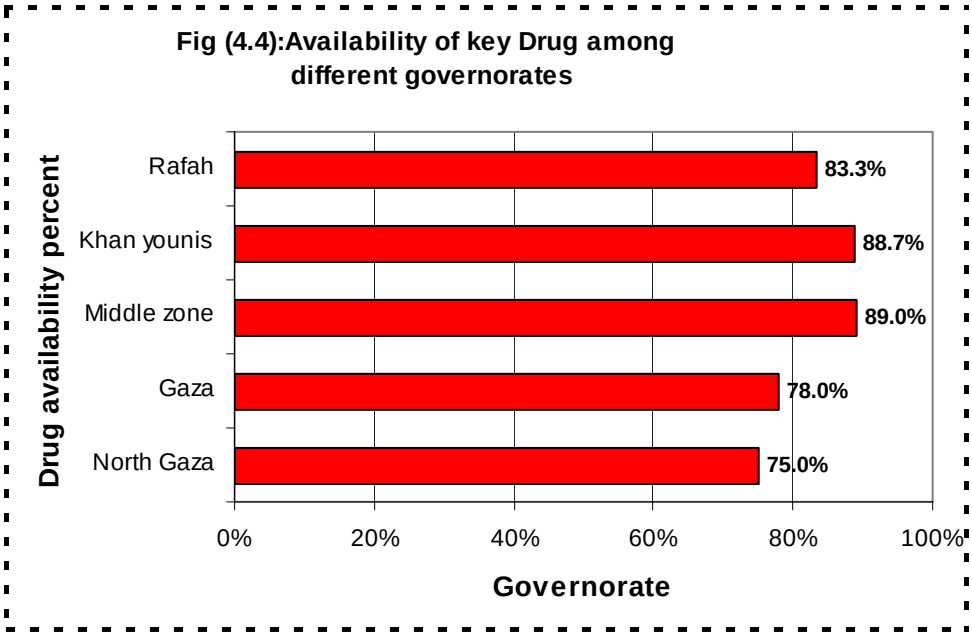
Table (4.9): health facility indicator by specific variable

Independent variables	Key drugs availability	%of patients treated by drug	%of patients treated by drug	
			Under 3 year	Over 3 year
Governorates				
North Gaza	75	78.1	91	73.2
Gaza	78	75.3	92.4	69.6
Middle zone	89	73.1	82.5	69.2
Khan younis	88.7	73.8	79.9	72.2
Rafah	83.3	76.9	95.7	66.9
PHC level				
Level 2	88.4	72	88.2	64.6
Level 3	81.6	78.2	92.1	73
Level 4	78.4	76.1	84.6	72.5
Community served by the facility				
Urban	78.4	76.1	84.6	72.5
Camp	83.2	73.4	93.9	65.5
Rural	86.8	76.8	86.4	72.1
Average	82.8%	75.4%	88.2%	70%

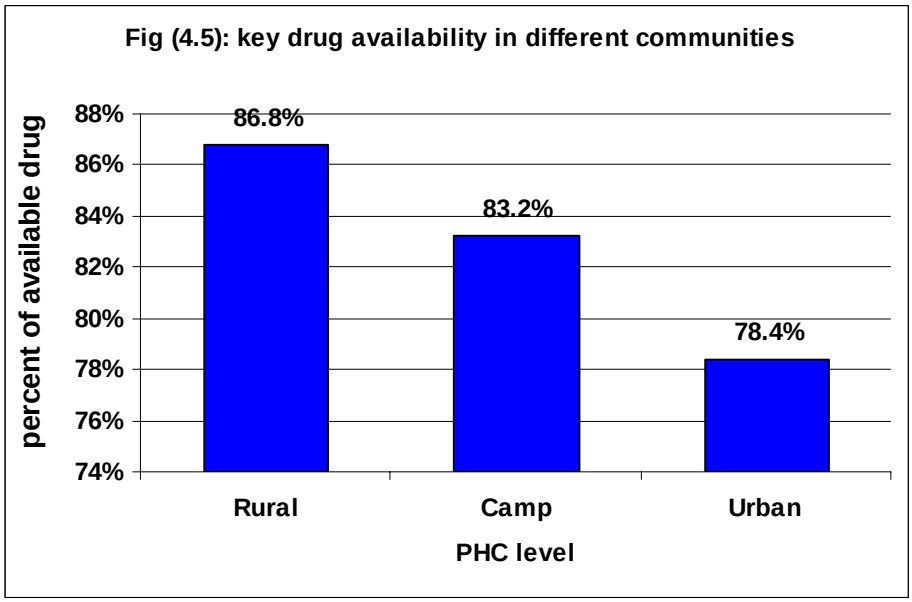
4.1.2.1 Drug availability

The checklist of key drugs was established before the study based on discussion with policy maker, and it was limited to 12 products chosen according to their importance and frequency of usage (Annex 9). The availability of key drugs was 82.8% and the minimum value was 75% in North Gaza and maximum value was 89 % in Middle Zone Governorates, (SD= 10.65) and the median was 83%. Drug availability is affected by

many factors as physician attitude and behavior; procurement fund; society behavior; supplying sources and population crowded the thing which cause variation of percent among different Governorates and PHC level and may cause the percent of available drug in rural area more than urban area (Fig: 4.4).



The highest average percent of drug availability was in level II clinic and rural area (86.6%) to that extent to reach 100% in some rural clinic as Wadi Elsalka and Alfokhary clinics. Followed by level III clinics and camps area (83.2%), and the lowest percent was reported in level IV clinics and urban area (78.4%) (Fig 4.5). This might be justified because the economical status of urban citizen which better than rural area is one of the main reasons causes patients more able to pay co-payment and consume more drug than other areas where there patients may resort to use alternative medicine to save money. The accessibility difficulty to health care clinics in rural area is other reasons for more drug availability, while less percent of drug shortage in camp areas refer to most of camps patients who prefer to receive their drug from UNRWA where all services are free.



The average percent of drug availability (82.8%) is lower than which is recommended by WHO references (100%) (WHO,2006[b]). This result is inconsistent with result of previously conducted studies in Gaza strip and the West Bank which reported the drug availability (100%); which may interpreted by knowing that the conducted of previous study involved public and private sectors, in which compensate the lack of drug at one party by found it at other (Obeidallah, Mahariq, Barzeq, and Zemli, 2000). But the result is consistent with that reported in a study in Gaza strip (82.6%) in 2005 (Fattouh, 2005); and the percent being in same average of most countries reported (>80%) (WHO, 2006[b]). It is inconsistent with middle-income countries situation where key essential drugs were more available in the public sector than in the private sector (WHO, 2006b). Despite the special political and economical situation in the Gaza strip; in this study the result is higher than Ecuador (38%), Bangladesh (54%), Nigeria (62%) and in Tanzania (72%)(Hogerzeil, Ross, Laing, Ofori-Adjei, Santoso, Chowdhury, et, al. 1993). Key drug shortage may be due to reasons such as Israeli siege which prevent regular passage of drug, uncommitted a number of supplier due to raw material shortage or bad political situation, insufficient fund for needed quantity, and donor agenda.

4.1.2.1.1 Comparison drug availability by various variables

Table (4.10) is illustrating the statistical results between drug availability and different variables.

Table (4.10): Comparison drug availability by various variables

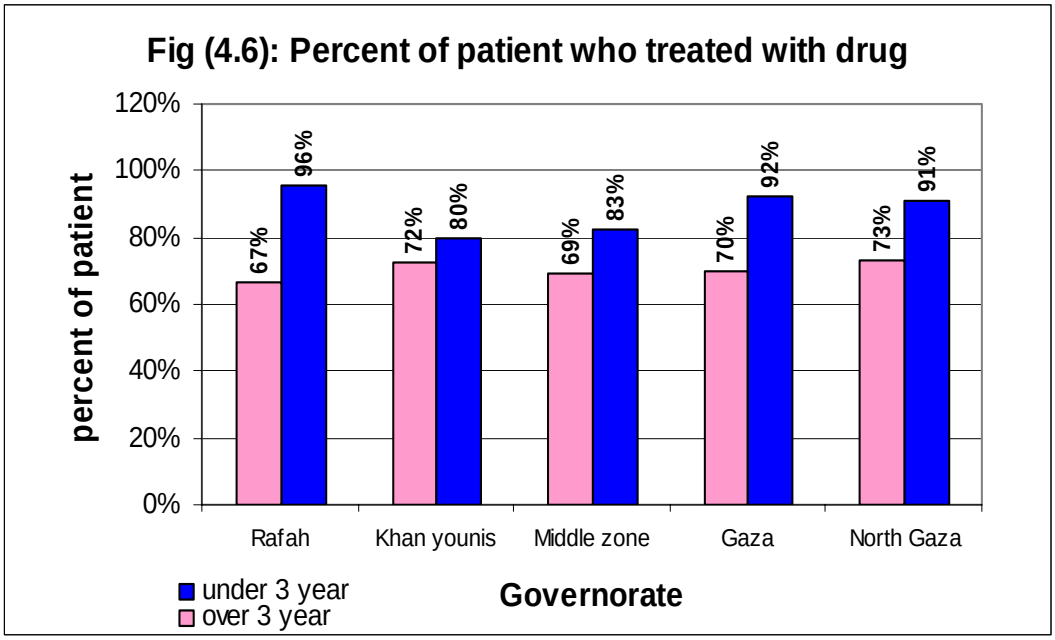
Drug use indicators	variables	mean	F	P Value
Governorates				
Key drugs availability	North Gaza	75	1.054	0.43
	Gaza	78		
	Middle zone	89		
	Khan younis	88.7		
	Rafah	83.3		
PHC level				
Key drugs availability	Level 2	88.4	1.18	0.34
	Level 3	81.6		
	Level 4	78.4		

** Statistically significant*

One-way ANOVA test is used to examine the relationship between drug availability and different governorates at different PHC level. Table (4.10) illustrates that. despite the difference in drug availability percent among different governorates and PHC level, the result illustrates that the difference is not statistically significant; where the P value was equal (0.43) and (0.34) in different Governorates and PHC levels respectively. results showned that, the cultural and demographical variation cross governorates and, variation in provided services cross different PHC levels, is don't cause radical change in drug availability. May be the main reason for drug shortage in clinic might be the lack of some drugs in MOH stores not due to bad prescribing pattern.

4.1.2.2 Percent of patients treated with drug.

As illustrated in table (4.9), the average percent of patients treated with drugs per clinic was 75.4% and the minimum value was 73.1% in Middle Zone and maximum value was 78.1 in North Gaza (SD= 7.03) and the median was 72.08; which mean 24.6% of patients leave's clinics without recipient of pharmaceutical services. The average percent of patient treated with drug increased by co-payment size decrease where the average percent was 88.2% for patients who pay 1NIS/drug and 70% for patients who pay 3NIS/drug. Percent of patient treated with drug, is consider one of complementary drug use indicators; and it seen as relatively issue different from one country to another affected by health situation; drug availability; physician attitude and knowledge and economical status (WHO, 2006[b]). Despite any variation among different governorates, the percent of under 3 years visitors who treated with drug is higher than others (fig 4.6).



The study reported that; the percentage of patients treated with drugs was 75.4%, which is lower than which shown in Saudi Arabia (85%) (AL-Ahmadi and Martin, 2005), and in Al-

sharja (92%) (Hasan, Das and Mourad, 1997). The right side of the table (4.9) clarifies the role of co-payment in the drug use rationalization, and limiting the use of only those who need it; where 88.2% of patients who pay one NIS per each drug are recipient drug services. Which might be return to low value of co-payment, which facilitate drug affordability; and create patients attitude to receive any drug, and physician attitude to prescribe any safe drug such as creams or drops to satisfy visitors where the visitor may not need it? This attitude is limited for patients who pay three NIS per each drug where only 70% of those visitors treated with drug.

Role of economical status is return to clarify here, where proportion of drug treated patients in rural area (76.8%) is higher than urban area (76.1%) (Table, 4.9). at the same time that drug availability is more in rural than urban area (table 4.9); This indicates that visitors to clinics in rural areas are the real sick and who need of medicine and take the necessary medicine only, while in urban areas may have the aim of the clinic visit is to obtain medicines only.

Community awareness, and physician behavior play important role in this issue. Weakness of patients or communities knowledge about economical and healthy adverse effect of drug overuse, and drugs stockpiling in the house for times of need it, and uncommitted of physician by patient file with lack the physician motivation and attitude to success the MOH plane in rationalization drug use, in addition to weakness the accountability; all of these factors will increase the percent of patients who treated with drug with decreasing the co-payment value.

4.1.2.2.1 Comparison patients treated with drug by various variables

Table (4.11) is illustrates the statistical results between percent of patients treated with drug and different variables.

Table (4.11): Comparison percent of patients treated with drugs by various variables

Drug use indicators	variables	mean	F	P Value
Governorates				
Percent of patients treated with drugs	North Gaza	78.1	0.208	0.928
	Gaza	75.3		
	Middle zone	73.1		
	Khan younis	73.8		
	Rafah	76.9		
PHC level				
Percent pf patients treated with drugs	Level 2	72	1.01	0.39
	Level 3	78.2		
	Level 4	76.1		

** Statistically significant*

One-way ANOVA test is used to examine the relationship between percent of visitors treated with drug at different governorates and different PHC level. Table (4.11) illustrates that. the P value was equal (0.928) and (0.39), which indicate that; the difference is not statistically significant. The statistical results confirm that the difference in the Gaza Strip governorates factors such as population density; behavior; attitude; culture and physician knowledge; attitude and behaviors, and variation in provided services at different PHC levels does not cause change in percent of patients treated with drug.

4.1.3. Economical indicators

This section deals is dealing with financial issues in PHC clinic which may affecting on drug use and prescribing pattern; it is represented by two indicators; prescription cost and coverage of drug cost by co-payment revenue.

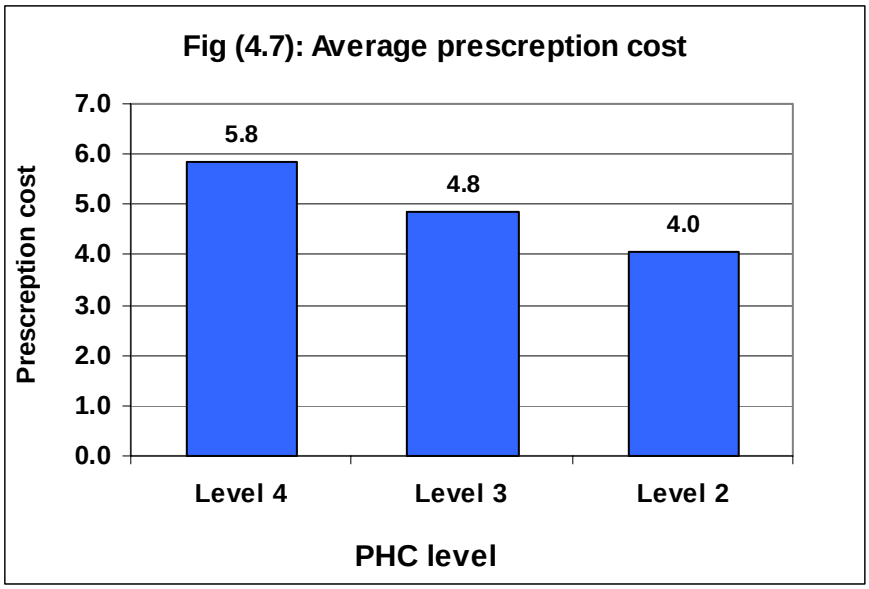
Table (4.12): Economical indicator by specific variable

Independent variables	prescription Average cost	Coverage percent
Governorates		
North Gaza	4.47	90%
Gaza	5.88	84.3%
Middle zone	4.56	95.3%
Khan younis	4.78	84.3%
Rafah	4.84	67%
PHC level		
Level 2	4.04	91%
Level 3	4.84	86.8%
Level 4	5.84	74.8%
Community served by the facility		
Urban	5.84	74.8%
Camp	4.81	85.4%
Rural	4.06	92.4%
Average	4.9	84%

4.1.3.1 Prescription cost

As illustrated in (table 4.12) the average drug cost of prescription per clinic was 4.9 NIS (1.4 US$) and the minimum value was 3.5 in Alshabora clinic, and maximum value was 7.9 in Alremal center (SD= 1.068) and the median was 4.69. The maximum value was in Gaza Governorate (5.88 NIS), while the North Governorate reported the minimum value (4.47 NIS). Regarding average prescription cost in PHC level and community served by the facility; the image has similar in both cases where the maximum value shown in level IV and Urban area (5.8 NIS), while the minimum value reported in level II and Rural areas

(4 NIS). Prescription cost is depends mainly on the number of drugs written in prescription and expensive of theses drug. The presence chronic patients clinic in level IV centers in urban area lead to more drugs number per prescription and more expensive drugs as insulin in uses (table 4.1) and in the end lead to raise prescription cost (Fig 4.7).



The average cost of prescription (1.4$) is lower than those reported in USA (10$) (Grant, 2007). The large gap is returns to the difference in cost sharing system, where in USA the patient have option to choose the trade name for the same item which may be more expensive but in our study the patient is restricted to what is available in PHC clinics. Despite the equality in number of drug per prescription (2.9) the results also lower than which reported in Nepal (3.29$) (Alam, Mishra, Prabhu, Shankar, Palaian, and Bhandari, 2006). And India (4.5$) (Gupta, Malhotra, Jain, Aggarwal, Pandhi., 2005), but that due to involvement of hospitals in Nepal and Indian studies which usually dispensed more expensive drug than PHC. The result is higher than Egypt (0.7$) (Egyptian MOH, 1997) as result of a low drug cost in Egypt and dependent of Egyptian MOH mainly in local industries which reduce the others logistic costs.

4.1.3.1.1 Comparison between prescriptions cost in various variables.

Table (4.13) is illustrating the statistical results between average prescription cost per clinic among different governorates and PHC levels..

Table (4.13): Comparison the prescription cost by various variables

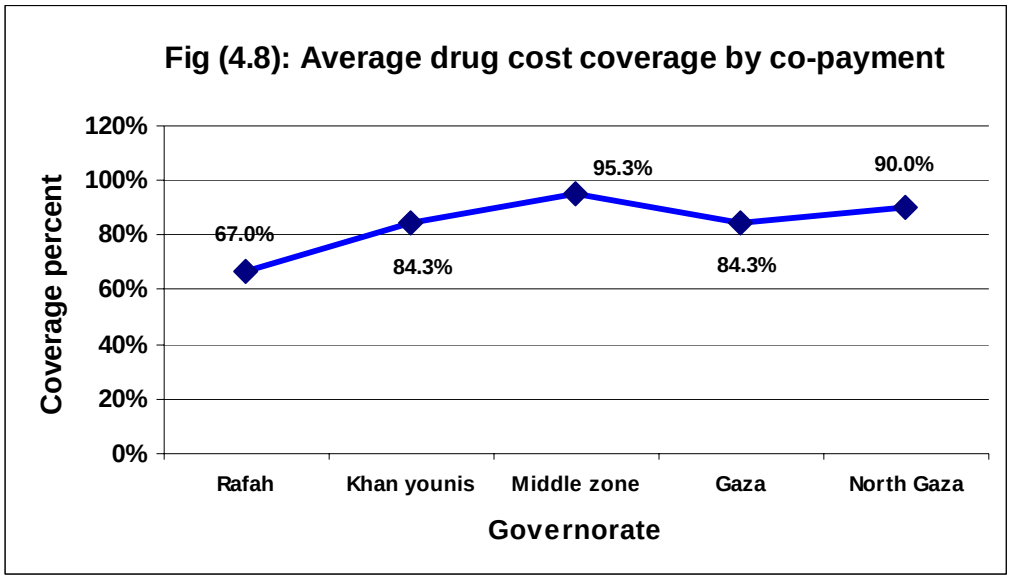
Drug use indicators	variables	mean	F	P Value
Governorates				
Average cost of prescription	North Gaza	4.47	0.795	0.555
	Gaza	5.88		
	Middle zone	4.56		
	Khan younis	4.78		
	Rafah	4.84		
PHC level				
Average cost of prescription	Level 2	4.04	6.2	0.014*
	Level 3	4.84		
	Level 4	5.84		

** Statistically significant*

The one way ANOVA test was used to examine the relationship between financial indicators and different governorates. As illustrated in table (4.13) the changes in socio culture and behavior in different governorates do not has statistically significant change in average prescription cost; where P value was equal (0.555). In the other hand the statistically significant relationship was reported between PHC level and average prescription cost where P value was (0.014). The prescription cost is increase with high level clinics, where the highest average prescription cost was in level IV (5.84 NIS), followed by level III (4.84), while the lowest average cost was reported in level II (4.04). The provided services increases in high clinic services due to presence of more clinic as chronic patients clinic, which lead to more drug use; especially expensive ones.

4.1.3.2 Cost coverage

The average percent of co-payment coverage to consumed drugs cost was 84%. Whilst the minimum was (67%) in Rafah Governorate, the maximum was reported in middle zone governorate (95.3%) (SD = 13.5) with a median equal 86% (Fig 4.8).



Low cost coverage in Rafah governorate (Fig 4.8) was because of high use of syrups, cream and drops dosage form compared to other governorates, due to presence of special dermatological and ophthalmic clinics in studied centers of Rafah region (table 4.14) which may dispensed for under 3 years prescription who pay low co-payment.

.Table (4.14): Percent of dosage form cost by specific Governorate

Independent variables	Tablet cost (%)	Syrup Cost (%)	Cream cost (%)	Drops Cost (%)	Injection cost (%)	Others Cost (%)
North Gaza	30.1	44.5	7.9	5.3	7.4	4.8
Gaza	39.5	33.9	6.9	4.5	11.7	3.6
Middle zone	32.8	40.4	6.7	4.5	10.3	5.3
Khan younis	32.1	42.7	8.5	3.9	9.3	3.5
Rafah	27.8	47.1	11	5	6.4	2.8
AVERAGE	32.5	41.7	8.2	4.6	9	4

The exploitation for low co-payment value for under 3 years patients in describing ageing possible dosage forms as syrup, cream, drop, was increase the consumed drug cost with low co-payment revenue which ended by less cost coverage percent. Rafah Governorates also report highest values in many indicators, which may interpretation the lowest percent of cost coverage. Rafah governorates has highest average percent of prescriptions which include antibiotics (67%) (Table 4.1), and average percent of under 3 years patient treated with drug (95.7%) (Table 4.9). Additionally, Rafah governorate has the highest number of exempted patients (table 4.15); who have the highest average number of drug per prescription without paying any thing.

Table (4.16): Number of exempted patients in Governorates

Governorate	North Gaza	Gaza	Mid zone	Khanyounis	Rafah
No. of exempted patients	148	159	52	43	160

Regarding the PHC level; the highest average percent of cost coverage was reported in level II (91%) that represent rural area, followed by level III (86.8%), while the lowest value was reported in level IV (74.8%) that represent urban area (Table 4.12). This is all due to the economic and social conditions; caused the difference in the average of previous indicators between rural and urban areas, addition to highest number of exempted patient in level IV (table 4.17), all together caused decline in the percentage of cost coverage by co-payment revenue.

Table (4.16): Number of exempted patients in PHC levels

PHC level	IV	III	II
No. of exempted patients	383	114	65

The study result showed that; the percent of cost coverage (84%) which is better than which are is reported in England (40%) (Freemantle, Bloor, 1996). The low coverage percent in England return to included privet sector in study that involve expensive drug. The coverage percent is a relatively issue depends on consumed drugs cost, type of drugs, number of exempted patient, pattern of prescription and may be corruption in dispensing the thing which cause variation in coverage percent; but in general the percent is not bad for facilities submit free service for huge number of wounded, poor, and specific class. The percent can be much bitter if there are continuous improvement for drug procurement system, and if we have ability to contact with other global and neighbor markets.

4.1.3.2.1 Comparison between drug cost coverage in various variables.

Table (4.14) is illustrating the statistical results between average prescription cost per clinic among different governorates and PHC levels.

The one way ANOVA test was used to examine the relationship between average cost coverage per clinic and different Governorates and various PHC levels.

Table (4.17): Comparison the percent cost coverage by various variables

Drug use indicators	variables	mean	F	P Value
Governorates				
Percent of cost coverage by co-payment revenues	North Gaza	90%	2.9	0.081
	Gaza	84.3%		
	Middle zone	95.3%		
	Khan younis	84.3%		
	Rafah	67%		
PHC level				
Percent of cost coverage by co-payment revenues	Level 2	91%	2.98	0.143
	Level 3	86.8%		
	Level 4	74.8%		

As illustrated in table (4.17) the changes in socio culture characteristics and different physician attitudes and behavior among different governorates. Additionally to; variation in provided services at different PHC levels, there are no statistically significant change in average percent of drug cost coverage; where "P" value was equal (0.081) and (1.43) for percent of cost coverage by co-payment in different governorates and PHC level respectively.

Finding similarity

The reason of finding similarity in variables of PHC level, and community served by facility return to fact that all level IV clinic are found in urban area while most of level III clinic are found in Camps area but the level II clinics are found in rural area. This thing will cause close equal values in level IV with urban area, level III with camp area and level II with rural area, and this facts will repeated in all following relations, so any relation by PHC level will reflect the situation in community served by facility and vice versa.

4.2. Exemption and prescribing pattern effects

This part will discuss the role of exemption patients number and number of drug prescribed per prescription on improvement or deteriorate different variables; such as cost coverage, drug availability and prescription cost.

4.2.1 Exemption and prescribing pattern effects on cost coverage

The variation in cost percent coverage among different clinics is due to specific difference inside these clinics.

4.2.1.1 Relationship between cost coverage and number of drug per prescription

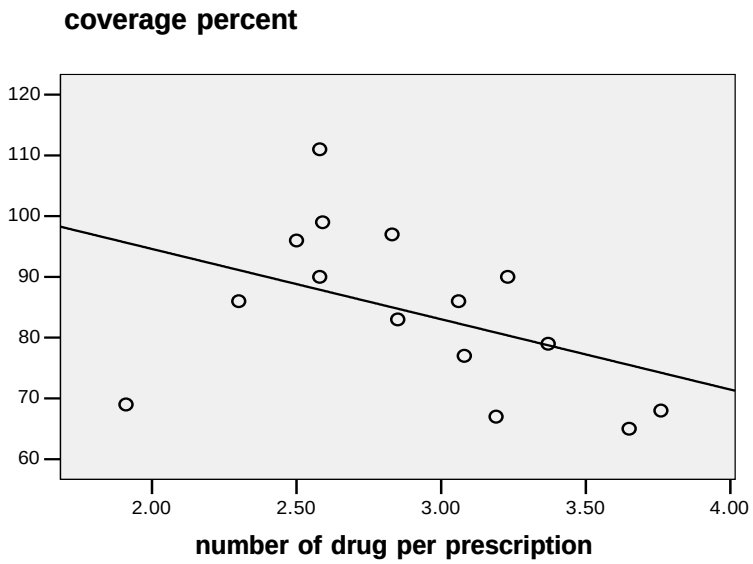


Fig (4.9): Relationship between cost coverage and number of drug per prescription

As illustrated in (Fig 4.9) by using the Regression Analysis. there is negative relation between cost coverage percent and number of drug per prescription; which refer to increasing in cost of consumed drug due to more number of drug per prescriptions is highest than increasing of fixed co-payment revenue. This relation is not statistically significant where P value equal to (0.106).

4.2.1.2 Relationship between cost coverage and number of exempted patients

As concluded from previous relations more drugs is consumed by exempted patients; and they are more utilized for more different dosage form; but does this exploitation has effect on general cost coverage percent.

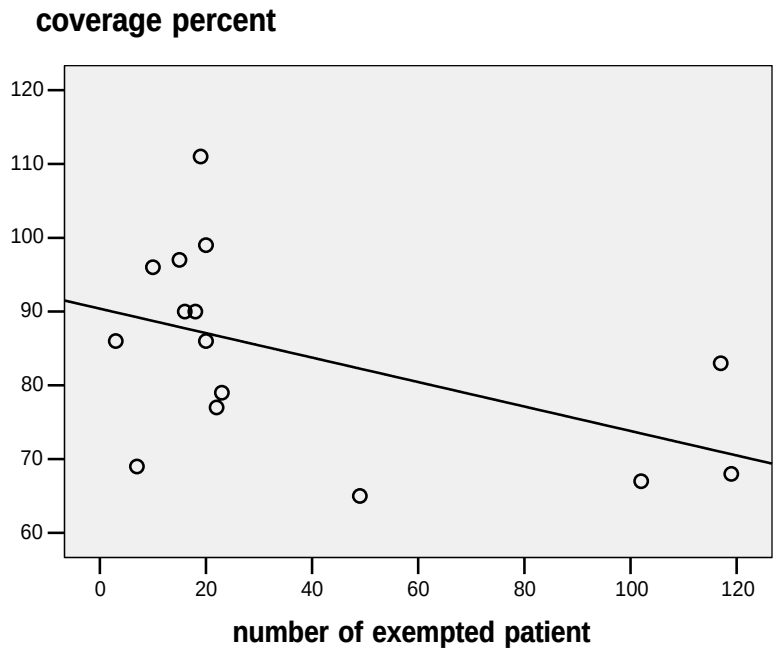


Fig (4.10): Relationship between cost coverage and number of exempted patients

The P value which achieved from Regression test was equal (0.041); which indicate that negative relationship between cost coverage and number of exempted patients which is illustrated in (Fig 4.10) is statistically significant. The relation confirm that the amount of drugs which were consumed by exempted patients is costly effect on total drug consumed by clinic with lowest amount of revenue in extent to cause negative effect on cost coverage percent. Result reflect the necessarily to review the exemption system and establish the appropriate restriction which help in limitation drug exploitation from exempted patients.

4.2.2 Exemption and prescribing pattern effects on drug availability

Is the change in number of exempted patient and number of prescribed drug per prescription able cause statistically significant change in drug availability?

Regression Analysis test was use to examine the relationship between drug availability and both number of exempted patients and number of drug per prescription. As illustrated in figures (4.11) and (4.12) there is a negative relationship between drug availability and both two variables.

In both cases the relation is not statistically significant where P value was (0.255) for relation between drug availability and number of exempted patients; and equal (0.304) for relation between drug availability and number of drug per prescription.

Result confirm that the drug availability is depends mainly on drug quantity which received from main drug store.

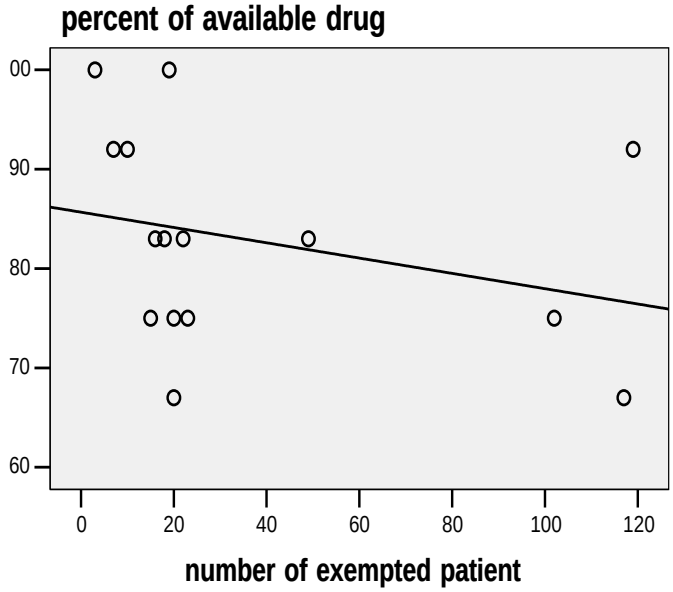


Fig (4.11): Relationship between drug availability and number of exempted patients

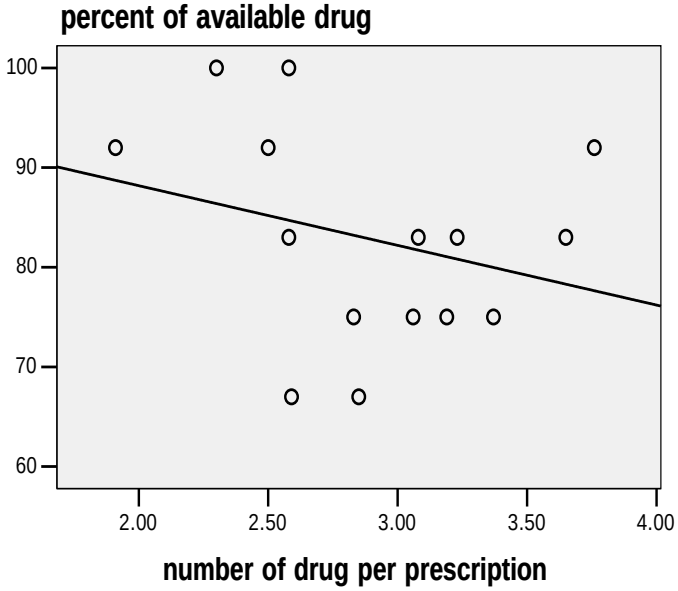


Fig (4.12): Relationship between drug availability and number of drug/prescription

4.2.3 Exemption and prescribing pattern effects on prescription cost

Prescription cost value is very important indicator to extent of drug exploitation, and knowledge the factors which affecting in this value is important to expenditure control.

Regression Analysis test was used to examine the relationship between prescription cost and both number of exempted patients and number of drug per prescription. As illustrated in figures (4.13) and (4.14) there is statistically significant positive relationship between prescription cost and both two independent variable where P value was equal (0.004) and less than (0.001) for relation with number of exempted patients and with number of drug per prescription respectively.

In both cases the main reasons return to high number of drugs per prescription which consumed by exempted patients or by other patients who need it or who able to pay co-payment; which finally decrease prescriptions count and increase prescription cost.

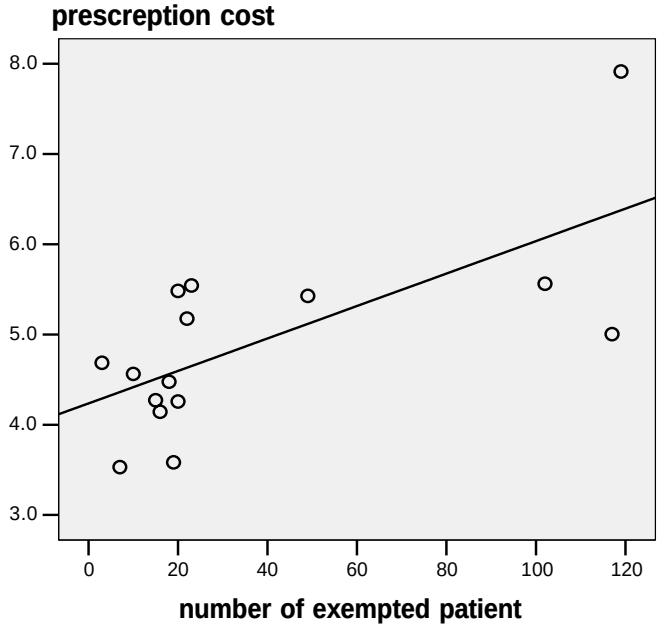


Fig (4.13): Relationship between prescription cost and number of exempted patients

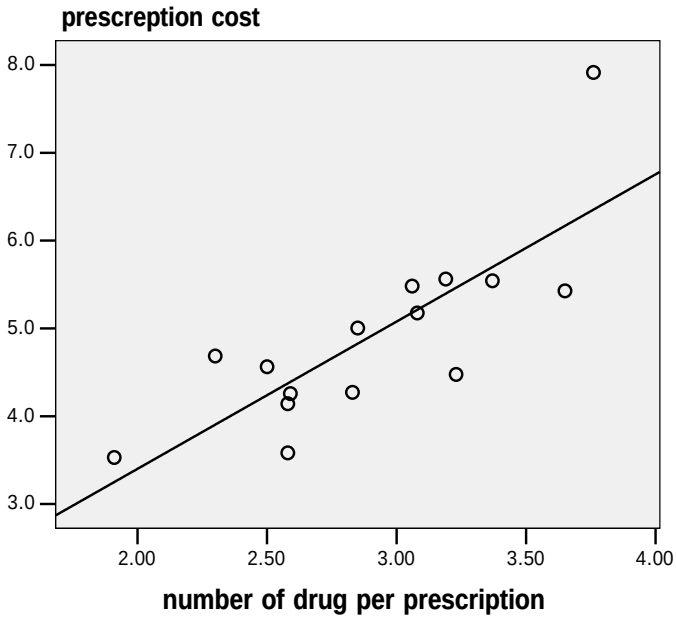


Fig (4.14): Relationship between prescription cost and number of drug/prescription

4.3. Chapter summery

4.3.1 Descriptive Analysis

Indicator	Results
Average percent of consumed drug cost covered by co-payment	84%
Availability of key drugs	82.8%
Average drugs cost per prescription	4.9 NIS
Percentage of patients treated with drugs	75.4%
Percentage of patients treated with drugs for under 3 year patients	88.2%
Percentage of patients treated with drugs for over 3 year patients	70%
Average number of drug per prescription	2.9
Average number of drug per prescription in exempted prescriptions	4.5
Average number of drug per prescription in under 3 year prescriptions	2.2
Average number of drug per prescription over 3 year prescriptions	2
Percent of antibiotic included prescriptions	64%
Percent of antibiotic included prescriptions in exempted prescriptions	79.1%
Percent of antibiotic included prescriptions in under 3year prescriptions	66.3%
Percent of antibiotic included prescriptions over 3 year prescriptions	47%

4.3.2. Inferential statistics

dependent variable	independent variable	"P" Value
Number of drug per prescription	Governorate	0.06
	PHC level	0.001*
	Dispensing time	0.001*
	Co-payment value	0.001*
Percentage of prescription included Antibiotics	Governorate	0.163
	PHC level	0.31
	Dispensing time	0.001*
	Co-payment value	0.001*
Key drugs availability	Governorate	0.43
	PHC level	0.34
	Number of exempted patient	0.255
	Number of drug per prescription	0.304
Percent of patient treated with drug	Governorate	0.928
	PHC level	0.39
Percent of cost coverage by co-payment revenue	Governorate	0.081
	PHC level	0.143
	Number of exempted patient	0.041*
	Number of drug per prescription	0.106
Average cost of prescription	Governorate	0.555
	PHC level	0.014*
	Number of exempted patient	0.004*
	Number of drug per prescription	0.001*
Average number of dosage form /prescription	Co-payment value	0.0001*

** Statistically significant*

Chapter (5)

Conclusions and Recommendations

Chapter 5: Conclusion and Recommendation

Palestinian Ministry of Health looks for health system from two points of view; clinical prospective focuses on individual patient who required treatment, and economical view concerned with the most appropriate use of resources to achieve the greatest benefit for society as a whole. Availability of essential drug and drugs funding are two important issues related to pharmaceutical services which faced by MOH by establishing two financial systems represented by procurement and co-payment system. Main goal for establishing co-payment system is achieving a greatest benefit for society as whole by concerning with efficiency, allocation of resources and limitation of resource waste, more than concerned with cost containment. MOH try to have reasonable co-payment value commensurate with general economical status for Palestinians citizen. The law permits to exempt some special case or poor patients, to avoid bad effect of co-payment system to impede drug accessibility or cause reductions in the use of life-sustaining drugs or drugs that are important in treating chronic conditions, which may have adverse effects on health, and increase the use of healthcare services and overall expenditures. Unfortunately, since the establishment of this system there has been no study to evaluate their implementation, so there is no any improvement introduced to the system.

This study is the first one in Gaza strip which dealS with co-payment effect on drug rational use and its role in cost coverage at primary health care facilities. Researcher used descriptive, analytical, cross sectional design. Drug prescriptions in Governmental PHC centers in Gaza strip was the target population. The study was conducting in randomly selected 15 PHC clinics from different geographical areas and levels.

In each centre, a sample of 1620 prescriptions written over first six months of 2008 was retrospectively reviewed, 108 prescriptions written over the same months from each

selected clinic to test co-payment effect on rational drugs use, and record documents over the first six months of 2008 also was retrospectively reviewed from pharmacy files. The data was recorded on designed forms to study co-payment coverage percent to drugs cost, and co-payment relation with drugs availability.

The study demonstrates that, there are clear differences between exempted and non-exempted patients in drug utilization and prescribing pattern. Poly pharmacy is not a major problem in not exempted prescriptions, as average number of drugs prescribed per prescriptions was 2.1, which is closely equal to WHO recommendation and better than many other neighboring and developing countries. Nevertheless, the poly pharmacy problem clearly demonstrated in exempted prescriptions where number of drugs was 4.5, which ishigher than any other studied value. Study results clearly demonstrate the need for considerable improvement in prescription practices for exempted patients. Improvement can be achieve by physician education program, training and compliance of physician in standard protocols, and health personnel inform about drug cost. Community awareness about economical and healthy adverse effect of unnecessary drug use also is necessary in improvement step. Moreover the reform of exemption system is necessary to limit the random exemption license. Reform could include establish of special socio healthy committee responsible on determine who was exempted and exemption period and proportion of exemption according to need. Introducing few co-payments may increase patient's responsibility toward dispensed drug. Flat prescription fee which covering all medicines in whatever quantities within one prescription lead to over prescription, therefore user charges should be mad per drug not per prescription, or pay fixed small co-payment for each three drug per prescription. On other hand, the antibiotic prescribing was a clear problem in all Gaza strip clinics and among all exempted and not exempted patients despite the worsening problem in exempted patients, as it was the highest in most of the

reviewed countries (64%);(79.1% for exempted prescriptions and 56.65% for not exempted). Intervention to rectify over prescription of antibiotics through reinforcement of the knowledge of the adverse effect of different antibiotics, availability of relatively safer alternatives and continually update the essential drug list is necessary to improve rational drug use.

The study demonstrates also the variation in type and in number of dosage form prescribing by co-payment value decrease especially the dosage form which can dispensed for all ages as cream and drop, where highest number of exempted prescription was include creams and drops followed by under 3 years prescriptions then over 3 years prescriptions. The result is demonstrating the extent of specific dosage form exploitation by co-payment value decrease, the problem can be easilly overcome by physician compliance in patients file, and systems computerize. Bad signal revealed in this study due to drug shortage, where the percent of drug availability which was 82.8%, which should be available all the time (100% availability), so the managerial interventions such as sufficient governmental expenditure and good benefits from donors is necessary to overcome key drug shortage problem. At the same time the study demonstrate that the effect of co-payment value in percent of patients who were treated with drug, where 88.2% of under 3 years patients but only 70% of over 3 years patients treated with drug, physician compliance to prescribe the drug to whom need it will help to easy overcome of the problem.

Regarding the financial indicators, the percent of drug cost coverage by co-payment revenue (84%) is not bad for middle income country and responsible to the free treatment of huge number of Intifada wounded. In other hand the study demonstrate the prescription cost (1.4 US$) is relatively good compared by other developed countries.

Recommendations

- Education program, training, and compliance of physician in standard treatment protocol and using of patients file are necessary for more rational and safer drug prescribing and efficiency of drug use.
- Enforcement of community education and awareness about economical and healthy adverse effect of over use or misuse of drug.
- Reinforcement the community role in shaping the vision of primary care provision and steering to meet changing health needs.
- Alleviate the patients fear from drug shortage by sufficient governmental expenditure to ensure availability of key drug.
- Change of antibiotic prescribing behavior by reinforcement of the knowledge of the adverse effects of different antibiotics and the availability of relatively safer alternatives.
- Reviewing the co-payment system to be able limit exploitation of drug from specific dosage of patients who pay low co-payment.
- Establish special socio healthy committee responsible on determines who exempted, exemption period and proportion of exemption according to need.
- Increase exempted patients responsibility toward dispensed drug through introducing small co-payment per specific number of drug or establish drug-prescribing ceiling per exempted prescriptions.
- Cost effective improving of drug donations from other countries, donation should be based on and our need and support Palestinian essential drug policy.
- Follow WHO recommendation in Improving the drug procurement to reduce the consumed drug cost by; procuring the most cost-effective drugs in the right

quantities; selecting reliable suppliers of high-quality products; achieving the lowest possible total cost, and complete knowledge status of internal and external markets (WHO, 1999).

- Continually update the essential drug list is necessary to improve rational drug use.
- Computerizing the prescribing and disbanding system in PHC facilities.

Research recommendation

- Comparison study in pharmaceutical services quality among different cost sharing systems in different health providers such as governmental, UNRWA, and NGO,s
- Further studies could help in demonstrating the co-payment effect on drug accessibility and extent patient's satisfaction toward co-payment system.
- Further studies is needed to determine the more needed drug quantity stored in patients home and reasons of this behavior.
- Other studies needed to assess the Palestinian Ministry Of Health procurement system.
- Further study could help in evaluating the efficiency of educational programs that related to rational drug use reinforcement.

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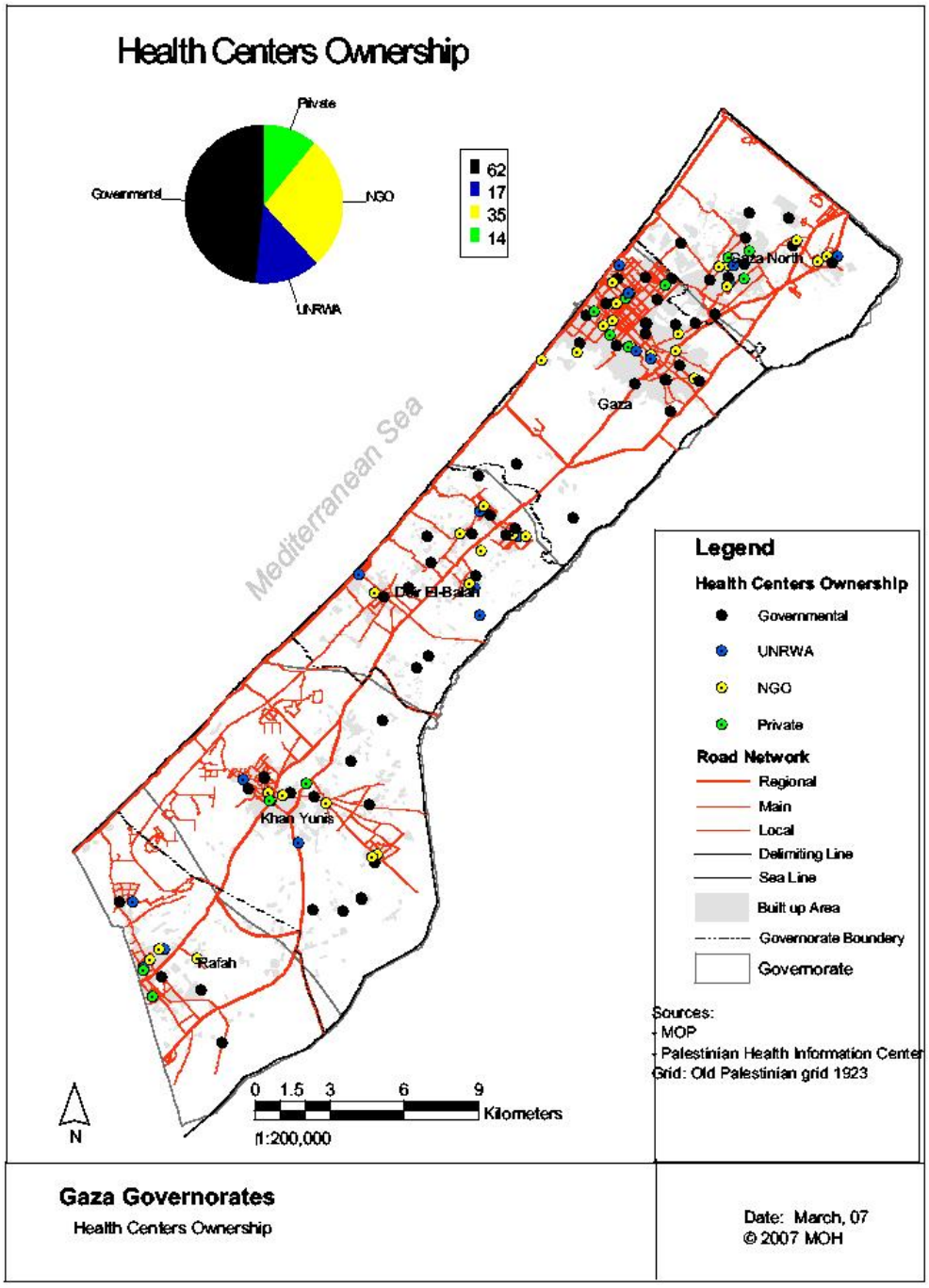
Annexes

Annex (1)

Map of Palestine

Annex (2)
Map of Gaza Strip



Annex (3)
Core WHO Drugs 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
Patient Care Indicators	
6	Average consultation time
7	Average dispensing time
8	Percentage of drugs actually dispensed
9	Percentage of drugs adequately labeled
10	Patients' knowledge of correct dosage
Facility Indicators	
11	Availability of copy of essential drugs list or formulary
12	Availability of key drugs

Annex (4)
Complementary drugs use indicators

Complementary drugs use indicators	
13	Percentage of patients treated without drugs
14	Average drugs 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 5)

Clinics which included in the study sample

Serial #	Clinic	Level	Governorate
1	Jabalia center	IV	North Gaza
2	Jabalia camp clinic	III	North Gaza
3	Al Atatra clinic	II	North Gaza
4	Al- Rimal center	IV	Gaza
5	Al- Shate'a clinic	III	Gaza
6	Al- Huria clinic	II	Gaza
7	Der-Elblah center	IV	Mild Zone
8	Al- Nussaerat alkadema	III	Mild Zone
9	Wady-Elsalka clinic	II	Mild Zone
10	Khaneounous center	IV	khaneonous
11	Al-karara clinic	III	khaneonous
12	Al-Fokhary clinic	II	khaneonous
13	Rafah center	IV	Rafah
14	Tal Essultan clinic	III	Rafah
15	Al-Shabora clinic	II	Rafah

(Annex 6)

Approval from Helsinki Committee

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

Date: 15/8/2008

Name: Khalid Abu Saman

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

Co-payment effect on drug rational use and cost coverage at governmental primary health care in Gaza Governorates.

In its meeting on August 2008
and decided the Following:-
To approve the above mention research study.

التاريخ: ٢٠٠٨/٨/١٥

الاسم: خالد أبو سمعان

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

و ذلك في جلستها المنعقدة لشهر أغسطس ٢٠٠٨

و قد قررت ما يلي:-

الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member
عضو

Member
عضو

Ministry of Health
Helsinki Committee

Chairperson

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.

(Annex 7)

approval from general director of PHC in Gaza Strip

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

5/7/2008

الأخ/د. فؤاد العيسوي المحترم
مدير عام الرعاية الأولية – وزارة الصحة
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب خالد أبو سمهان

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Co-Payment Effect on Drug Rational Use and Cost Coverage at Governmental Primary Health Care in Gaza Strip"

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار إدارة صحية و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة من مراكز الرعاية الأولية التابعة لدائرتكم، علماً بأن المعلومات ستكون متوفرة لدى الباحث و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

College of Public Health

منسق عام برامج الصحة

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(Annex 8)

Data Abstract Sheet

Prescribing indicator form

Location _____ PHC level_____ community served by the facility _____

Investigator _____ Governorate _____ Date ___/____/____

Seq.#	Type of Rx	Date of Rx	#of drugs	# of Antibiotics	Diagnosis code					
					Tab	susp	cream	drop	supp	inj
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
Total										
Average										
percentage				% of total drugs ---------- -						

Note : type of Rx code 0= exempt Rx, 1= under 3 year, 2over 3 year

Annex (9)

Data Abstract Sheet
Key drugs chick list

Location _____ PHC level_____ community served by the facility _____

Investigator _____ Governorate _____ Date ___/____/____

Total prescriptions number per month _____

Exempt Rx number _____ Under 3 year _____ Over3 year _____

Number of patients exempted from co-payment _____

Cost of total drugs consumed per month _____

Aerial #	Drug	Present	#of days drugs consumed
1	Betamethasone cream		
2	Captopril tablet		
3	Cephalexin Capsules		
4	Diclofen sodium tablet		
5	Ferrous sulphate +folic acid tablet		
6	Gentamycin eye drops		
7	Insulin (mix)		
8	Metformin tablet		
9	Miconazol cream		
10	Oral rehydration salts (ORS)		
11	Paracetamol syrup		
12	Tetracyclin Eye ointment		

Annex (10)

Data Abstract Sheet
Cost of dispensed drugs

Location _____ PHC level_____ community served by the facility _____
Investigator _____ Governorate _____ Date ___/____/____
Total prescription number _____ under 3 year_____ over 3 year _____
Total number of visitors _____ under 3 year_____ over 3 year _____

Total drugs co-payment revenue _____

Sn	Item	Unit	Unit cost	Total quantity	Total cost
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
Total cost					